

BYRAM HILLS CENTRAL SCHOOL DISTRICT
ARMONK, NEW YORK

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Title: *Exploring Unlike Denominators with Persistence*
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School/Grade: Wampus Elementary School / 3-5

SUMMARY OF INVESTIGATORS OF PRACTICE ACTION RESEARCH PROJECT

Context:

As the Advanced Learner Specialist for Science and Social Studies for grades third through fifth at Wampus Elementary School for the last seven years, I have confidently written and instructed several creative and engaging units to extend the existing curriculum. I have also pushed into the classroom to assist teachers with differentiating instruction in language arts, science and social studies. This year I was asked to teach two math enrichment classes for third grade.

While reading the Common Core Learning Standards (CCLS), fractions stood out as a major focus in third grade. Therefore, I decided to write a unit on fractions. The problem I faced was how third grade student's will best understand fractions and unlike denominators. I also needed to know what prior knowledge my students had from second grade and plan my initial lessons and final learning outcomes. Not being familiar with the math program, I had to familiarize myself with the program and then extend it for our advanced learners. I have been teaching science, social studies and language arts for several years and found that teaching math was going to be a journey down an unfamiliar path.

Action Plan:

My action research question initially was, "How do 3rd Grade Advanced Learners internalize fractions and what struggles will they face?" I wanted to create a unit of study that would enrich our advanced learners but also differentiate the unit for each individual. There are several articles on differentiating instruction for advanced learners as there are several curriculum models that can be followed. Most models favored an inquiry-based model of instruction and based on my work with advanced learners I wanted to create an inquiry based project. From Center for Inspired Teaching, Inquiry based instruction is defined as a pedagogical approach that invites students to explore content by posing, investigating and asking questions.

Not having taught math in some time I wanted to embrace the subject and immediately collaborated with our math specialists to plan the year. I started the unit exploring unlike denominators using slices of pizza. The students cut the pizzas, which were outlined, and then they pieced them together to create a whole pizza using unlike denominators. We made our own pizzas and the students combined all of their unlike denominators. One student made a pizza with 1/12 mushroom, 1/12 plain, 1/12 pineapple, 1/3 ham 1/4

pepperoni, and 1/6 sausage. While one student shared, the other students put the pieces together to see if it equaled a whole. When all agreed it was correct I would shout, “Pick up or delivery?” And the hands quickly shot up to take the next turn. Students were all engaged in listening to the student creating the pizza and checking to see if they were correct. It was a fun way to begin exploring fractions and getting to know one another. I kept anecdotal notes and recorded their enthusiasm each week.

Next we started to create our own frameable design on an 8 x 11 piece of paper using unlike denominators. The students began by measuring colored paper with a ruler and folding the paper and cutting into fraction pieces. Next they began to arrange the pieces of paper to create a design. They wrote their combinations down on yellow paper and checked to see if they were creating a whole by checking with their pizzas.

As the students worked I walked around observing their approach to the assignment. Several students had trouble dividing the paper into thirds. Once that was accomplished folding to sixths and then twelve’s was easier. Many students struggled to make their folds equal lengths. Many had trouble cutting the paper. Several pieces of paper were tossed into the scrap pile. Several students took a long time cutting and folding. Some were getting very frustrated trying to get the lines perfectly folded. I continued to keep notes on how the students were progressing, their strengths, and weaknesses.

What I began to notice as the weeks progressed was how some of my students were completely focused on having their projects completed and accurate while others did not show the signs of persistence I expected of an advanced learner. I then decided to change my research question to “Are behaviors and attitudes of persistence and perseverance necessary attributes of advanced learners?”

As the year progressed I continued to work with the same students in a metric measurement study. They were invited to create a dream home or strip mall using centimeters, decimeters and meters. They had a wonderful time measuring everything in the room to make a comparison to objects, windows and doors they would have in their home. Again I noticed how some students were focused and used every minute of the period to insure their units of measurement were accurate and made sense. While others were quick to create what they wanted regardless of whether it was accurate or made sense.

I decided to research habits of mind and persistence. Much of the research conducted among the gifted, the talented and the highly creative reveal that their unique personal characteristics include being; (a) critical (b) independent and (c) persistent. (Torrance, 1965; Feldhusen, Treffinger, and Elias, 1969). Of those enumerated traits, only persistence is one of the 18 elements identified in the publications that indicate how individuals tend to learn (Dunn &Dunn, 1978).

I also decided to have a mini Socratic seminar on persistence using quotes for mindfulbydesign.com. Some of the quotes I found were as follows:

- “Be like a postage stamp-stick to one thing until you get there.” Margaret Carty
- “Patience, persistence and perspiration make an unbeatable combination for success.” Napoleon Hill, author
- “Every day you miss playing or practicing is one day longer it takes to be good.” Ben Hogan, Golfer

- “Big shots are only little shots who keep shooting.” Christopher Morely
- “Energy and persistence conquer all things.” Ben Franklin

I spoke honestly with the students about my observations and my curiosity about persistence being a quality of an enrichment student. I noticed the students were really thinking whether they were persistent with their projects. Some stated it helps them to work with a partner they know will help keep them focused while others knew they needed to work alone. When we finished our conversation on persistence I also noted every student worked hard and persevered to use their time wisely during that session.

Results:

While teaching math enrichment this year I learned that my math enrichment students were eager to learn and enjoyed an inquiry-based math project that gave them the freedom to solve problems, and explore fractions and measurement in a challenging environment.

I learned that persistence is a quality for any student that should be taught at home and school. It’s a conversation worth having in any subject area and although we may feel pressed for time to complete the already crowded curriculum, perhaps it can save time that otherwise could have been wasted.

Next year I am curious to see if teaching persistence in the beginning of a unit will bring this quality to light for students who otherwise would persevere. I’m also considering following the learning path of a few students over their next years here at Wampus. There were a few who I noticed didn’t show signs of persistence in the beginning of the unit and I wonder if I were to collaborate with their teachers on habits of mind lessons and this research project, what results might we see.