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## Furthering Math Education through Differentiated Instruction

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# Incorporating Differentiated Instruction into the Elementary Mathematics Classroom

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## Questions:

- How do I implement differentiated instruction into the classroom?
- In what ways is differentiated instruction different then ability grouping or tracking?
- What does differentiated instruction look like in my classroom for the students and for me as the teacher?
- Do the students enjoy math workshop and do their mathematic skills seem to grow through its use?



## Definitions For This Study:

- Differentiated Instruction - instruction that is delivered in a variety of ways and consistently adapted to better meet students' learning needs. These adaptations should stem from ongoing assessments of the students' learning.
- Math Workshop - A form of differentiated instruction that is incorporated into the math curriculum.

## Methodology

In order to established the groups for Math Workshop I created a pre-test and sorted the students into groups based on these scores. The students named their own groups and were introduced to the guidelines and stations for math workshop. The students rotated through the independent station where they worked on their math packet, the teacher station where students focused on specific math concepts with me, and the games station where students practiced math facts through games. However, I also taught whole class math lessons and mixed ability group lessons. At the end of the units I administered a post test. The lesson plans for Math Workshop, student work, photographs, tests, personal reflections, student reflections, and scholarly literature was the data for my study.

## Literature Review

### Differentiated Instruction Vs. Ability Grouping

At a quick glance differentiated instruction looks very similar to ability grouping. However, there are two key differences:

- *Flexible Grouping:* In an ability grouped classroom students are put into a group based on their ability and they stay in this group for the entire school year. In a differentiated classroom students groups are constantly being analyzed, changed, and mixed.
- *Use Of Assessment:* In an ability grouped classroom students are assessed at the beginning of the year and at the end of the year. If they are assessed more often it is to make sure they are on track. In a differentiated classroom teachers are constantly using all kinds of assessment to evaluate the students ability and learning style.

### Differentiated Instruction and Learning Needs

Differentiated Instruction gives students chances to learn material in a variety of ways:

- *Assessment:* Assessment can be formal or informal but, if using differentiated instruction should directly inform the teachers instruction and group dynamics.
- *Small Group Lessons:* Differentiated instruction is based on small group lessons. These lessons allow the teacher to provide individualized instruction to each student. While the teacher is meeting with groups, other students will be working on independent work or partner work. This gives them a sense of ownership over their own learning experience.

## Findings

### How does one go about implementing differentiated instruction?

- By administering pre-tests and dividing students based on these scores.
- By creating guidelines for the stations that are clearly posted in the classroom.
- By designing lessons in which math workshop is introduced and the stations are modeled.

*"I think that in perfect world we would have a little more time for math workshop implementation. This time would allow a teacher to introduce the stations more gradually"*

### What does Differentiated Instruction Looks Like?

- All students engaged in learning mathematical skills.
- Students helping one another play games or practice facts.
- The teacher is helping students in small groups work on specific skills and concepts.
- It is a mix of small ability group lessons, mixed ability group lessons, and whole class lessons.

*"I have really enjoyed teaching small groups because often times I am able to really see the 'light bulb' turn on. I also enjoyed seeing the students at the game station and independent station, working quietly, helping each other, using their textbooks, and recording their scores."*

### Are the students learning mathematical concepts and enjoying the process?

- The charts on the right show that a majority of the student's scores improved from each chapter pre-test to the post-test.
- The students' mixed scores on their packets show that the students have a grasp on the skill but, since the curriculum spirals, they still struggle with some concepts.
- The students reflections discuss enjoying working with other students, and enjoying the math being on their level.

*"I like math groups because you can learn math problems better. I like the teacher station because you can learn more."*



## Conclusion

In using differentiated instruction I felt that I was really able to give students more individualized attention. When I used whole class mixed ability groups I always picked a spokesperson from each group. It was wonderful to see the students band together to help their spokesperson find the answer and to see the spokesperson's confidence being boosted. I learned in doing my literature review, that this too is differentiated instruction. As budgets are slashed and class sizes rise, I believe differentiated instruction will be on the rise too, since it helps teachers better reach all their students needs.

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