

PROFESSIONAL DEVELOPMENT NEWSLETTER
LEARNING AND TEACHING TOGETHER

Volume 1, Issue 2

April 2005

LESSON STUDY:
LESSONS LEARNED

DEBBIE HALE

This fall we embarked on a new professional development initiative in mathematics called *Lesson Study*. (See PD Newsletter #1.) When we started there wasn't much out there to go on, so Beth Yando, a math specialist, and I worked with the teachers to assist them (and us), with simply learning the process of Lesson Study. Learning how to analyze, rather than describe or evaluate, the teaching and learning process is new to many. Facilitating that process was challenging and one of our major goals.

We started by using the protocols embedded within *Lesson Study* to analyze our first round of observations. In some cases, teachers simply described what occurred during the lesson. In other cases the teachers analyzed what occurred during the lesson and discussed what could have done better and what the next steps might be. As we engaged in three rounds of

lesson study, across five grade levels, I noticed our own evolution from describing to analyzing a situation. Our growth enabled us to discuss the "big picture" and how certain mathematical understandings fit or "spiral" with other understandings. This was extremely powerful. As we continued, an equally important goal was to keep nudging ourselves to always ask, "Where's the Math?"

Increased understanding correlates directly to making deeper, more lasting connections.

Understanding the mathematics embedded in *Lesson Study* means understanding a big idea that underlies many different mathematical ideas. It also means being able to look at many different mathematical ideas as relevant through a big idea. Identifying the big idea is a very important skill for teachers and students; without it making connections between mathematical ideas is difficult.

Analyzing teaching and learning is a complicated intersection between knowledge, curriculum design, and student learning. Support on many levels is integral to success. *Lesson Study* provides a structure for such learning.

However, while increasing elementary math teachers' deep content knowledge is important, it is vital not to lose sight of the lure that many educators see, and relish, in lesson study. A lure to simply engage in the learning process; to be learners ourselves. Despite our best efforts, teachers are often isolated and sometimes placed in paths that do not allow, encourage, or celebrate collaboration. This alone, from my experience, justifies the use of lesson study, to help educators grow. If this leads to an opportunity for teachers to develop their content knowledge, as it often does, so much the better.

We are hoping that lesson study builds and strengthens our reflective culture. This is something that will benefit all teachers and their students. At all stages of the process, learning takes a

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Lesson Planning Questions

1. What do students currently understand about this topic?
2. What do we want them to understand at the end of the unit?
3. What's the sequence of experiences (lessons) that will propel students from 1 to 2? What will make the unit and each lesson motivating and meaningful to students?
4. Which lesson in the unit will be selected as the research lesson?
5. What will students need to know before this lesson?
6. What will they learn during this lesson?
7. What is the "drama" or sequence of experience through which they will learn it?
8. How will students respond to the questions and activities in the lesson? What problems and misconceptions will arise and how will teachers respond to them?
9. What evidence should we gather and discuss about student learning, motivation, and behavior? What data collection forms are needed to do it?

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about knowing what you don't know. Deepening our understanding of and appreciation for what coherence and scope and sequence really mean in mathematics enables us to make connections between the big ideas in math. This is extremely important and powerful. It translates content knowledge into something that works for student learning. This is what lesson study aims for in the end.

In closing, just like there is no one way to teach effectively, there also is no one kind of professional learning that is effective for teachers. I think lesson study can and does foster a different kind of teacher professional culture, which might, in the end, be what really matters. I think lesson study can develop a culture in which gradual, but steady improvement over a period of time becomes the reality (as suggested in the *Teaching Gap* by Stigler & Hiebert). *Lesson Study* generates a desire to learn more. This is positively infectious in an ever expanding community such as ours. Together *Lesson Study* provides a forum for educators deeply committed to learning more mathematics and more about the teaching and learning of mathematics together!

GRADE TWO

Heather Castonguay, Grade 2
Steward School

This year the Tri-Town ventured into something new... math focus study groups. Across the District teachers got together at grade level and worked very productively to further enhance our Tri-Town math program. It was great working with teachers across the District and hearing everyone's input and expertise. We improved our mid-year assessment and had many productive discussions. As a group, with the help of Deb Hale and Beth Yando, we focused on understanding children's mathematical thinking with concentration on problem solving and number sense. Several classrooms across the District, including mine, shared their classrooms for observations and it allowed us to reflect on our teaching strategies and how to better differentiate for all learners. At first I was very nervous but once I started teaching the lesson, I felt at ease and confident that my observers were not there to critique me, but rather there to study the methodology of the mathematics and how

the students learn and respond. As we discussed the "math" together it became increasingly clear as to why it was important to teach the components of the lesson as designed, even though they may appear different from the way we learned math in school. We talked about the "why" and saw how this understanding was integral to future learnings. As a result, several colleagues were going to go back to their own classrooms and teach the lesson more fully

THE IMPORTANCE OF CONVERSATIONS

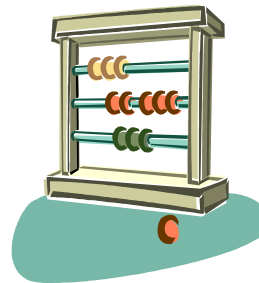
Beth Yando

Instructional Specialist

Boxford Public Schools

Lesson Study has given me the opportunity to look closely at the math embedded in Math Trailblazers. The rich conversations and collaboration about practice has been a reflective learning experience.

The power of Lesson Study is watching your colleagues teach and having the time to sit as a group and discuss the lesson. Within the lesson you become aware of misconceptions students have. These misconceptions are addressed and strategies are shared for teachers to bring back to their classroom. Lesson Study helps teachers explore how students' learn mathematics and communicate their mathematical thinking. Lesson Study has helped us affirm that high standards are an integral part in helping all students achieve.



Overall, I felt the whole experience this year was very beneficial and helped the District to become unified and more consistent. I highly recommend continuing math focus groups.

MEETING THE NEEDS OF ALL STUDENTS

Kathryn Nikas

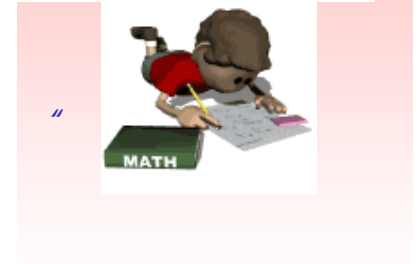
Assistant Principal Cole School

Math Focus Group Leader

For the past year, several teachers from Cole School and Spofford Pond School have worked collaboratively on a math initiative focused on creating an assessment tool that will help teachers pinpoint the area of difficulty a student is experiencing in one or more areas of mathematics through a survey of observation questions and probing questions. This project then moves to the next level in which teachers are asked to take the information they have gathered through the survey and translate it

nect the identified 'preferred' learning style(s) with math strategies that will clarify student thinking and understanding. The teachers have completed action research as a part of this study group to work ensure that it is usable and meaningful for our practice .

See Issue 1 for more info on math learning disabilities.



INCLUSIVE LEARNING STRATEGIES AND TOOLS TO FACILITATE INSTRUCTION IN COMBINATION WITH THE TRAILBLAZERS CURRICULUM.

This fall a group of teachers at Steward School in Topsfield, MA read the book [Teaching Inclusive Mathematics to Special Learners, K-6](#), by Julie A. Sliva, Corwin Press, Inc. They then met as a "Math Book Club." As a result of this book and the discussions that followed, several products were produced.

One of these products was "bookmarks." For each unit in the Grades 1-3 Trailblazers series a bookmark was written. Each unit's bookmark consisted of vocabulary/concepts addressed in that unit. These bookmarks will assist students with spelling, receptive/expressive language and oral/written expression. A bookmark will help in the acquisition of concepts for students who rely heavily on visual supports and have difficulty with the auditory components of Trailblazer's lessons.

A further product that was cultivated from the group was an Observation Sheet for "Look For's" - Area of Difficulty. This device will serve as a helpful tool in categorizing difficulty children may encounter in math in the following areas: Information Process-

ing, Visual, Auditory, Motor, Memory, Attention, Language (Expressive/Receptive), Cognition/Metacognition and Disposition toward learning mathematics. The group prepared "Discussion Notes" - bullet formatted notes from the book and utilized the Strategy Checklists from the book to provide a user-friendly resource to help accommodate and facilitate learners who are having difficulty in one or more of the mentioned learning categories.

The group also developed an informal number sense assessment. This assessment will provide a microscopic picture into where students are requiring direct instruction in regards to number sense.

An instructional fluency curriculum was the final product produced. This included a data chart, and various levels relating to the different mathematical operations. A hallmark of the program is that it calls upon personal ownership to improve operation fluency by way of student's charting their progress over time.

These products will assist us in finding areas of difficulty through the

John Lyons, Steward School
Math Focus Group Leader

assessment and checklists. It will also help us categorizing the specific area of difficulty a child is experiencing in Trailblazers. Then, we will be able to effectively plan curriculum and instruction strategies to facilitate instruction for various learners in combination with the Trailblazers curriculum.

As part of our PD plan we hope to support joining and sharing the work of these two study groups with other educators.

Look for the Upcoming Summer Professional Development Brochure , Teacher to Teacher Request for Proposals and additional info listed on www.tritownschoolunion.com

**BOXFORD, TOPSFIELD, &
MIDDLETON PUBLIC SCHOOLS**

Debbie Hale

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*The best way to teach students to answer open-ended questions is to embed these questioning strategies in regular instruction and on-going local assessments."
Amy Aubrey, Advanced Systems (MCAS)*

For more information go to: the Tritown School Union Professional Development web-page

Tritownschoolunion.com

And connect to the Power Point links from our Feb. 28th PD Day-

Other links to check out:

<http://www.heinemann.com/shared/onlineresources/07132/chapter1.pdf>

<http://www.heinemann.com/shared/onlineresources/E00634/chapter5.pdf>

What can you say to help students reflect on what they are saying?

GUIDING QUESTIONS TO GET KIDS UNSTUCK !

- How did you feel?
- Did you feel OK about this?
- Anything else you want to say?
- What strategies might you use to solve the problem?
- How might that help you?
- You're telling me that
- What else can you do?
- All I see or hear you saying is
- All I want you to see is