

### Module 3

It is critical to differentiate in order to teach students effectively. In the past I differentiated just for my students that were special education or my lower end students. My goal is to incorporate differentiation skills that reach all my students regardless of their level. To learn more about differentiation I utilized a book on differentiation and spoke with my co-workers.

I read the book *More Good Questions* by Small and Lin. The book talks about multiple instructional strategies and tips on differentiation in a math classroom such as, using parallel tasks and multi-level open-ended questioning techniques. I made use of tips and ideas from the book and implemented them in my class, asking open ended questions in both large and small group discussions and parallel tasks when designing lessons. Parallel tasks are sets of two or more related tasks that explore the same big idea but are designed to suit the needs of students at different developmental levels. One of the things I like about parallel tasks are that the tasks are similar enough in content that all students can participate fully in a single follow-up discussion. I also talked with the algebra one PLC group members, the special education teacher, an instructional coach, and my mentor about more ways I can differentiate in algebra. A common theme among them was to use different types of grouping to differentiate classwork and other in class assessments.

I learned to ask open ended questions more frequently. I also learned to be more open ended in my actual questions and to use longer wait times to solicit student responses. At first this was difficult for me as the silence made me want to answer the question or give a hint. I used phrases that asked "why", "how", or "justify your answer with a mathematical argument." After students were able to grasp the main idea for the day then I learned to use follow up questions that takes their thinking further. If a student is struggling with the concept in a mathematical argument I followed up with leading questions meant to lead them to their own conclusions about the concept. I learned how to lead a follow up conversation that involves all students regardless of which specific parallel task they completed. Students benefited by contributing much more frequently and in more depth without really noticing that their tasks were leveled.

Through this process I learned another type of open questioning which was to have students critique fake student work. This is a fun way to think critically and gives students multiple ways to answer. When my students critique student work I learned the benefit in making my groups homogenous. By doing grouping this way I can sort groups by level. I give my lower functioning students an easier differentiated problem on the concept while my higher functioning students get a more challenging differentiated problem. I also use color paper to distinguish groups which makes it easier for me to see the level the group is on, which helps me tailor my questions. As an example, the lower students get green paper, the grade level students get pink paper, and my higher students get yellow paper. The students do not know that each color has different leveled problem. The students get excited about the color they have.

By implementing parallel questions into my lessons, I am able to manage class work time better. By using parallel tasks, I can give my higher performing students more than one problem in the same time it takes my lower performing students to complete their problem. I also learned I wasn't giving my higher learners enough

problems in the time allotted. I learned that my students were not only able to work more independently but enjoyed working more on their own. They were better able to feel their own success. Within some assignments I experimented by having certain groups solve a problem and then challenged them to solve the same problem using a different method. This was a brain teaser for some students but after a while they were able to get it.

Currently I am teaching rules of exponents to my algebra students. To practice the rules I play a tower game with paper cups. Students have to build the tallest tower in a timed period by getting the most answers correct. On the bottom of the cups are the answers to the problem that only the partner can see when holding the cup at eye level. On the inside of the cups are the problems that are going to be solved that only the person solving can see the problems at eye level. The person holding the cup cannot see the problem but can tell their partner if they got the answer correct or incorrect. I differentiated this game in a few ways. Inside the cups, where I wrote the problems, I used a different color for each exponent rule. The product rule was pink. The zero exponent rule was orange. Each of the five rules all were different colors. When I combined two or more rules of exponents I used a black marker. I made eight groups of review cups that were twenty-four cups each. Within the 24 cups I made different levels of difficulty of each exponent rule. Among the sets were some problems that were more complicated. I differentiated the cup game by making some cup sets harder than others for differentiation among the regular education students in the class and also included an easier set of exponent problems for my students that are special education and cannot process information as quickly as some of my other students.

Another way I differentiate for my students is by using colored pencils to group like terms together or shading inequalities. Students who need that step by step direction are able to see what colors match or overlap and find it easier to get answers.

Other ways I used differentiation is by designing my student work groups. For certain tasks, such as a performance task, I use homogenous grouping. This allows for my higher performing students to challenge and push themselves on the assessment, while allowing me to break the same task into smaller steps for my lower performing groups. It also allows me to monitor and assess their learning more easily.

Since using more differentiating techniques in my class I have seen an increase in my students' grades and completion on assessments, homework, and classwork. I also noticed that more students pay attention in class. They have expressed more confidence in their work and demonstrated they are more capable of the work they are doing.

When I give a major assessments, such as a test, quiz, or performance task, all students that have special education accommodations receive a modified version. Sometimes the modified version involves fewer multiple choice answer choices or a modeled example of an equation, and other times the problems are broken up into smaller chunks. Spacing is used as a way to modify or differentiate an assessment. If there are a lot of problems on a page it can be overwhelming to a struggling student.

When I space out the same number of questions, the task of taking an assessment isn't as overwhelming. Students who receive a modified version have been doing as well as the students who do not.

I began modifying some of the homework assignments as well to see if this would help improve the amount of homework being completed. Since modifying homework for my special education students, I have seen an increase in the number of students completing and turning in homework. I modify homework by giving less words on a page, I may provide them with a formula, I highlight or underline, and I sometimes model a problem. For my lowest performing learners I do all these modifications. For my middle performing learners I usually will give them the formula and highlight as needed. For my highest performing learners I may give them the formula.

Since I began differentiating my whole class instruction, small group instruction, homework, and assessments, I have seen an improvement in completed work and my students have expressed they feel more confident in their mathematical ability. They feel like they are capable of understanding the material and they appear more willing to learn and try new and challenging concepts. Differentiating is a very useful classroom tool for success. As an educator I am always looking to get better and improve and I feel like differentiating more has made me a better teacher.