

Reflection Paper

Subject:

Math

Grade:

4

Module 3: Instruction for Active Learning : Teacher implements instruction in order to engage students in rigorous and relevant learning and to promote their curiosity about the world at large by:

Selected Indicator: Using differentiated instruction and supplemental interventions to support students with learning difficulties, disabilities and/or particular gifts and talents. Note: differentiated instruction applies to all students (tier one) and supplemental instruction applies to students in tiers two and three.

Goal: I will learn how to successfully use pre and post assessments to develop differentiated instruction based on students individual needs. As a result each student will be appropriately challenged at their zone of proximal development with activities specifically tailored to their level of understanding. (Based on Indicator 2 CCT 4.5)

Initial Summary:

Differentiation in my classroom during a Math unit happens on a basic level. While I do make an effort to modify tasks for students to help them understand the material, this is often “off-the-cuff” and not planned. While I do pre-assess what students know before starting a new math unit, I don’t think that I use the information collected from these pre-assessments to effectively plan or adjust their work. While students finish a unit engaged and knowledgeable of the concept, I know that they are capable of more. Typically, I find that students who are comfortable with the material will rush through their work in an effort to get the “right answer” while students who struggle with the concept may avoid or “fake their way” through the work.

Reflection:

Implementing meaningful differentiation is something that has always challenged me as a teacher. While it is always a “hot topic” in education and is something I learned a great deal about during my coursework, successful implementation in my own classroom, especially during math instruction, is something I consistently struggle with.

When my mentor and I reviewed the Connecticut Common Core of Teaching (CCT), I realized my current level of performance in the classroom and where I could improve. According to the CCT (Instruction for Active Learning Indicator 4.5), my current level of differentiation included “providing instruction predominately in whole group arrangements...” And, “occasionally provides supplemental intervention for students who need academic or behavioral supports, but intervention not provided in a systematic or routine manner.” Seeing this on paper made it clear to me that

the version of differentiation I was using needed to change. I realized that effective differentiation is well planned, data driven and highly individualized. It was much more than quickly coming up with an activity to enrich or reinforce a concept to students. Based on this new information, I set a goal for myself to improve my instruction during Math through differentiation.

The first step toward my goal was asking for recommendations from colleagues about texts and other sources on differentiation. I began by collecting these sources and reviewing them. While they were not content specific (for 4th grade math instruction) they gave me a variety of examples and strategies to start planning a unit. The book, *A Practical Guide to Differentiated and Tiering Instruction* was very helpful. Its easy to navigate format helped me learn the importance of using assessment data when planning differentiated instruction. It also provided tips and sample forms to help me implement some of their suggestions in my own classroom. I also found my observations of teachers in a different district extremely beneficial. The district where I observed differentiated Math instruction has been working on the implementation of differentiation in their math curriculum by using a Math Workshop Model. -

Observing these teachers raised some new questions such as “What resources can I use to supplement my current math curriculum?” “What are some effective ways to manage several different groups?” “What happens when a student is absent? As well as, “Should pre and post assessment be the same?” My mentor and I were able to debrief with these teachers after the observations and get some of their input. One idea that really stuck out to me was that the 3rd grade teacher had her students work with math partner(s). These partners switched about every week, and were assigned not only based on pre-assessment information for the unit but also grouped according to other small groups she hoped to pull during the week to work on-going skills such as estimation, multiplication, or even addition and subtraction. She also had a great idea to have the partners pre-assigned space to work in the room. This helped students move quickly from the mini lesson into working. When observing partnerships work, I found they were engaged, on task and the teacher was able to check in with many different pairs throughout the lesson.

Even with some feedback and guidance some questions were still floating around in my head. One night as I was looking through a copy of *Educational Leadership*, I came across an article about differentiation. This article by Tracy Heubner kept referencing Carol Tomlinson. This reminded me of a book I had read for a course in graduate school by Tomlinson specifically on differentiation. With some searching I was able to find the book and re-read it. In doing so, I found many answers and suggestions to the questions I had posed after my observations as well new ideas and suggestions I had forgotten about since my graduate year.

Armed with new knowledge and full of ideas, I set off enthusiastically to start my work. My first obstacle came when trying to create an assessment which would not only tell me what students know about a topic but would assess higher thinking skills as well. I turned to my team (two other 4th grade teachers and a district math consultant) to help me design this type of assessment. Together, they helped me identify a continuum of skills/topics, which could be addressed in the unit. These ranged from simple to more complex. Keeping my goal of differentiation in mind, I went back and identified “Must Haves” –or skills which every student must encounter during the unit. The others were things which students might cover, but could be considered “above and beyond” and would not be asked on the assessment. We incorporated a performance-based section to the assessment where students had to apply their knowledge of the concept to arrive at an answer. Excited, I gave the product as a pre-assessment to my class so that I would have time to interpret the results and develop further instruction. What I hadn’t counted on, however, was the difficulty and

frustration students had taking the pre-assessment. The pre-assessments I had done in the past, were shorter, and much more open-ended. This new pre-assessment had a different format, was longer, and anxiety producing. Students were focused on getting the “right” answer and not on showing what they knew about the topic.

Talking with my mentor about this I realized that if the unit was going to be successful then a shift in thinking had to take place in the classroom. Students needed to understand the purpose/content of the assignment as well as the learning they were going to be responsible for. When thinking about this I was reminded of a chapter in Tomlinson’s book about introducing students and parents to a differentiated classroom. Besides providing answers to questions students and parents may have it had different vignettes from classrooms. One explained the point I had failed to make to my students when they struggled with the pre-assessment, “That some students will learn to do things sooner, which is fine as long as everyone is working on skills they need”. A great analogy one teacher used with their class was when you learn to walk, talk, ride a bike etc.—it doesn’t matter when you learn to do it all that matters is that you can do it now! I found this particularly helpful when launching the unit on the first day. After having students brainstorm topics they thought the unit might cover, I explained that we all would be covering each topic, just not the same day or even the same way. This was a huge learning experience for me before even starting the unit. It was crucial that students started with this mindset.

One of the largest challenges for me occurred when I was trying to organize the pre-assessment data into meaningful groups. While creating the assessment, my team and I had created sample responses that students might give. For each question we determined a continuum that students would fall on based on their answer. I envisioned that looking at their answers would be easy to see where they fell thus which group to put them in. However, I soon realized that it was not as cut and dry. Using the data from each question was cumbersome and not useful. A tool, which was helpful, in *The Practical Guide to Differentiation*, was a Readiness Scale. This evaluated four categories—background knowledge, higher level thinking skills, interaction with content and degree of independence. I was able to use this scale after looking at the students entire pre-assessment to determine their overall knowledge of the topic rather than looking at each question individually.

After these management issues I was able to finally start teaching! Immediately I saw dramatic results. Perhaps the thing that struck me and showed me that differentiation was working was the atmosphere of the classroom during math time. Previously, when working on an assigned task students seemed focused on rushing through trying to finish and move to the next task. They rarely stopped to reflect, “Does this make sense?” or take time to think about and defend their answers. The advanced group of students would always finish the task in record time, ask for it to be checked and then inquire what to do next. Now when they finished their work I heard them involved in debates and going back and forth arguing for what they believed to be the correct answer. This showed me they were being challenged and stretching their minds by utilizing higher level thinking skills. In fact students of all levels were asking questions and supporting their work regardless of the skill they were working on. Instead of hearing things like “The perimeter is 12cm. Right?” I heard students asking each other “Why?” and “How did you get that?”. Having tasks at their own level and being surrounded by peers who are at the same place I believe helped students feel comfortable and confident in their work and supporting their ideas.

Another indicator of the success of differentiation was evident in the wide range of skills taking place in the room at one time. Each year there is

a challenging page in the Student Workbook about finding how much ribbon it would take to wrap a package several different ways. Conceptually, many students struggle with the material while others pick up the concept right way. In the past I've had to take several days to teach the concept—while some students don't need as much instruction and got it right away while others struggled. Now, with a short mini-lesson and minimal instruction the advanced were able to go and investigate the concept. In the past this assignment may have taken many whole group lessons and become dis-engaging for these students but with this format they were able to complete it in one day, with maximum engagement. I was then able to have them prove which ribbon style would be the cheapest and why. When I got to this point with other groups, I differentiated by using manipulatives; paper and many other hands on approaches to demonstrate what was being asked. I asked myself what these kids who "got it" would have been doing during the two days it used to take me to teach the lesson. Would they have been engaged? Challenged? Asked to prove their thinking? No! With this method of instruction while I was working with another group they developed a proposal on which ribbon style would be cheapest to use. Seeing the varied products of each group helped prove to me that students are meeting with success due to my differentiating for their individual needs.

Towards the end of the unit, I had an especially successful lesson where I differentiated instruction. Up until this point the unit had been going along smoothly, however I realized while I had differentiated according to the content and students readiness I hadn't done much to differentiate according to multiple intelligences, learning style or interest. I also had done little to connect what students were learning to the real world. While the advanced tier had worked on some application problems, the intermediate and basic tier had not. Their activities tended to be more skill based and on lower level of Bloom's Taxonomy. After this realization, I knew that I needed some way to incorporate this real world connection.

I decided to have all students work on the same project however, I differentiated by providing different parameters for each group. For the task, students would create a playground using toothpicks and clay. Students in the basic tier had to list the perimeter of each piece of equipment they put into their playground. Shapes did not have to be 3-D and could be as close together as possible. Students in the intermediate tier had the same requirements, however their pieces of equipment needed to be 10 cm apart and they had to create 3-D shapes. Those students in the advanced tier had to create the same playground but were required to use 3-D shapes only and had to describe the properties of each (edges, vertices, faces). They were given a limit to the total number of edges, vertices and faces their playground could contain. They had to think carefully and design their playground wisely. It was great to see these students were not only challenged but also had to think carefully about what they were doing—rushing and impulse would not help them complete the task. I was pleased with this lesson because all students were applying knowledge from the unit to a real life problem and that they were completing a task that met them where they were in their learning.

Additionally, students were all creating similar looking projects and using the same materials, something that can be a big source of contempt among ten year olds. The open end nature of this task was crucial as it allowed students in all tiers to think carefully about what they had learned and apply those concepts to their final product. One student in the advanced tier, who previously had a tendency to seem unengaged during math time, told me "This was the best day of math ever". This sentiment was echoed by his mother who emailed to tell me that, "her son had come home and drawn a scale drawing of the playground his group had assembled to show his family the structures they had created". Another indicator that this lesson was a success was when I overheard two students in the basic tier brainstorming the first piece of equipment to place in their playground. One suggested a sandbox which would have only required a 2-D square. After thinking about it for a minute, her partner replied "No,

that doesn't have any edges. Let's make it a cube instead!" Not only did this student connect and use vocabulary taught in the lesson---she was pushing her partner to use 3-D shapes!

One thing I realized after doing the unit was that my students had made great growth throughout the unit in explaining and defending their ideas. This was something every group had become accustomed to doing during the unit and I felt it was important growth for them. Based on this I added a question to the final assessment asking student to explain whether a shape was a pentagonal prism or a pentagonal pyramid. After grading them, I found that all 20 students in my class defended their answers in writing. Even the one student who said prism instead of pyramid included specific reasons backing up her answer. While the average score from pre-assessment in the start of the unit to the post-assessment at the completion of the unit went up from a 44.5% to 85.3%, I was most impressed to see the vocabulary, arguments and rationale students had for their response to the open-ended question because this showed me that all students, regardless of their level, were able to support their thinking and challenged themselves rather than giving a "right" or "wrong" answer.

While I am excited with the progress I have already made I realize that there is still a long way for me to go before I am comfortable in using differentiation in each unit. I believe that while I have made great strides using assessment data to determine lesson direction and formulate groups I need to do this more routinely. I also need to be more flexible in my grouping and not be afraid to move students around after a unit has begun. One thing I realized from incorporating the playground activity into instruction is that at least one task per group should incorporate real life application as well as higher order thinking in their tasks. Looking back, I realized I didn't include as many opportunities for higher level and creative activities for students in lower tiers. While often times they may need more direct instruction, I want to be careful that within this practice their tasks have some of the same creativity and critical thinking skills of other groups. Additionally, I want to continue to have my students be active participants in their learning process.

Developing my comfort level with differentiation will be an ongoing process. I want to continue to look for and stay current with resources and sources being published on differentiation. I think that my greatest strength and support will come from my team and asking for and using professional development or common planning time to develop assessment, gather resources and collaborate so we can create units which are fully differentiated. Each tier of students in my classroom directly benefits from the extra time it may take to put such tiered lessons together. Continuing to develop my skills for differentiated instruction is a crucial ingredient that will ensure that each of my students is appropriately challenged and will allow my students the freedom to learn, connect and construct knowledge.