Guided Math: A Book Study

by Deanna Lightbody

Deanna Lightbody has been an elementary educator for 25 years in the Langley School District. Her current role is a District Teacher for Numeracy for grades K-8. She enjoys supporting teachers by providing professional development, team-teaching and implementing instructional strategies for an effective math classroom.

> *When a teacher tries to teach something to the entire class at the same time, chances are, one third of the kids already know it, one third will get it, and the remaining third won't get it. So two thirds of the children are wasting their time.*
> ~Lillian Katz

I can genuinely say in 25+ years as an elementary teacher, I frequently felt that whole class instruction approach, regardless of the subject, didn't always meet my needs or that of my students. So whenever I noticed students struggling or needing support, I would work with students in small groups. Does this ring true for you? This isn't new, it's common sense and it happens in most classrooms. I tried all sorts of differentiated instruction strategies, such as providing choice, creating engaging and hands on activities, providing a challenge for those that needed it and so on. The more I worked on my tool kit of strategies, the more impact I felt it had on my teaching.

Although I continually made changes to my math program, I wasn't truly satisfied. Something was missing. This can be a curse many teachers put on themselves. Actually, it's called reflection, and it is a good thing, continuous reflection on our pedagogy and instructional strategies.

As time went on, I noticed more challenges come my way while teaching my students math. The pressure to cover all the learning outcomes, the diverse learning needs and lack of time for math instruction were to name a few. So I decided to structure my math program differently. I developed different math centres or activities to create student independence, assessed my students more frequently and thought long and hard about what were the essential skills and concepts I wanted my students to learn. The bulk of the time was spent on whole group instruction but I scheduled mini lessons for small groups and meaningful activities for the rest. So what I set out to do at the time didn't have a name but it was my way of making positive

changes in my math program. Things were seeming like they were coming into place.

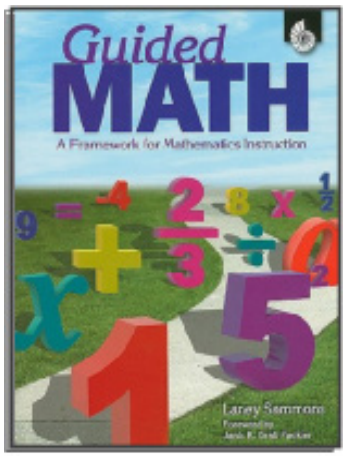
Flash-forward… a few years later. My role as an educator changed from classroom teacher to district numeracy teacher. (K-8) I left the classroom for new adventures, looking forward to working with teachers and their students, learning, leading and supporting along the way. Three years have been spent continuously building my toolkit with the help of all the math gurus along the way: Marian Small, Marilyn Burns, Kim Sutton, John Van de Walle et al. Having the opportunity to share my new found knowledge with teachers and learning from each other has been a rewarding experience.

One positive aspect of my role as a District Helping teacher is the chance to meet and work with hundreds of teachers. Lesson demonstrations, side by side teaching and presenting workshops on various math topics are the usual types of support provided. However, the most common request for support comes from an email or phone call from a teacher: a teacher who is feeling that what he or she is doing in the math classroom is just not working.

This email or phone call always starts off the same way. The teacher is challenged by the copious amount of learning outcomes expected to be taught, the different levels of student readiness and abilities, as well as the feeling that there is not enough time in the day to teach math. Sound familiar? I listen and remind teachers that many of their colleagues are feeling the same pressures. From here, I offer support through strategies, resources and perhaps some team teaching opportunities.

I noticed that teachers were trying new strategies and doing a great job of applying them in their math instruction. However, there were so many bits and pieces that didn't seem to come together. Other teachers confirmed this sentiment, as well.

I cannot pin point the exact event, but I experienced an "aha" moment while chatting with teachers. Why do we as teachers spend so much time with our literacy instruction worrying about just right text, leveling books, small group instruction etc. and not do the same for math? I presented this question over and over again as I worked with teachers. During this realization, I happened to come across a book called "Guided Math" by Laney Sammons.



Over one summer, as I was reading the book, I noticed the author had organized a book study

and an online group for teachers to post questions, make comments and offer ideas. Personally, this turned out to be a valuable professional development experience. So I began to make plans to share the book with my colleagues in the fall while using a book study as the format.

What is a professional book study? It's not an Oprah book club. It starts with a group of educators who have the desire to engage in critical reading, discussion, and continued learning. The purpose is to enhance teaching and increase student achievement. (2008 Professional Development Institute: Saint Mary's University of Minnesota)

A well-planned book study needs a facilitator to open the doors to discussion and keep it focused. The facilitator should provide opportunities for reflection, questions and sharing. Through these discussions and the readings, teachers can identify ideas that can be applied to their classroom and the potential obstacles for implementation. (Adapted from Zepeda, 2008)

The intent of the first session of the books study was to investigate what is guided math but first of all why are we here? Teachers spent time in groups discussing a set of guiding questions.

As teachers, how can we…
- Reach students at all levels of achievement?
- Provide diverse methods of learning?
- Allow more opportunities for observation and communication by students?
- Encourage active engagement by students?

Teachers expressed their challenges while teaching math and how they were looking for new ways to structure their program to meet the needs of all their students. They were asked to describe one negative and positive experience they have had while differentiating math instruction. These discussions were key to understanding why we were here and interested in guided math. I didn't need to convince anyone that the traditional approach to teaching math wasn't working.

The teachers admitted they were having their own "aha" moments. What seemed to have worked in the past wasn't effective in today's diverse classrooms. The conversations after reflection time revealed that teachers weren't going to need convincing to try different instructional strategies for teaching math. They were eager and ready for it. Teachers commented that the whole group instruction approach was holding them back from exploring other opportunities to work with their students.

We reviewed the components of guided math and the basic definition as described by the author.

What is guided math?

A flexible instructional framework that enables teachers to:

-determine students unique needs

-address those needs through a combination of whole class instruction and small group instruction (Laney Sammons, Guided Math 2009)

The word *flexible* resonated with the group. Using guided math as an instructional strategy gives you lots of flexibility. Your instructional structure can change from day to day. From large group to small group instruction, or even students working independently, the level of support provided by the teacher may depend on the mathematical content being taught or the needs of the students.

Instrucional Approach	Level of Teacher Support	Teacher Activities	Student Activities
Whole-Class Instruction	Full Support	•Activating strategies •Modeling •Think-alouds •Direct instruction •Mini lessons •Math Huddle •Directed review	•Respond to teacher's questions •Discuss with partners •Become a member of a mathematical community
Small-Group Instruction	Moderate Support	•Introduce new concepts •Provide intensive/targeted instruction •Guide conversations •Conduct informal assessments •Reteach	•Practice new skills •Work with manipulatives •Engage in mathematical discussions •Solve problems
Math Workshop	Limited Support	•Provide appropriate activities and tasks at students' independent work level	•Complete follow-up from whole-group or small-group instruction •Practice previously mastered skills •Conduct investigations •Play math games •Record in math journals •Complete interdisciplinary work •complete interdisciplinary work

Levels of Instructional Support

Figure 1 –Levels of Support (Laney Sammons)

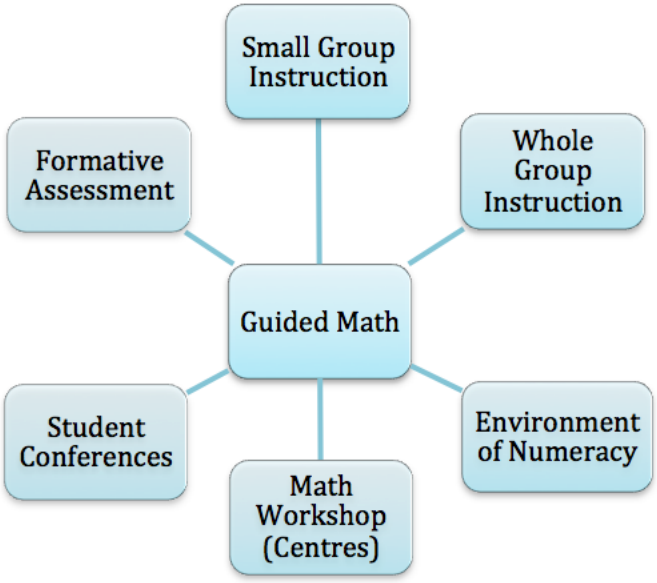
As we delved into the first few chapters, another point was emphasized. Guided math is part of a balanced math program. It takes place in a numeracy-rich environment. There are many activities and meaningful routines that can establish an environment of numeracy. These are only a few

• Create and display class-made charts to tell of math processes and concepts.
• Integrate math into other curricular areas
• Demonstrate, model, and do "think-alouds" of problem solving strategies.
• Link Math to Real Life
• Display a Mathematics Word Wall
• Read literature that promotes exploration and application of math concepts

The message I shared was that if you walked into someone's elementary classroom, could you tell that math was valued there. Can you see math, read math and hear math?

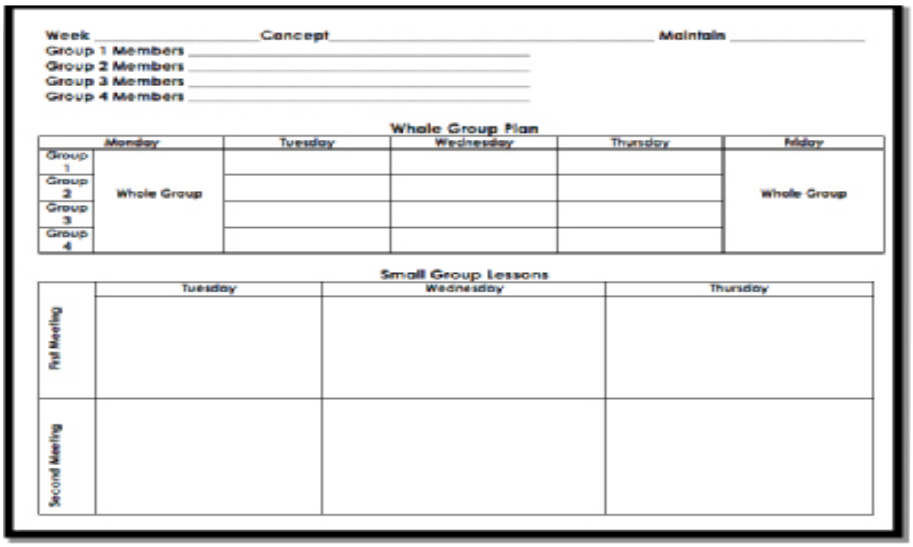
Math workshop works very similar to Literacy centres during guided reading time. You can call it what you want (math centres, work stations etc.) but it is essentially, "What are the rest of the kids doing" when the teacher is with a small group. Exploring this particular topic could take quite a bit of time as it has with guided reading. So we would deal with it at our second session together. Teachers left ready to read more of the assigned chapters and were asked to think about what changes they might want to make in their math classroom before next time.

The second time we came together we all agreed that there wasn't only one way of implementing guided math. But, there were important aspects or structures that need to be in place in order for it to be effective. This includes accurate ongoing assessment, formative and summative, informal and formal. Balanced assessment is the key to grouping students, checking for understanding and maintaining the flexibility of the groupings. In general, a guided math framework would usually include these elements.



Guided Math Framework (Adapted from Laney Sammons)

During this session, teachers also wanted to explore the different ways guided math could fit into their weekly schedule. Some were willing to dive right in and try afive-day a week model, similar to the plan included in the book, whereas others, wanted to ease into a plan and start with three days a week. Teachers knew that it was up to them to develop a plan that fit their style and comfort level.


Week _____ Concept _____ Maintain _____
Group 1 Members _____
Group 2 Members _____
Group 3 Members _____
Group 4 Members _____

Whole Group Plan

	Monday	Tuesday	Wednesday	Thursday	Friday
Group 1	Whole Group				Whole Group
Group 2					
Group 3					
Group 4					

Small Group Lessons

	Tuesday	Wednesday	Thursday
Red Meeting			
Second Meeting			

Figure 3 - Guided Math Lesson Planning, Laney Sammons

We spent the third night investigating the types of activities we could plan for students to do while the teacher was with a small group. During math workshop:

1.Students work independently, in pairs, or in groups.
2.Procedures and routines must be established and practiced.

3.Activities should provide opportunities for exploration or practice of mastered skills.

Laney Sammons also offered some of her ideas about experiences that children should often have during math workshop. I encouraged us to talk with colleagues to add to or make our own list and it included the following:

- Math Games – math facts practice or to reinforcement previously taught concepts
- Problem Solving (include time for sharing of strategies)
- Manipulatives (Explorations or Investigations)
- Technology (iPads, laptops, SMART Boards, calculator puzzles)
- Independent Work (finish work from whole group or guided math group lesson)
- Children's Literature (read and write about math found in books)
- Math Journals

There is a wealth of resources and ideas for centre type of activities, such as our core resources, on-line sources or materials found in the classroom. I reminded teachers not to go overboard or get caught up by all that's available on-line. Have a critical lens and don't get enticed by the cutesy or glitzy ideas, even if they are free! Ask yourself these questions. Is this activity appropriate for my student's grade level? Does it build conceptual understanding? Does it fit with my beliefs about learning and understanding mathematics? If so, add it to your teacher toolkit.

After three sessions of collaborating, discussing, and reflecting on our own practice, our book study was coming to an end. Or so I thought!

A guided math movement has begun to percolate in our school district. Teachers who have read the book continue to collaborate, implement more ideas and share their successes with others within their schools. Next year, there are plans to organize further book studies on Guided Math and to extend the work with teachers as the try putting it into practice. Two questions were asked of teachers once they finished the book study.

1.How will you begin to implement the Guided Math framework into your classroom?
2.How can you create a professional learning community to support you as you make changes in your mathematics instruction?
(Adapted from Laney Sammons, Guided Math)

We know our students learn best when they are given opportunities to work with their peers and to feel a sense of community. Teachers also learn best with a network of teachers to share and learn together as professionals. This experience has allowed teachers to feel safe as they took risks with new ideas, knowing in the beginning that one size didn't fit all or there was

only one way of building a classroom of numeracy. I am looking forward to introducing Guided Math to a new set of colleagues next year. Plans are underway to connect teachers who are experienced with the guided math framework with those just beginning. Creating a Guided Math learning community will only make the process of change easier and more effective for all.

"*We shouldn't try to do something better until we first determine if we should do it at all.*" --Dwight D. Eisenhower

Resources:

Dana, N. F., (2009). Leading with passion and knowledge. Thousand Oaks, CA: Corwin.

Miles, K.H., and Frank, S. (2008). The Strategic School: Making the Most of People, Time, and Money. Thousand Oaks: Corwin Press.

Newton, Dr. Nicki (2010) Guided Math in Action. (2013) New York: Eyes on Education.

Sammons, Laney, (2010). Guided Math. A Framework for Mathematics Instruction. California: Shell Education.

Zapeda, S.J., (2008). Professional development: what works. New York: Eye on Education, Inc.