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# Using the Guided Math Framework to Provide Differentiated Instruction

An Action Research Report by  
Sarah C. Donovan

Using the Guided Math Framework to  
Provide Differentiated Instruction

By Sarah C. Donovan

Submitted on November 4, 2013  
in fulfillment of final requirements for the MAED degree  
St. Catherine University  
St. Paul, Minnesota

Advisor: \_\_\_\_\_

Date: \_\_\_\_\_

## Abstract

The action research conducted in this north suburban public elementary school included twenty-one mathematics student participants in my homeroom, and a cohort of fourteen participants who have been my students as third and fourth graders. I examined teaching strategies that are instrumental in providing quality education for all learners, specifically differentiated instruction through Guided Math. This framework of instruction, designed by Laney Sammons, takes into consideration daily data collection about each student's ability, learning style and learner profile. These considerations allow teachers to fine tune instruction for struggling students and higher achieving students. In this study, I compared diagnostic assessment data, summative assessment data, and analyzed the Guided Math student survey. The results show an increase in student motivation and achievement on multi-digit addition problems, multi-digit subtraction problems, and identifying landmark data. I will continue using the Guided Math framework to differentiate instruction for my fourth grade mathematics students.

Fourth graders, at the suburban school that I teach, are less proficient in mathematics compared to the fourth grade district average, based on the MCAIII (Minnesota Comprehensive Assessments) data from 2013. In addition, fourth graders did not score within the 95<sup>th</sup> percentile on the MCAIII or the 4<sup>th</sup> grade NWEA (Northwest Evaluation Assessment). Such a high placement is needed to qualify for the district's mathematics transitions class, an advanced placement class covering fifth grade MN Mathematics Standards with an emphasis on standards through eighth grade. The school's administrator, mathematics specialist, and I have set a goal to increase the number of proficient fourth graders, on the MCAIII, by four percent in 2014. I have set an additional goal to increase the number of students qualifying for the transitions class. To facilitate this change, I will eliminate one variable that may be contributing to this decline in scores. Specifically, I will eliminate the exclusive use of whole-group, teacher focused mathematics instruction, shifting my practice to differentiated mathematics instruction for all fourth grade students.

The participants in this study include fifty-three fourth grade students. This north suburban school has a 55% free and reduced lunch population, making it a school wide Title I building. Even though this school is recognized as a school wide Title I building, students in fourth grade will not receive instructional support from supplemental support staff. Only students in grades kindergarten through third grade will receive this support.

Of the fifty-three fourth grade participants, fourteen were in my third grade class last year, so I am already aware of their mathematical strengths, weaknesses, and their individual learner profile. All fourth graders have been separated into three sections. Each section has a homeroom teacher who specializes in one content area. I specialize in mathematics instruction. My homeroom consists of twenty-one participants, twelve boys and nine girls.

Seventy-one percent of these students received proficient scores on the MCAIII 2013 mathematics test; while twenty-nine percent received non-proficient scores, based on the third grade Minnesota mathematics standards. Two students scored within the 95% on the MCAIII, and work with our Talent Development teacher three days each week. Two students have been identified by special education and have an IEP (Individualized Education Plan).

My action research project will focus on providing differentiated instruction through the Guided Math framework laid out by Laney Sammons in the book *Guided Math: A Framework for Mathematics Instruction* (2010). Students will receive whole-group, small-group, and individualized instruction which will include skill based instruction and Cognitively Guided Instruction (CGI) (Carpenter, Empson, Fennema, Franke, & Levi, 1999).

Differentiating mathematics instruction is an ongoing fluid process. Teachers begin this process by collecting data through formal and informal assessments, student surveys, and teacher observation. Using these data, teachers identify the varying instructional needs of individual students then group them with other students of similar ability levels, interests, and individual learning profiles. Carol Thomlinson, co-director of the University of Virginia's Institutes on Academic Diversity suggests through her website that, "The idea of differentiating instruction is an approach to teaching that advocates active planning for and attention to student differences in classrooms, in the context of high quality curriculums," (<http://www.caroltomlinson.com/>). According to the research conducted by Luster (2008) and the example set by Holland Elementary (Cusumano, 2007), the practice of differentiating instruction, increases student achievement on standardized testing.

Another differentiated approach used to increase student achievement in mathematics is CGI (Carpenter, et.al., 1999). This instructional strategy, developed by researchers,

promotes and develops each student's mathematical thinking. Students are encouraged to use a series of strategies when solving problems. With teacher guidance and modeling, these strategies become increasingly efficient and sophisticated over time.

Finally, the classroom environment is the backdrop for developing a community of learners. Students must feel secure and respected in their environment in order to take the educational risks needed for learning to take place. The Responsive Classroom Model (Sobel & Taylor, 2006) will be instrumental in providing this foundation. Students will benefit from the development of a respectful, caring community through Morning Meetings. During these meetings, students will have the opportunity to share information about themselves while others listen and ask questions.

Differentiated instruction is a multi-faceted approach based on student ability, student interest, and "student learner profile" (Luster, 2008). The goal of using Guided Math is providing differentiated mathematics instruction for all fourth graders. I will provide learning opportunities using the most current teaching practices of CGI, student learner profiles, and the Responsive Classroom. Student work will reinforce current mathematical understanding and push it to the next level.

During the timeframe of this action research project, I will collect data from diagnostic and summative assessments to assess the effects of differentiated instruction through the Guided Math framework. These results will answer the question, "What effect will differentiated instruction, through the use of Guided Math, have on fourth grade math students' achievement in mathematics?" The next section will describe my data collection procedures and how I plan to implement the differentiated instruction using the Guided Math framework.

### Description of Research Process

I plan to address the concerns outlined in my introduction by providing differentiated mathematics instruction to my fourth grade mathematics students. In my classroom, the guiding sources for mathematics instruction include Everyday Math curriculum and the UbD (Understanding by Design) documents written by district curriculum writers. I will differentiate instruction by incorporating Cognitively Guided Instruction (CGI) (Carpenter, et. al., 1999), individual student learner profiles, and Responsive Classroom (Sobel and Taylor, 2006), within the Laney Sammons' Guided Math framework (Sammons, 2010).

As instructor, it is important that I follow the district designed UbD documents. These documents were written to ensure that students meet the designated benchmark(s) by the end of the unit. By meeting these benchmark(s), students will be on course to meet the MN State Standard(s) addressed in this unit, by the end of the school year. To ensure that students meet these benchmarks, I used these data sources: informal assessment, unit diagnostic, student self-assessments, district designed common assessment on data analysis, unit summative assessment on multi-digit addition and subtraction, and a student survey on Guided Math instruction.

The first data source that I used was daily informal assessments. These assessments are a crucial component in providing differentiated instruction through the Guided Math Framework. This daily data collection was comprised of teacher observation, exit slips, Everyday Math Journal work, and class discussion. This daily data collection was useful in flexibly grouping students for small-group instruction, measuring individual student progress toward benchmarks, and creating differentiated Math Workshop activities.

Successful implementation of Guided Math required an ample allotment of time to setup classroom procedures and student expectations during Math Workshop time. This model of instruction works best when classrooms are organized and when classroom management is consistent. Developing these procedures and classroom expectations, during Guided Math Workshop, began on the first day of school, September 3<sup>rd</sup>, and continued through the sixth day of school, September 9<sup>th</sup>.

During those six days, students worked together in creating I-Charts describing their roles, as learners in the classroom. We created procedural I-Charts for beginning the day, mathematics games, seat work, Math Workshop, and ending the day. These charts were displayed in the room as a visual of expectations. After the I-Charts were completed, students practiced the procedures for mathematics games and seatwork. Students were expected to follow the procedures outlined on the I-Chart. If procedures were not followed, we put the supplies away and started over. This practice continued throughout the six days, until I felt that students were ready to be independent workers during Math Workshop.

On September 11<sup>th</sup>, fourth grade students began their first official day of Everyday Math instruction through the Guided Math framework. Students entered the classroom and began working on the mathematics stretch problems posted on the smart board. These problems were designed to accommodate all students' ability levels. Students chose a "just-right" problem to solve and completed their work in their mathematics notebook. To clarify and expand students' mathematical thinking, I used the CGI model to facilitate a student discussion on the varying strategies used. Furthermore, on occasion, these discussions continued into whole-class instruction.

Whole-class instruction, within the Guided Math framework, is not teacher-centered, as one would equate with traditional models of instruction. Whole-class instruction is used to briefly address the entire class when new skills are introduced, explain new Math Workshop centers, discuss varying approaches used to solve problems, and using the CGI method of instruction to facilitate questioning which will develop students' mathematical understandings. To allow enough time for small-group instruction, it was important that I minimize the time spent on whole-class instruction.

Unlike whole-class instruction, small-group instruction was used daily with fourth grade mathematics students. I met with at least three small-groups of students for 10-15 minutes each. Daily data collection helped identify the instructional focus and formation of these small-groups. This form of instruction was reserved for students having difficulty with their daily Everyday Math lesson, students who needed interventions on basic procedural concepts, and those who needed a challenge. While students were not working with the teacher, they participated in Math Workshop.

During Math Workshop, students worked independently and/or cooperatively as they moved through mathematics centers. The activities in each mathematics center, were designed to accommodate all ability levels and the preferred learning styles of my students. Students worked at a minimum of 3 mathematics centers daily. These centers included work from the Everyday Math Journal, Everyday Math games, and basic facts of multiplication. While students worked independently, I worked with individuals or small-groups of students.

As independent workers, students completed a school district designed Everyday Math unit 2 diagnostic. This diagnostic provided data for differentiated instruction and

student goal setting. This diagnostic was composed of four questions. Questions one and two were designed to assess students' understanding of solving multi-digit addition and subtraction problems. Following those questions, students completed a real-world story problem assessing their problem solving abilities. Finally, students were assessed on data analysis when presented with a series of 10 numbers. Students were asked to organize this data and identify landmarks: such as, range, median, mode, minimum, maximum and mean. After the diagnostic was corrected, students had the opportunity to complete a self-assessment.

Students used this self-assessment to identify their strengths and weaknesses by using a self-assessment table. On this table, students indicated which problems they were able to successfully complete with accuracy; problems that they could do but may need help; problems that they made simple mistakes; and the problems that they need more instruction. In addition, students listed one area, in mathematics, they feel good about, and one area they want to learn more. This goal setting became their main focus during the remainder of this Everyday Math unit. Students organized their self-assessment, diagnostic, weekly timed tests on multiplication, timed test graph, and other work from unit 2 of Everyday Math in their portfolio binder. These portfolios will be used for goal setting, and as a tool, for monitoring individual growth throughout the unit.

On the tenth day of instruction, using the Guided Math framework, students completed a district designed common assessment on data analysis. A scoring rubric was used to measure student understanding. These results were compared with this cohorts, third grade, scores on a similar data analysis assessment. This comparison was useful because, as third graders, these students did not receive differentiated instruction through Guided Math.

On the sixteenth day of this Everyday Math unit, students were given a summative assessment. This summative assessment, on subtraction and addition of multi-digit problems, was used to compare students understanding of similar problems at the onset of this Everyday Math unit. These assessment results will be used to measure student growth on benchmarks, and to determine skill areas that need individual or whole-class intervention work.

Finally, during the first week of Guided Math and again at the end of the unit, students completed a student survey on their thoughts and feelings about learning in a Guided Math classroom. This survey was helpful in determining which Math Workshop centers students liked most, and whether students preferred the Guided Math instructional framework or more traditional instructional approaches. The next section provides additional analysis of this survey, and the data collected from the diagnostic, common, and summative assessments.

### Analysis of Data

The data collected in this action research project will measure student achievement on targeted mathematic skills based on district benchmarks and MN State Mathematics Standards. I will use the Guided Math framework (Sammons, 2010) and the Everyday Math curriculum to provide differentiated instruction for fourth grade mathematics students. During this research project, student achievement and motivation will be measured through teacher observation, a diagnostic assessment, summative assessment, comparison of open response assessments of students as third and fourth graders, multiplication timed tests, and a student survey.

Within the Guided Math Framework it is important to establish a respectful community of learners. Students need to feel secure in their classroom in order to take the

educational risks necessary for learning to take place. *Creating a Responsive Classroom* (Sobel & Taylor, 2006) begins with the classroom teacher greeting students each day followed by a brief morning meeting. This is a student facilitated meeting where students review the classroom rules, reflect on their strengths and weaknesses, set goals for the day, and share about their lives outside of school. During a recent morning meeting, one student, who typically keeps to himself, reluctantly shared what he had for breakfast. After stating that he had toast, he was observed smiling with a look of relief when his peers accepted what he said, and responded positively with follow up questions and comments. This student now contributes to classroom discussions on a regular basis. This is one example, of how a sense of belonging can play a vital role in classroom participation, which is fundamental for learning to take place.

In addition to creating a respectful classroom environment, daily observation is an important component of differentiated instruction through Guided Math. Each day, fourth graders complete mathematic warm-up problems. These problems were designed to accommodate all students' ability levels. Each morning, students choose a "just-right" problem to solve, and complete their work in their math notebook. Typically, these mathematics warm-up problems spiral in content, however, most of my fourth graders set a goal to improve their addition and subtraction of multi-digit problems. This became the focus of mathematics warm-up during the first three weeks of instruction. As students worked on these problems, I walked around the room with a clipboard, and took notes on students who appeared solid in their multi-digit computations and those still in need of small-group instruction. In addition, I asked questions to assist students in solving these problems. Finally, using my knowledge of CGI (Carpenter, et. al., 1999), I selected students to present

their strategies, of varying efficiency, to their peers. Students were asked to discuss the similarities and differences of these strategies and challenged to use a more efficient strategy next time when solving multi-digit addition and subtraction problems.

Another data collection method used for differentiating mathematics instruction is diagnostic assessments. To collect this data, fourth grade mathematics students completed a unit diagnostic assessment. This assessment took place prior to the first unit of instruction during the 2013-2014 school year. This diagnostic assessment was comprised of four mathematics problems: Multi-digit addition, multi-digit subtraction, real-world story problem, and data analysis. Using a scoring rubric (see Appendix A), students were given a score of one through four, depending on their ability to complete each problem. These results were used to inform differentiated instruction for students with similar abilities. Students receiving a two or one on this diagnostic assessment received small-group instruction. This instruction was differentiated by modifying the addition and subtraction problems and using manipulatives. Students worked on solving either one or two digit problems, with and/or without regrouping. In some cases manipulatives were used to develop students' understanding of how place value can be used to help solve these problems. Students who received a score of three on the diagnostic assessment, indicating they are on target to reach the benchmark by the end of the grading period, were monitored throughout the unit. In addition, they received challenge problems to be completed during Math Workshop. At the end of this Everyday Math unit, these baseline results were compared with data collected on the district written common and summative assessments.

In addition to establishing baseline data, students used the unit diagnostic assessment for goal setting. This goal was documented on their student self-assessment (see Appendix

B). Students completed their self-assessment by reflecting on the results of their unit diagnostic assessment. For each of the four problems on the diagnostic assessment, a learning target was listed for students to indicate their level of understanding on each task. Next, students commented on something they already knew how to do on the diagnostic assessment, and set a goal for what they want to learn more about during this unit. Throughout the unit, students were encouraged to reflect on their goals and share them with their parents.

Figure 1 represents how students felt about using the student self-assessment for goal setting. This data was collected from a student survey (see Appendix C) presented during the fourth week of Guided Math instruction. Forty-three percent of the students surveyed answered, “I can see what I am good at good.” When I interviewed students about the self-assessment, they responded with positive feedback. One student commented, “If you set a goal on the self-assessment, you practice it.” Another said, “I like setting goals and accomplishing them.” When one student was asked how he would have done on multi-digit subtraction without goal setting, he stated, “I wouldn’t like subtraction at all. It’s really hard. It (goal setting) helps me beat my goals.” These comments and the survey show how establishing baseline data and goal setting are integral components of increased student achievement and motivation.



*Figure 1.* Student survey results of student feelings about the self-assessment

and goal setting.

As discussed in the introduction section of this action research project, the Guided Math framework consists of several Math Workshop centers. Throughout the three weeks of differentiated mathematics instruction, students participated in Math Workshop centers. One of these centers focused on the development of multiplication fact fluency. During this center students used flashcards, Everyday Math Fact Triangles, or paper and pencil to establish automaticity of their basic facts. Each week students completed a one hundred problem, three minute timed test using factors up to twelve. Students graphed their results on their “My Timed Test Graph” (see Appendix D) in their portfolio. Figure 2 shows the weekly classroom average of the problems that students were able to accurately complete in three minutes. The classroom average improved during the second and third week, but leveled off during the fourth week. The results of these weekly multiplication timed test support my belief that using the Guided Math framework contributes to increased student achievement on multiplication facts.

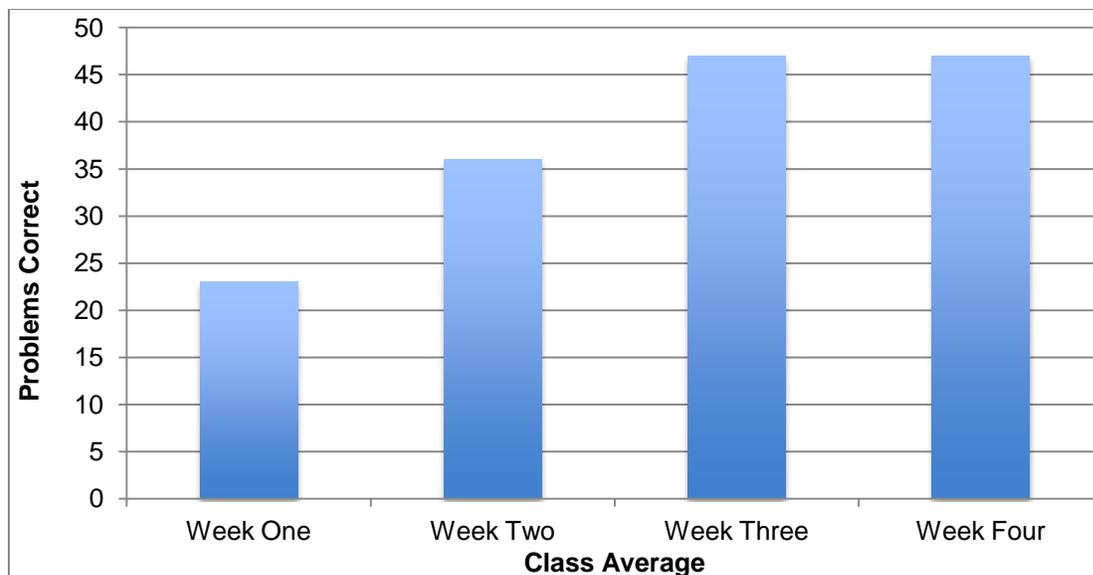
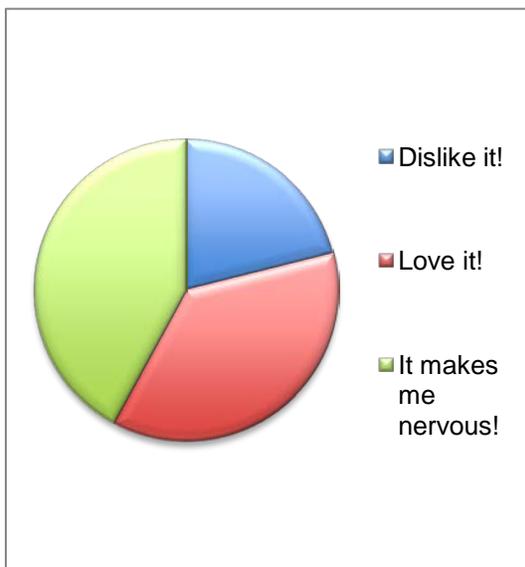


Figure 2. Weekly multiplication facts timed test class average.

In addition to improved student achievement on multiplication timed tests, student confidence and motivation increased. Student survey results (see Figures 3 and 4) show the comparison of how students felt during the first week of taking the timed test and their feelings after four weeks. During week one, the majority of the students felt that the test made them nervous. While students still felt nervous during week four, more students felt that they love taking timed tests. Also, the number of students who dislike these tests dropped between weeks one and four. One student commented on his graph, “Every time I take it (timed test) I get higher and higher.” Another student stated, “Multiplication is getting easier. I practice each week and know more problems.”



*Figure 3.* Student feelings about timed test after week one.

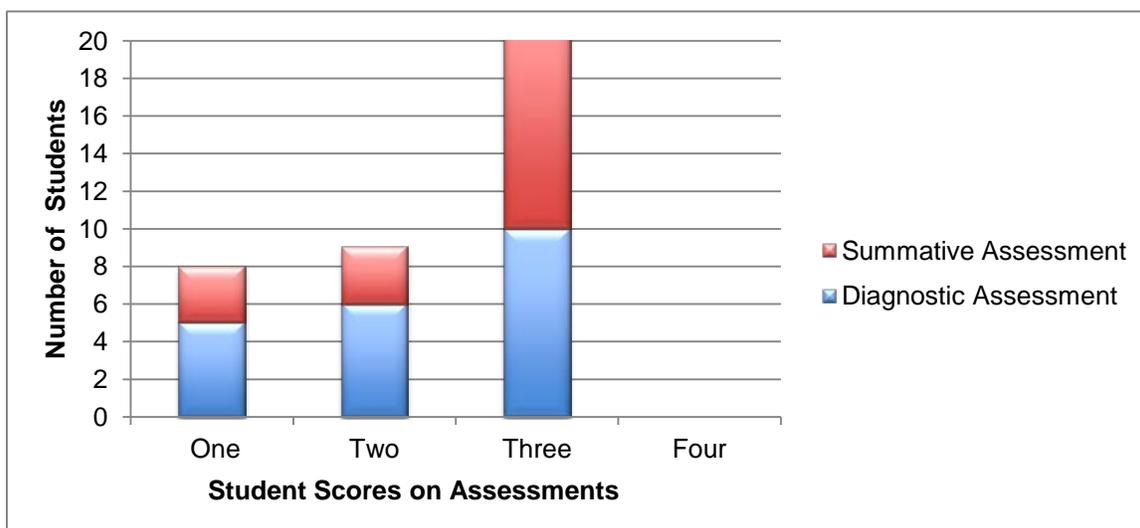


*Figure 4.* Student feelings about timed test after week four.

Previously, I described how collecting baseline data contributed to my ability in providing differentiated instruction to my fourth grade mathematics students. This differentiated instruction, through the Guided Math Framework, increased student achievement. Figures 5 and 6 show increased student achievement of multi-digit addition and subtraction by comparing the results on the diagnostic and summative assessments. The

scoring rubric in Appendix 1 was used to score students performance on these learning targets. Furthermore, Figure 7 represents student achievement of this cohort, as third and fourth graders. As third graders, this cohort did not receive differentiated instruction on data analysis through the Guided Math framework.

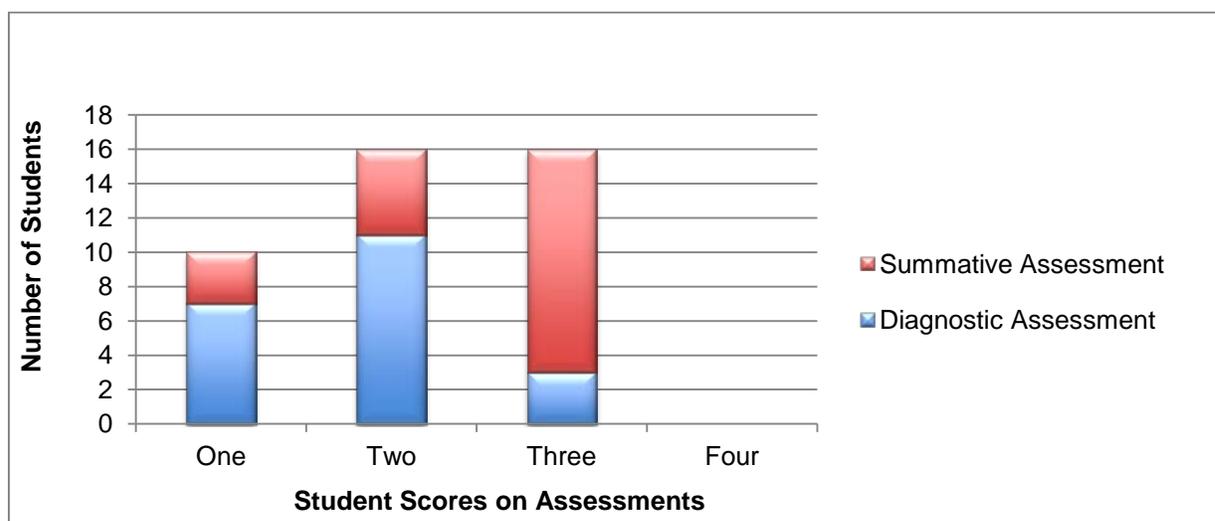
Multi-digit addition is the learning target comparison represented in Figure 5. Eleven students scored below the grade level benchmark on the diagnostic assessment. On the summative assessment only six students were still below the grade level benchmark. That is a decrease of fifty-four percent. In addition, compared to the diagnostic assessment, five more students were at the grade level benchmark for this grading period on the summative assessment. Overall, seventy-four percent of the participants in this study have met the benchmark on multi-digit addition for this reporting period.



*Figure 5.* Student improvement on multi-digit addition problems after differentiated instruction through Guided Math.

The data comparing the results on the multi-digit subtraction assessments are significant (see Figure 6). Eighty-six percent of the participants in this study scored below the grade level benchmark on the diagnostic assessment. After three weeks of differentiated

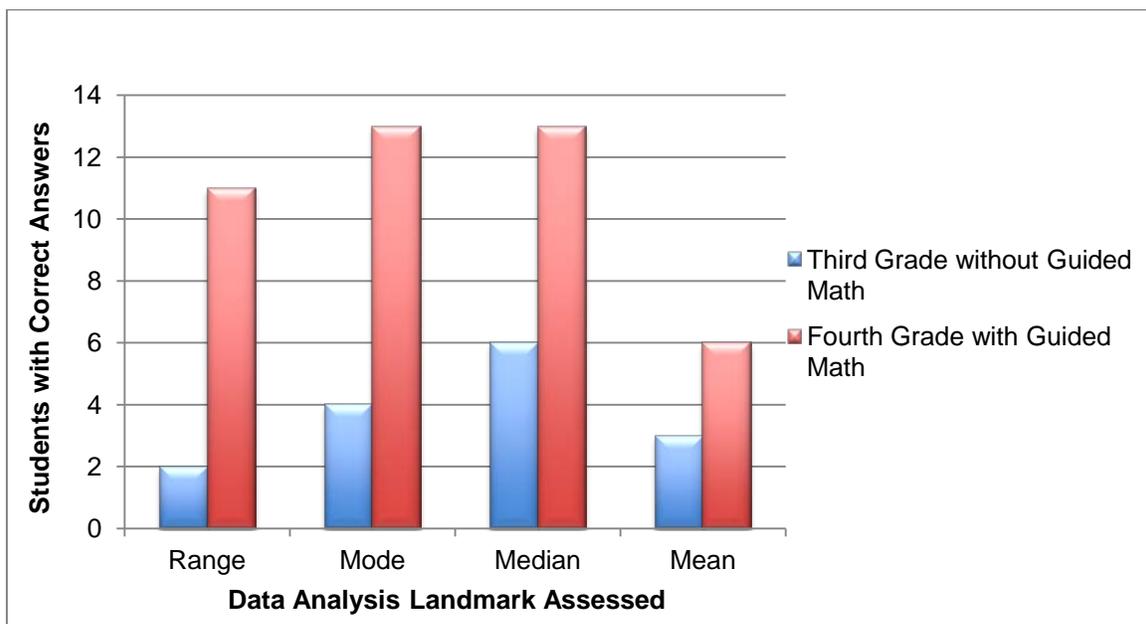
instruction through the Guided Math framework, sixty-two percent of participants scored at the grade level benchmark on the summative assessment. These students were able to consistently and accurately solve multi-digit subtraction problems using two strategies. These findings support my belief on increased student achievement by providing differentiated instruction through the Guided Math framework.



*Figure 6.* Student improvement on multi-digit subtraction problems after differentiated instruction through Guided Math.

Finally, I had the unique opportunity to loop from third grade to fourth grade with 14 of my students. As third graders, these students did not receive differentiated instruction through the Guided Math framework, thus allowing for the comparison of data collected from the 2012-2013 and 2013-2014 school years. I compared data on the common assessments administered on June 5, 2013, as third graders, and September 27, 2013, as fourth graders (see Figure 7). Participants were assessed on their ability to analyze landmark data; such as range, mode, median, and mean. Of these landmarks, participants demonstrated an increase in their ability to find the range, mode, and median in a set of data. As third graders, only two students demonstrated an understanding of range. As fourth graders, eleven

students successfully identified the range, an increase of eighty-two percent. Fourth grade participants showed a sixty-nine percent increase in their understanding of finding the mode on the common assessment. Finally, fourth grade participants showed an increase in their understanding of median by fifty-four percent. These data support my belief that data informed differentiated instruction through the Guided Math framework increases student achievement.



*Figure 7.* Comparison data of third and fourth graders common assessment on data analysis.

My analysis of data collected during this action research project suggests that differentiated instruction through the Guided Math framework improves student achievement. Through this study, I compared the results of a unit diagnostic assessment and a unit ending summative assessment. These results showed that my fourth grade mathematics students increased their ability to solve multi-digit addition and subtraction problems using more than one strategy. In addition, by comparing this cohorts third and fourth grade data analysis scores on similar common assessments, I found that students showed an increase in

their ability to find landmark data. In the next section of this paper, I will describe how these data will impact my teaching.

### Action Plan

My purpose for conducting this action research was to obtain a better understanding of how differentiated instruction through the Guided Math framework impacts student achievement. Going into this project, I believed that using Laney Sammons' framework along with the Everyday Math curriculum and district provided documents would improve student achievement. As I set out on this journey of instructional discovery, I was hoping that I would see improvements in students achievement; which I did. However, I kept an open mind during the process and found so much more. What I found will have an impact on my teaching practice as I continue through this journey.

The Guided Math framework was helpful in setting up classroom procedures and expectations for students to work independently, in small groups, whole group, and in pairs. I found that this took more time than I had expected. I recall the fifth day of school as being a difficult day. That is the day that I completely implemented Guided Math. Students did not have a complete understanding of how to move through Math Workshop productively, respectfully, and efficiently. The next day we made classroom I-charts. The purpose of I-charts is to identify teacher and student expectations during workshop time. Then, using the I-charts as a guide, we practiced until students were able to move through the classroom and each workshop station purposefully. By taking the extra time to set up Math Workshop, students were able to work independently, allowing me to focus on small group work with students.

These small groups were formed by collecting data from the unit diagnostic assessments. I was able to flexibly group students, by ability, into four groups: Significantly below grade level, below grade level, at grade level, and above grade level. In addition to flexibly grouping these students for small group instruction, I was able to challenge the mathematical thinking of students at grade level and those above grade level by using CGI.

The results of this project will change my teaching practice for years to come. I will continue to use the Guided Math framework as it allowed time for small group instruction and opportunities to differentiate. In addition, I will give myself permission to take time away from the prescribed curriculum to make professional decisions based on my research. Through this project, I found that students are more motivated to learn when they complete self-assessments and set goals for their learning. This became evident to me when students made the connection between practicing their basic facts of multiplication and improvement on their weekly timed test. At parent teacher conferences, students excitedly took out their mathematics portfolio and showed their parents their graph of improvement on multiplication. Students also showed their parents their goal setting self-assessment and discussed how they improved on certain skills by the end of an instructional unit. By observing the excitement and pride shown by students when they reach their goal or show improvement, I am convinced that student motivation plays a significant role in student achievement. Moving forward, I will continue providing opportunities for students to be an accountable participants in their learning.

Another opportunity to involve students in the learning process, begins with providing a classroom community of learners. Establishing a caring classroom environment of respect and sense of security does not happen by chance. This was a purposeful practice, in my fourth grade classroom, using the Responsive Classroom model. I accomplished this by greeting students each day, providing time for student facilitated morning meetings, encouraging students to participate in classroom discussions, and modeling respectful discussion, where everyone's point of view is validated. My research and observation, as a teacher, support the belief that students need to feel safe and respected in order to take the educational risks for learning to take place.

Looking back on this action research project, I recall moments of frustration, celebration, and validation. Throughout my years of teaching, I have been a proponent of providing differentiated instruction, even though the rigor of current curriculum does not always make this an easily attained practice. Using the Guided Math framework provided a medium for this meaningful practice. This project has supported my belief that the practice of differentiation increases student achievement. Additional findings along the way, show that student motivation is an important component in student success. As I continue on this journey as an educator, I will continue to enhance these practices and keep an open mind about future possibilities.

## References

- Carpenter, T.P., Empson, S.B., Fennema, E., Franke, M. L., & Levi, L. *Children's mathematics*. Portsmouth, NH: Heinemann, 1999.
- Cusumano, C. (2007). How differentiated instruction helps struggling students. *Leadership*, 36(4), 8-10.
- Luster, R.J. (2008). *A quantitative study investigating the effects of whole-class and differentiated instruction on student achievement*. Walden University, ProQuest, UMI Dissertations Publishing. (UMI No. MSTAR 304381234).
- Sammons, L. (2010). *Guided math: A framework for mathematics instruction*. Huntington Beach, CA: Shell Education.
- Sobel, D. M., & Taylor, S. V. (2006). Blueprint for the responsive classroom. *Teaching Exceptional Children*. 38(5), 28-35.
- <http://www.caroltomlinson.com/>

Appendix A  
Diagnostic Assessment Scoring Rubric

Score	Criteria based on benchmarks in meeting MN State Mathematics Standards by the end of the school year.
4	Student well above grade level benchmark during this reporting period.
3	Student was able to accurately complete the task and show evidence of progress toward the benchmark for this reporting period.
2	Student is below the grade level benchmark during this reporting period. Student showed some understanding of the task but was unable to accurately complete the task.
1	Student is significantly below level benchmark during this reporting period. Student was unable to complete the task or showed very little understanding of task.

Appendix B  
Student Self-Assessment

Name \_\_\_\_\_

Block \_\_\_\_\_

Date \_\_\_\_\_

**Student Self- Assessment Unit 2**

Question	Learning Target	I can do by myself and explain to others.	I can do but still need help.	I can do but still make simple mistakes.	I could not complete problem and need to learn more.
1	Estimation and solving multi-digit addition problem				
2	Estimation and solving multi-digit subtraction problem				
3	Real-world mathematical problem				
4	Data Analysis				

**Something that I already know how to do:**

**Something that I need to learn more about:**

Appendix C  
Student Survey on Guided Math

**1. Compared with other models of math instruction that you've had, rate the Guided Math model we are using this year.**

- a. Dislike it!
- b. Same as last year.
- c. Love it!
- d. Not sure yet.

**2. What do you like best about math this year?**

- a. Math Centers
- b. Working alone
- c. Working with other students
- d. Working with teacher

**3. Which math center do you like most?**

- a. Math Journal
- b. Math Games
- c. Basic Facts
- d. Working with teacher

**4. How do you feel about the student self-assessment and goal setting?**

- a. It helps me get better at math.
- b. It does not help me in math.
- c. I can see what I am good at in math.

**5. How do you feel about the basic facts timed test?**

- a. Dislike it!
- b. Love it!
- c. It makes me nervous!

**6. How do you feel about math assessments in class?**

- a. I like showing what I know!
- b. Assessments make me nervous but I try my best!
- c. I do not like taking them and I guess at the answers!

Appendix D  
Timed Test Graph

(3 minutes)

