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An Investigation: No Child Left Behind, California Mathematics Standards

Do They Influence Teacher's Instructional Practices and Student Motivation to Learn Mathematics?

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Rationale

My thoughts for this study were inspired by my personal experiences teaching lower performing sixth grade math students. Most students that come to my class have not mastered many of the math concepts taught in the previous grades. Right from the beginning it has been a challenge to try to catch them up and jump into the sixth grade curriculum. It has been next to impossible to effectively teach these students all the standards in the time allotted. At first, I thought I was the only one of the sixth grade teachers that felt that there were too many standards. Over time I discovered the teachers of both the high and middle math classes were feeling the same way I did; there was not enough time to teach the 6^{th} grade standards effectively before the No Child Left Behind (NCLB) assessment (In California we use the STAR), in May.

Learning this, I began to wonder if we might be putting too much pressure on the middle level students as well as the lower level math students by our use of the rigorous California standards. If this were true, would their motivation to learn math be in jeopardy. At the same time, I wanted to begin to document teachers' thoughts and opinions about the California standards and the NCLB assessment policy as they relate to their instructional methods and the curriculum they employ in the classroom.

By examining the views of one math teacher and one of her students, I hoped to highlight some of the thoughts and concerns that teachers have about how current NCLB and standards based teaching plays out in the classroom. It is my belief that educational decision-making should include input from those who will implement it. Teachers possess a body of information about the practical application of ideas in the classroom that needs to be considered if effective change is to take place.

Context

Foothill Elementary is a K-6 elementary school situated in a middle class neighborhood. Our school community is friendly and involved. Parents are well educated and participative. Our staff is both cooperative and highly skilled. Students who attend come mainly from the surrounding neighborhood. The school has a student population of 380 students: 73% White, 20% Latino, and 7% other. Approximately14 % of the students receives free or reduced lunch. Special services are given to the following: Gifted and Talented Education (16%), English Language Learner (8%), and Special Education (15%). The mobility rate is 1%. Most of our parents have some college education (88%) and 31% attended graduate school. The average classroom size is 19 for K-3^{rd} grades and 26 for 4-6^{th} grades.

Method

Two questionnaires were administered: one to a 6^{th} grade teacher and another to one of her students. Questions were designed to ascertain how the uses of California math standards and NCLB assessment policies have affected both teachers and students in the classroom. (See Appendices A, B, C) Responses were then analyzed.

The questionnaire was administered to Mrs. June (pseudonym), a sixth grade teacher at Foothill Elementary School. Mrs. June has been teaching for about ten years.

For the past three years she has taught 6th grade. She is a skilled teacher who is well liked by the Foothill Elementary School community. Mrs. June's classroom environment can be characterized as friendly and focused on learning.

After analyzing Mrs. June's initial questionnaire, I decided I needed to ask her some follow-up questions to clarify some of her responses. (See Appendix C)

Research Question

In what ways, if any, do NCLB assessment policies and the use of California standards influence teachers' instructional practices, and student motivation to learn math?

Literature Review

To understand how we as a nation came to embrace current policies related to No Child Left Behind (NCLB) and the creation of the rigorous standards adopted by California, a review of the differing perspectives that may underlie these educational decisions, as well as, the historical context in which they were created is warranted.

Review of the literature will focus at first on the differing perspectives and goals for education that influence decision-making in the field of education. Then a brief description of the context within which current No Child Left Behind policy and the California standards will be given. This review is limited in scope. It is an overview of the making of policy and some of the many concerns that educational experts, teachers and researcher, hold concerning these topics.

Stanic (1984) outlines four different perspectives (Schoenfeld, 2004 p. 3) that over time have shaped policy decisions in education. Each perspective provides a lens through which education can be viewed, and has informed policymaking decisions in the field of mathematics. One such perspective held by those espousing humanism places emphasis on the importance of logical thinking and the cultural value of the study of mathematics. Another, the developmental perspective, espouses the belief that the curriculum should be aligned with the development of mental abilities. From a social meliorist position, the most important issue in education is equal access to a quality education. Finally, there are those who are concern with ensuring that our country remains militarily and economically strong. Their voice is strongest at times when other countries seem to be pulling ahead of the United States.

The democratization of our nation's schools took place in the 20th century (Rosen, 2000). Prior to that time, access to school was limited in that most students only attended elementary school. Only a few select students attended college. In the early to mid 1900's more and more students started to attend high school. It was at this time that the political climate surrounding the war brought an increased emphasis on the importance of the effective teaching of math and science in school.

Around the time of the Russian's launching of Sputnik, the National Scientific Foundation developed the math and science curriculum that was named "New Math". It was at this point in our nation's history that "curricular issues became social issues" (Schoenfeld, 2004 p.258). In the 1970s the New Math curriculum became out of favor and it was *Back to Basics*, and an emphasis on skills and procedures. It was not until the 1980s that the emphasis on problem solving began. This initiative waned in influence quickly, in part due to the fact that teachers and students didn't have access to needed support in the form of training and materials like textbooks.

In the political world of the 1980s, China and Japan had economies on the rise as ours weakened. At this time, Secretary of Education T. H. Bell, in response to what was perceived as a dip in economic competitiveness, low expectations in schools, and lack of student motivation, directed the National Commission on Excellence in Education to investigate the state of education in America (Kornhaber, 2004; Shoenfeld, 2004). The resulting federal report, *A Nation At Risk*, summarized what they had discovered about the effectiveness of schools to produce a competitive workforce. This call to action cited "a rising tide of mediocrity" (Schoenfeld, 2004, p. 259; Nodding, 2004) in our educational system that could have serious consequences for the future of our nation. Emphasizing the need for assessment of students and teacher accountability, this report gained momentum with the help the National Council of Teachers of Mathematics who championed a drive for excellence in teaching mathematics.

Additional momentum was gained as a result of concomitant changes in the cognitive sciences, (comprised of such disciplines as anthropology, artificial intelligence cognitive psychology, computer science, education linguistics and philosophy (Schoenfeld, 2004, p262). Add to this a trend toward equal access to quality education for all, and the stage was set for creation of more rigorous standards. These standards were aimed at making our students well equipped educationally to compete worldwide. Emphasis was then placed on basic knowledge of math concepts, problem solving, application of knowledge, and student belief in their capacity to do well in math.

As the 21th century began, support at a national level for student assessment and teacher accountability continued to grow. In 1989 President Clinton showed his interest by holding a educational summit (Kornhaber, 2004). The following administration, led by the first President George Bush, proposed an educational plan that called for tests that would be tied to standards (Kornhaber, 2004) More recently, George W. Bush followed suit with No Child Left Behind.

Emphasis on rigorous standards and teacher accountability had gained political favor according to (Kornhaber, 2000; Mose & Nanna, 2007) in part in reaction to the perceived threat, that had its genesis in the 1980s Nation at Risk report (a report whose data has been called into question). The resulting accountability model that followed is based on a business model. As such, NCLB assessment emphasizes the bottom line, meeting target goals, incentives and disincentives.

Standards

As the nation's political will moved in the direction of NCLB policies, the standards for measuring teacher and student performance became more and more rigorous (Kornhaber, 2000, p.48) moving from minimum standards to increasingly more challenging standards. This movement (Schoenfeld, 2004) has sparked debate about the effectiveness and appropriateness of such standards and NCLB testing.

In 1986 (Schoenfeld, 2004), standards were established by the NCTM and by 1988 they were published. (They were never intended to be used as requirements for a student exam.) The goals of the standards were:

- To create mathematically literate workers
- To create lifelong learners

- To ensure opportunity for all
- To create an informed electorate (p2660)

The underlying premise for these standards was learning "an active practice, rather than rote memorization and practice." (Schoenfeld, 2004, p.266). The perceived national crisis as stated in "A Nation at Risk" and current research had created a perfect political environment for the adoption of the NCTM standards. The standards would be developed locally, rather than nationally.

In 1992, the California Department of Education developed the Mathematics Framework for California Public Schools for Kindergarten through grade 12 (Kornhaber, 2000). The standards written emphasized a less traditional method for learning called the "New Math" that would require more student participation in the learning process." In part thwarted by a failure to address the views of the conservative state board and to provide teacher and parental support needed to successfully implement these standards, a backlash developed against them. In the end, the framework was rejected by the board. It was at this point that the board rewrote the elementary standards and asked the math faculty at Stanford to rewrite the standards for secondary school. Interestingly, this process was accomplished with little to no input from those who would be required to implement such a program, that is, teachers.

Recent changes in educational policy brought about by the No Child Left Behind (NCLB) mandates and the state of California's establishment of rigorous standards have had a profound impact on the instructional practices of teachers (Dorgan, 2004; Wall, 2000). Changes related to this initiative have sparked debate among educators and researchers.

As a part of NCLB, a procedure for assessing student progress using the standards was established to monitor student achievement. Student learning would be measured yearly using a standardized test based on state adopted standards. As teachers implemented the new curriculum and worked toward ensuring student success on the NCLB assessments, educators have become concerned about the effects this policy has had on the curriculum taught, instructional practices, and student learning.

The use of a single standardized test to measure student achievement has been called into question by some educators (Nodding, 2004). One concern has to do with the value of this test as an accurate measure of student achievement. Some say the test does not adequately measure what a student has learned (Schmoker, 2006). Schmoker claims that there are too few test items for each standard to determine if the concept/skill being measured has been mastered. In addition, some students may not be able to demonstrate what they know on the standardized test. For example, English language learners and special education students could be at a definite disadvantage when taking a math test that is so language-based. Another concern has to do with the fact that the information received from this test has limited value for improving instructional practices (Schmoker, 2006) and is lacking in useful tools for planning for student mastery of the standards.

Discussions about the merits of NCLB assessment policy, in part, revolve around both the intended and unintended consequences of standardized testing. Standardized tests were selected in part because of its practicality from both a cost and ease of implementation standpoint (Kornhaber, 2004). However, there are serious concerns about just how accurately they are able to measure student mastery of content (Schmoker, 2006), as well as concerns about how they may influence instructional practice and decision-making.

On one hand, there are some positive sides to using standardized tests (Kornhaber, 2004; Schoenfeld, 2004). Standardized tests yield reliable data. This data can be used to make nationwide comparisons of student achievement. It allows a great amount of information to be collected efficiently and at less cost than other kinds of assessment tools. Use of a standardized test encourages teachers to teach the intended curriculum (Wheelock, 1998) and the results yield some data, albeit limited, useful to teachers. While some say that these tests increase student learning, Kornhaber (2004) reports there is no proof of this assertion.

In part, criticism of this assessment tool has to do with the fact that the test covers too many standards and encourages shallow teaching of concepts, thus promoting instructional practices not supported by brain research (Clark & Clark, 2000; Stake, 1999; Wall, 2000; Dorgan, 2004). Instead of spending time building a solid foundation of knowledge in basic concepts that will support future learning, teachers sometimes feel compelled to move quickly through the curriculum giving little time for students to fully comprehend the concepts. This practice can have a negative impact on future learning since many math concepts build upon each other.

What some educators say is a more serious concern about NCLB assessment policy has to do with equal access to quality education for all (Moses & Nanna, 2006). As Kornhaber (2005) states, high stakes exams measuring achievement may in fact impede student's educational opportunities. For example, the practice of using one kind of test to measure a student's knowledge of the standards is especially problematic when used with special education students and with English language learners. Both of these groups of students can be at a significant disadvantage when taking the NCLB assessments. The following example is taken from my own experience. In some instances, a Special Education student may have a reading disability that prevents him/her from being able to effectively read the grade level test. This would impact his/her performance in all parts of the testing because even the mathematics portion of this test is language based. Some English language learners may have limited understanding of the vocabulary used on the test, yet know many of the concepts. In both instances students may not be able to show what they know. This is troublesome because results on the STAR, the California's NCLB standards based tests, are sometimes used for making educational decisions that can have significant impact on a student's future educational opportunities. For example, in some instances, scores from a NCLB assessment tool like the STAR are sometimes used by some districts to select students for GATE and placement in college bound classes. In these cases, it would seem that NCLB assessment policy is in direct contradiction to the purported goal of No Child Left Behind policy.

California Standards

California educational standards are among the most demanding standards in the United States. As such, they were established with the intention of ensuring students' competitiveness worldwide. The standards (Wall, 2000; Wheelock, 1998) help teachers by defining what curriculum they need to teach. They also help to make sure all students are exposed to the same high standards.

As ambitious and attractive as the California standards may be, there are those who believe that their use is having a negative impact on teachers and students. Some of the criticism (Kornhaber, 2000 p.48) stems from the fact that they were "developed with little knowledge of the context for implementation." As such, the standards have been criticized as being too detailed, too numerous, and too rigorous. From my experience, the majority of teachers I know believe this to be true.

Motivation

Research on the topic of student motivation tells us that students require an environment in which their basic needs are met first (Maslow, 1970). When a student believes that he/she is a valued member (sense of belonging) of his/her class and is provided opportunities to be a successful learner (Pintrich, 1988) student motivation to learn is enhanced. Conversely, when instructional practices interfere with a child's ability to feel like a valued member of his/her class and opportunities for him/her to be successful are not present, motivation can be negatively affected.

Teacher Questionnaire Results

Mrs. June, the sixth grade teacher who completed the questionnaire, believes that her job is to create a classroom environment that is "emotionally and socially safe, and intellectually challenging." Her perceived role is that of a "guide." Students in her class are supported in meeting their full potential by her use of differentiated instructional strategies. She reports that her instructional practices have not been influenced by NCLB assessment policies. However, she admits "Any time you look closely at your teaching practices (as you do when you get the assessment results) and how you teach an individual or class, it helps in their achievement." She uses the standardized test (STAR) results to determine the different areas that need to be taught or re-taught. She would like to receive more information from the STAR; that is to have "the skills broken down further to see more specifically what areas to teach."

When asked if she thought the NCLB assessment policies affected her students' attitude toward math and/or their motivation to learn math she replied, "No." She views the California math standards for her grade level as, "the highest standards" and "really difficult" for many students. One good aspect about using the California standards in teaching is that "they provide a goal to reach for achievement." One negative aspect of the standards is that, "If a student doesn't meet the goals or the teacher goes through a lesson and keep going because they have to finish by the assessment (time), even they don't get it, it is a travesty."

Mrs. June believes the intent behind the implementation of the California math standards and the NCLB assessment policies was good, "but when the standards are set too high, and there are too many standards, it (the plan) is set up to fail." In her opinion, there are too many things to master before the test in May. Further, she expresses a concern that the test can create a lot of pressure for students who don't master the information. Decisions are made about what classes students are able to take in junior high and about entry into the Gifted and Talented program based on this test. She recommends that the standards not be made easier, but be made, "more realistic and able to be mastered." She reports her strategy for covering the standards is to teach the key standards first and then she does her best "to hit all of them by the 180 days."

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Student Questionnaire Results

Anne is an outgoing sixth grade student with a sunny disposition who receives math instruction in a leveled math class (the middle level). Math is not her best subject, but, but she works hard to be successful. Anne reports the math instruction she receives is good, helps her learn, and is fun. Further, the pacing of math instruction is "just right" and math concepts being taught are neither, "too hard" nor "too easy". When asked what is easy she replied, "multiplication and division." Fractions and integers are difficult for her. Finally she believes she has enough time to learn and practice all the concepts presented.

Discussion

Mrs. June's responses to the questionnaire are in some ways representative of concerns other educators/researchers have expressed about the NCLB assessment policy and the California standards. As a teacher of the middle level math class, she expresses concerns about how difficult the standards are and the fact that there are too many standards to teach in the allotted time. She expresses her strong feelings about when a teacher feels compelled to move from one concept to another, "even when a student doesn't meet the goals." In fact, she calls it a "travesty." In her follow-up questions (See Appendix C) Mrs. June reports that she teaches the key standard first and others after that. (It should be noted that Mrs. June did not suggest that the standards be made less demanding.)

The good news about what is happening in Mrs. June's class is revealed in Anne's responses. Anne paints a rosy picture of her learning experiences in Mrs. June's class. Although she reports she has to work hard to be successful, her responses seem to indicate that she is receiving the needed support from her teacher to be successful. It appears that Mrs. June is able to create the environment she seeks to establish; an environment where Anne is challenged and receives the help needs to be successful. Anne says the math concepts that Mrs. June teaches and the pacing of instruction are, "just right." Given these statements, one may assume that Mrs. June is introducing concepts is a way that is appropriate for Anne.

What is remarkable is that Anne does not appear to be affected by the pressures described by Mrs. June. This I believe speaks, not only to the good attitude toward learning that Anne possesses, but to how Mrs. June, like many teachers today, are able to do what is right for their students despite the educational context in which they work. It should not be overlooked that the educational structures created by NCLB policy and use of the California standards can create a conflict between a teacher's sense of what it morally and educationally right, and what administrative policy dictates (in this case getting through all the standards in too little time).

In my opinion, while the evolution of NCLB assessment policy and the California standards was motivated by the best of intentions, there seems to be some unintended consequences of these policy decisions that need to be remedied. Referring to Stanic's (1987) four policy maker perspectives can provide us information useful for improving this existing educational policy.

Of the four perspectives named by Stanic (1987), current policy seems to be reflective of the military/economic and the humanistic perspectives. NCLB policy and the new California standards seem directly related to a perception that we are losing our military and economic competitive edge. These views culminated in the use of a business model policy to changes a “failing” school system. Additionally, a humanistic perspective with its emphasis on logical thinking and the cultural value of learning appears to have influenced decisions related to the creation of rigorous standards that include those components. Although supported by research, these components of learning are not supported by the overall structure of that policy. When asked, “Do you think that you have enough time to use concept-building activities?” she replied, “No, not in one hour.” She would agree that there is a need for inclusion of logical thinking and the cultural value of learning, however, when asked to implement too many standards in too little time, she does not have time to do so effectively.

The debate among educators about NCLB policy changes and the California Standards appears to relate to the views of proponents of a developmentalist and social meliorist perspective. Mrs. June’s characterization of the California standards as, “really difficult to many students” suggests that some standards are not developmentally appropriate for her students. She goes on to say, “There are too many things to master before May, and it is a lot of pressure for an eleven year old…” From a social meliorist point of view, students need to be given equal access to a quality education, anything less than this is an injustice. Mrs. June believes, her “goal, as an educator, is to help students meet their fullest potential…”. She comments on how difficult the standards are for many of her students and how there are “too many to master.” Couple these statements with her belief that when teachers move on to teach the next standard before students have learned the previous standard is a “travesty” and you could build a case that she is concerned that students are not always able to receive equal access (i.e. time to learn.) to quality education.

For me, many of the problems associated with the implementation of NCLB and the California standards could have been avoided, if at the policy making level teachers were allowed to add their voice to the decision-making process. Some critics of teachers like to assume that teachers are out only for their self -interest, not the best interest of their students. I would like to disagree. Teachers are not asking for accountability to be erased (e.g. No mention was made of eliminating the assessment tool by Mrs. June.), but for accountability that makes sense. That is, one that allows teachers to teach in ways that are supported by research and personal teaching experience, while ensuring maximum learning for all students.

Policy Implications

- Slow the pacing of the teaching of California standards and/or reduce the number of math standards to allow teachers to give their students a solid understanding of mathematic concepts and their application before going on to the next concept.

Implications for Administrators

- Provide teachers with training to support their efforts to meet the requirements of the California standards and NCLB assessment policy in the classroom. Ask teachers what they need to be successful and provide it.

- Provide time for teachers to collaborate with their co-workers so they can learn, together, better ways to approach teaching the standards.

Implications for Teachers

- At the classroom level teachers need to make educationally sound decisions about how they pace and teach the standards effectively. Sometimes this will mean doing what is right, not what policy demands.

- Teachers need to become more vocal about changes in the California standards and NCLB assessment policy they seek. Teachers have the task of implementing these policies and they know from experience what works at the classroom level.

Appendix

Appendix A

Sixth Grade Teacher Questionnaire

1. How would you characterize your philosophy of teaching? I believe that each child is a unique individual who needs a safe, caring, and stimulating atmosphere in which to grow and mature emotionally, intellectually, and socially. It is my goal as an educator to help students meet their fullest potential in these areas by providing an environment that is safe, supports risk-taking, and invites a sharing of ideas. I believe there are three elements that are conducive to establishing such an environment: being a guide, allowing the student's natural curiosity to direct his/her learning, and promoting respect for all things and all people.
2. How does your educational philosophy affect your choice of instructional strategies for teaching mathematics? I make sure the environment follows my philosophy in the Math class. I help make each child meet their full potential by using different instructional strategies. ,
3. In your opinion, has the NCLB assessment policy influenced your instructional practices in the area of mathematics? No, I have not been influenced by the NCLB. I work to establish success for each student using differentiated instruction.
4. If so, in what ways? It does not influence my instructional practices.
5. In your opinion, has the NCLB assessment policy influenced your students' achievement in mathematics? I think anytime you look closely at your teaching practices and how you will teach an individual or class, it helps in their achievement. So, yes to some degree the NCLB makes teachers look at what they are teaching and why, but I would do that anyway as a teacher.
6. If so, in what ways? See question number 5.
7. In what way, if any, are the results of the NCLB standardized test beneficial to you in instructional planning for mathematics? The standardized test is beneficial in charting the different areas of the test for my students and seeing, as a whole, is there an area they are weaker in. Also, as individuals, are their gaps in their math that needs to be taught or re-taught.
8. Is there information that is not included in the NCLB assessment results that you would like to have included that would be beneficial for you in instructional planning? It would be nice if the skills were broken down further to see more specifically what areas need teaching.
9. In your opinion, has the NCLB policies affected your students' attitudes toward mathematics? No.
10. In your opinion, has the use of the NCLB assessments and current California standards had an impact on student motivation to learn mathematics? No.
11. What are your views on the CA standards for your grade level? I think CA has the highest standards and they are really difficult to many of the students?
12. What are some of the good aspects, if any, of using the CA standards in teaching? The standards do give a goal to reach for achievement.
13. What are some of the negative aspects, if any of using the CA standards in teaching? If a student doesn't meet the goals or the teacher goes through a lesson

and keeps going because they have to finish by the assessment, even if the students don't get it, it is a travesty.

14. In regard to your teaching of mathematics what are some positive aspects, if any, of teaching using the CA standards and NCLB assessment policy? I take the standards and work very hard to determine what my students need by the assessment time and teach until they understand.
15. In regard to your teaching of mathematics what are some negative aspects, if any, of teaching using the CA standards and NCLB assessment policy? The negative is teaching all of it before the test. There are too many things to master before May, and it is a lot of pressure for an eleven year old, if they are not understanding it. Don't make the standards easier, but make them realistic and able to master.
16. If you could change any aspect of the educational requirement for teaching mathematics, what would it be? Don't make the standards easier, but make them realistic and able to master. I think the CA standards and NCLB policies aim to support good instructional practices, but when standards are set too high and there are too many standards, it is set up to fail.

Appendix B

Sixth Grade Student Questionnaire

1. How do you like mathematics? Uh, it's okay. It is not my favorite subject.
2. What kind of math student do you think you are? I work hard, but sometimes it's not all right. Why do you think this is? Cause I always try to do my best and during homework and the test I don't get those problems right, but I try.
3. How you feel about the math instructions you are currently receiving? Good. It definitely helps me learn.
4. Describe how your teacher teaches math? We have these "foldables" and we write down our lessons in them. Then after that we do a couple of examples and she sends us off with homework. Then with that homework we look back in our "foldables" to help us do that…or then we can go online to the website (to find out how to do the problems)
5. Do you think that your teacher is teaching mathematics at just the right rate, to fast or too slowly? Uh, just the right rate.
6. Do you find that mathematics concepts you are learning are easy, hard, or just right? Just right.
7. What is easy about learning mathematics? Um, multiplication and division.
8. What is difficult about learning mathematics? Fractions and integers.
9. What are your views if any about the STAR testing? It was challenging, but I worked through it. And hopefully I did get it.
10. If you could change any aspect about how you are taught mathematics, what, if anything, would you change? Um, I don't know. I wouldn't change anything.
11. How good are you at math? Pretty good.

12. How hard is it for you to learn new things? It takes me a while to learn new things, but it like sinks into my brain in the day. Then I know what I'm doing when I do my homework.
13. How much do like doing math? It's really fun. I like it.
14. Do you think you have enough time in class to learn and practice all the concepts presented? Yeah.

Appendix C

Follow-Up Teacher Questionnaire

1. What does differentiation look like in your math class? My Math group is a leveled "medium" group of students. Most of the time we are all working on the same things. When it is clear a student needs to be challenged I give more in depth work in that area with different homework. When a student is struggling I have a recess Math tutoring group where we work in a much smaller group. (There is not enough time to do this in the one-hour class.)
2. What are the activities that you engage in besides direct teaching?
3. We play Math games (I have, you have, Math Baseball, etc.) We use graph paper and cooperative grouping to find out the "whys" of the Math.
4. If your students engage in experiential/exploration/discovery learning opportunities would you describe them. Do you think that you have enough time to use concept-building activities? No, not in one hour.
5. How often can you do so? If given time, once a week, but realistically once a month.
6. How do you propose to keep the standards as rigorous as they are still make them more realistic and able to be mastered? (Less standards, more time or what?) The focus has to be on the Key Standards and mastering them.
7. How do you keep students motivated to learn when they are presented concepts and there is not enough time to master them before moving on to the next concept? I don't move on unless a majority of the class knows the concept. Motivating them is just how it is presented. Always in a fun way!
8. Do you feel the pressure from teaching too many standards in too little time? Yes. I take the Key important standards first and do the best I can to hit all of them by the 180 days of school.

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References

Cohen, D. K. & Ball, D. L. (1990). Policy and Practice: an Overview. *Educational Evaluation and Policy Analysis.* 12, 233-239.

Clark, C. C. & Clark, S. N. (2000). Appropriate assessment strategies for young adolescents in an era of standards-based reform. The Clearing House, 73(4), 201-204.

Dorgan, K. (2004). A year in the life of an elementary school: One school's experience in meeting new mathematics standards. *Teacher College Record*, 6, 1205-1225.

Elgin, C. Z., (2004). High Stakes. *Theory and Research in Education*, 2, 271-281.

Kornhaber, M. L., (2004). Appropriate and inappropriate forms of testing, assessment, and accountability. *Educational Policy*, 18(45), 45-70.

Maslow, A. H. (1970). *Motivation and Personality*, 2nd ed., New York: Harper & Row.

Moses, M. S., & Nanna, M. J. (2007). The testing culture and the persistence of high stakes testing reforms. *Education and Culture*, 23(1), 55-77.

Nodding, N. (2004). High Stakes testing: Why? *Theory and Research in Education*. 2, 263-269.

Pintrich, P. R. (!998). A process-oriented view of student motivation and cognition. In J. S. Stark, & L. Mets. *Improving teaching and learning through research.* Vol. 57. New directions for institutional research (pp.55-70). San Francisco: Jossey-Bass.

Schoenfeld, A, H. (2004). The math wars. *Educational Policy*, 18, 253-286.

Schmoker, M. & Marzano, R. J. (1999). Realizing the promise of standards based education. *Educational Leadership*. 56(2).

Stake, R. (1999). The goods on American education. *Phi Delta Kappan.* 80(9), 168-172.

Wall, D., (2000). The impact of high stakes testing on teaching and learning: Can this be predicted or controlled? System. 28, 499-509.

Wheelock, A. (1998). *Safe to be smart: Building a culture for standards-based reforms in middle grades.* Columbus, Ohio: National Middle School Association.