

BYRAM HILLS CENTRAL SCHOOL DISTRICT
ARMONK, NEW YORK

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Title: *Scaffolding Math Learners' Paths to Success*
Year: 2012-2013
School/Grade: Wampus Elementary School/Grades 3-5

SUMMARY OF *INVESTIGATORS OF PRACTICE* ACTION RESEARCH PROJECT

Context:

We are math specialists at Wampus Elementary School, working closely with students and classroom teachers, grades 3-5. We work with students in small group settings for different purposes. Our job is multi-faceted as we teach students with various math abilities. The students we see on a most consistent and frequent basis need extra academic support in math because they are struggling to understand and apply math concepts. We also work with students who excel in their mathematical thinking. They are ready to be challenged and push their academic boundaries. We support classroom teachers with strategies and techniques to differentiate their math instruction. Lastly, we facilitate data analysis by creating standards-aligned assessments and item analysis spreadsheets to help teachers analyze student/class data in order to inform their instruction.

With New York State's adoption of the Common Core Learning Standards (CCLS) for mathematics, all schools were faced with the need to rethink, reorganize, and create lessons to support student learning in math. The new CCLS for math are more rigorous than previous standards. Many concepts shifted down to lower grade levels, while others were completely new to elementary math instruction. This required classroom teachers to become familiar with math concepts not previously taught.

All learners are expected to gain a deeper level of understanding of all math concepts. Students who struggled in the past with math were now faced with overwhelming expectations. As math specialists, our challenge was to create a system to break down each of the CCLS into learnable chunks of information for grade 3, 4, and 5 learners who struggled with math.

Action Plan:

With the increased rigor of the Common Core Learning Standards, we had to be sure that our struggling learners had a foundation of understanding, as well as the tools needed to scaffold their understanding to the deeper level of CCLS.

Our initial plan was to align and individualize our academic support program with the CCLS for our 4th grade students. This student group was chosen because they represented our largest cohort of students. Within a short period of time, it became clear that our plan was too big. With CCLS being so new to us, we were spending much of our time gaining an understanding of each CCLS so that we could break down the standards into manageable chunks for students.

We modified our project into creating lessons in a systematic way for every CCLS standard in grades 3, 4, and 5. The CCLS-aligned lessons were geared to scaffold conceptual understanding since our focus was to help our most struggling learners perform at the rigorous level set by CCLS.

Our work was fully driven by the mandate to implement the CCLS in the 2012-2013 school year. We anticipated that our students would need time to absorb and understand the deeper conceptual demands of CCLS, so we turned to resources to help us break them down. After studying the Common Core Learning Standards on the New York State Education website and on www.EngageNY.com, we found the North Carolina Department of Public Instruction's Unpacked Content document to be the most useful resource. This document restates each standard and then gives multiple examples of teaching strategies. We were able to create scaffolded lessons by breaking down each standard into chunks we believed our students could master in a 40 minute class period.

By implementing the numerous lessons we created to match every standard on every grade level, we learned that some lessons sufficiently led to student understanding. Some lessons, however, proved to be too difficult and needed refinement to adequately address individual learning gaps. When this was the case, additional lessons were created to specifically address student learning needs so that students could move forward mathematically.

Results:

We found that the process of creating CCLS-aligned lessons to be time consuming, but incredibly valuable. The process helped us develop a clearer sense of the new CCLS expectations. We were able to quickly identify the need for deeper scaffolding in order to slowly work our way toward CCLS expectations. This meant that the pacing and focus of our work was driven by student needs and CCLS.

Most students receiving academic intervention services in grades 3 – 5 worked with a math specialist for two 40 minute periods a week. This year proved to us that frequency and consistency are vital to a successful remedial math program. The students need time to grasp, practice, and internalize mathematical concepts. Most often, our struggling learners need multiple exposure and opportunities to practice new concepts. Meeting frequently decreases student anxiety about their learning pace and allows them a safe place to ask questions. It gives us the time to clarify any misconceptions for our learners.

We have learned that before we can help students understand math to the level set by CCLS, we often needed to focus on students' foundational learning gaps. For instance, before third graders could solve 2-step word problems using the four operations (CCLS# 3.OA.8), they had to be able to understand, interpret, and solve single step word problems. Before fourth grade students could multiply a 4-digit number by a 1-digit number (CCLS # 4.NBT.5), they needed further work in understanding place value and basic multiplication facts. Before fifth graders could multiply fractions (CCLS # 5.NF.4), they had to build a conceptual understanding of each fraction's value. Scaffolding work required students to sketch and visualize the value of whole numbers and fractions.

Overall, we have learned that students who struggle with math need repetition and many opportunities to question, clarify, and apply new math concepts so that over time, they are able to make sense of what they are learning and reach success.

Implications:

Our project was extremely successful in that we were able to create CCLS-aligned lessons to support students in need of math support. We created a great resource of CCLS-aligned lessons from which to use with students in need of academic intervention services in upcoming years. By having a starting point, we can more easily individualize lessons to meet student needs.

A new question we have is, “How do we deepen understanding for our advanced math learner population when the CCLS has already increased the rigor of the curriculum?” It seems very difficult to “pre-create” lessons for a cohort of learners with such varied background knowledge and understanding. In the past, deepening conceptual understanding was the basis of our advanced learner curriculum. Now that the CCLS requires this of all students, lessons have to be individualized based upon each group’s current level of understanding. Instruction has to be fluid in order to meet the CCLS and each student’s learning needs.