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How Student Self-Assessment Influences Mastery Of Objectives

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Abstract

In this action research study of my classroom of 7th grade students, enrolled in Pre-Algebra (an 8th grade course), I investigated: rate of homework completion when not taken as part of the academic grade, cognizant self-assessment and its affect on mastery of objectives, and use of self-assessment to guide instruction and re-teaching of classroom objectives. I learned that without sufficient accountability homework completion rates drop with time. Similarly, students can be overconfident in their abilities but unmoved when their summative reports do not match their initial perceived formative benchmarks. Finally, due in part to our society's reactive nature; students find it more practical to play catch-up rather than staying caught up. As a result of this research, I plan to create, with the help of the students, an accountability statute to help students stay caught up with their understanding of the objectives, as well as allow additional time and energy spent by both student and teacher to react in a timely manner to complete student knowledge within a day or two rather than a week or two later.

Introduction

In the utopic world of teaching, where students come ready to learn with homework in hand and questions to be asked in order to attain better understanding, the teacher's position is as facilitator, not lecturer of the holy math book. Alas, I shall not find myself here, at least not today. On the other hand, I am not at the other end of the spectrum where there is no motivation, and anarchy rules over education. Rather, I find myself in-between, with a portion of the students at each end and plenty sprinkled in between.

Overall the students fare well when they can do two things: know when to be quiet and actually be quiet at that time. When expected to work practice problems in class, most students will do so, whether to gain understanding through computation, or so that the teacher does not engage them about their work behavior. The level of engagement in solving or attempting to solve the problems differs from student to student. There must be a reason why day after day the same routine is kept.

Each day new material is plowed through in a direct lesson format in order to get to the homework, which some students see as a punishment. Others see homework as a way for Mr. Renfro to monitor what they know and to write their knowledge (grade) down in the grade book. Class starts every day by checking the last night's homework. The intent behind checking the homework in class is for the students to monitor what they know and find mistakes (if any) that they have made in order to address both mental errors in calculations as well as expand on any individual thoughts that may have arisen. The class then goes over any questions (asked by the students) in order to help have a dialogue between student (with question) and students or students and teacher. Students who ask questions without prompting are already those who strive for perfection or at least seeking personal growth (rather than some of the students who truly

need it). For each question asked, the student must be able to verbalize the error made and the correction. I believe this to be a powerful way to make connections between truths while eliminating any misconceptions.

Many students see the time spent correcting homework as a time to: draw, finish conversations from the passing time which just ended, write/pass notes or simply an easy way for Mr. Renfro to grade all the papers without doing it himself. I have tried the other way, where the students hand in their work, I grade it, and then hand it back. The papers hit the recycling bins before I can even finish handing them out. A rational response to this would be an approach where more benefit can be gained for the motivated and unmotivated alike. The focus was to be on a student owned activity to gain further understanding for themselves in order to bridge any gaps in understanding. Where in a small amount of time many of the students should have acknowledged their level of proficiency on a given objective, as well as be able to plan how to increase that understanding before a summative assessment if not simply for their own good.

Problem Statement

My intent was for the students to take control of their own learning of the objectives for each chapter. When the students have not learned an objective, they were to take the time to go back (not because the teacher gives them an extra assignment) and complete the knowledge that is the missing link between where they were and where they needed to be to be competent and proficient at the subject matter.

I wanted the students to realize that homework was for them (the students) not for me (the teacher). I no longer wanted to hold homework over the students as a grade. Rather, homework would be a tool for students to assess their progress and knowledge of the subject area. Upon self-assessment the students would decide what steps needed to be taken in order to

insure remembering of the material or filling in the gap between where they were and where they would like to be (hopefully proficient). This would be contradictory to the norm, which was Mr. Renfro telling students which objectives they needed to work on, in order to bring up their grade, not fill the gap in their knowledge.

Together students and teachers devised a number scale from 1 to 4, which was a general rubric (of sorts) to help students self-assess where they were on a given objective.

1- Could be a person who has no clue about the material or is very confused, possibly just has an answer.
2- Can get the problem started but forgets what to do halfway through the problem
3- Can complete or explain most of a problem but may make some small errors (computation for instance)
4- Is able to clearly communicate and exhibit the math necessary to complete problems for a given objective.

1 and 2 are those who are: more bad than good

3 and 4 are those who are: more good than bad (similar to what is seen on the rubrics for 6-traits of writing).

There were multiple opportunities for the students to assess their knowledge. My idea was that these points be monitored at:

1. The beginning of the day or chapter (pre-assessment)

2. At the end of the days in which the lesson is taught.

3. Upon completion of the homework (not completing the homework does not indicate lack of knowledge)

4. Upon completion of an in class quiz (that will cover 2 to 3 objectives)

5. Upon completion of the chapter test, which will signify overall mastery of the subject matter.

Please note that items 1, 2, and 3 were considered assessments for learning. Items 4 and 5 were considered assessment of learning.

That is, homework did NOT count as a grade in the grade book. It was recorded for purposes of student conduct and as a possible explanation of why a student is not yet to the mastery level. Homework was no longer counted for or against a student in terms of grades. Rather homework was a means for a discussion to begin the class with. The teacher was to help create (at the beginning at least) the leads to the discussion around the homework. Exemplars were posted (on the overhead or chalkboard) and the students were to compare and contrast what they did to complete the problem. Exemplars included all types of answers on the scale from 1 to 4. Eventually I wanted to get to the point where fearless students would be able to put their work on the board (or work in small groups) while other students critique it in order to give praise as well as advice (similar to how students read and critique others' writings in English class).

Students kept track of progress on a pre-designed chart. Each objective took up one full sheet of paper and included:

1. A place to record self-assessment at different points in the chapter.
2. A place to record student conduct/responsibility of completing assignments and whether or not they were done on time.
3. A list of general skills needed to be successful on a given objective.
4. A list of specific skills needed to be successful on a given objective.
5. A place for students to record what skills (general or specific) they are doing well on.

6. A place for students to record what skills (general or specific) they are struggling with and need to practice.

I wanted to dedicate one day or half of one day for students to get into groups based on what they wanted to improve on, and work together on bettering themselves.

I liked that the class was in a rhythm of checking papers and some of the students were looking to better themselves. However, students who were asking the questions and looking to better themselves were not only in the minority but generally needed the smallest amount of correction in their thinking/understanding. More often than not, the students not participating/asking the questions were the ones who needed the most attention/corrective feedback in order to help decrease the achievement gap. It was the students who are below the achievement gap for whom the original method of assessing homework was not working. This new method allowed the grace of not always having to completing a homework assignment, but the accountability that students were responsible for their own learning. This new approach also gave the students more chances to talk mathematically and for more students to be contributing members of the class as a peer mentor (not always just the teacher). If students' input on their learning did not put themselves at a 3 or 4, in terms of understanding, then something new must happen in terms of re-learning or a new approach to following sections.

Literature Review

For only $355 a person may purchase Dr. Rick Stiggins's Assessment for Learning: Classroom Assessment for High Stakes Success—Secondary Edition. For said payment one receives 2 VHS tapes, 1 Implementation Guide and 1 CD soundtrack. This comprehensive system ties together all the critical research in effective instruction, including research-based strategies, differentiated instruction, assessment, and standards. The works of this author are

acting as one of the frameworks for how Goodrich Middle School is attempting to close the achievement gap and get all students to find success within the realm of education.

The program promises many gains for the educators who partake in it as well as their students. In particular three areas of significance are:

1. Rely on learning targets and classroom assessment processes that set students up for success, build confidence and motivate learning (self-efficacy)
2. See how continuous student involvement in the assessment process keeps the learning target in full view. (Evaluation of work, checking for student mastery)
3. Link learning targets with various assessment methods in order to evaluate understanding and re-contour any necessary gaps in understanding (formative assessment, and re-teaching of objectives). Naturally Dr. Stiggins has many forms on which to base the theories and beliefs stated prior. The following research spans over the last decade in an effort to catch glimpses of the many benefits Dr. Stiggins writes about.

These three overlapping areas directly correlate to the following research in that the purpose within is to inherently allow students to eventually monitor their own learning and become more responsible for it. In order to raise self-efficacy (which is hardest because we must internalize and critique ourselves) we must first feel confident in judging and evaluating the work of others, which is much safer to the ego. Upon reaching this level of comfort the research will push the educator to look at his/her students and their achievement in order to accurately assess (formatively) and then re-teach if and when necessary. Only at this time when peers and educators work together can we then attain the level of knowledge that will allow students to actively be involved with the learning process as it is happening rather than after the fact.

Self-efficacy

In 2004, forty-one 2nd and 3rd grade students were asked to predict and graph outcomes on weekly multiplication tests, which included all the whole numbers from zero to nine. In addition the students were asked to reflect on their individual progress as well as evaluate their study habits and explain reasons for success as well as failure during a ten-week period (Brookhart, Andolina, Zuza, & Furman, 2004). The purpose of this study was for the students to use self-assessment in a rote activity in hopes of additional desirable outcomes other than the simple knowledge of their basic math facts.

What was discovered was that in fact this type of learning task requires students to compare performance with desired performance and take steps to close that gap. In order for the students to be able to do so each child had to be able to assess their own self-efficacy (an individual's estimate or personal judgment of his or her own ability to succeed in reaching a specific goal). This portion of the research proved to be most difficult because written reflection is hard, especially reflection on self. Students tended to get down on themselves when they did not see any progress on their scores. Overall this approach "…concluded that participating in the reflection helped students articulate the value of their own studying" (Brookhart et al., 2004, p. 223).

But as Hewitt (2002) points out, comparison of current progress must be compared with that of prior progress. By having students reflect they will be then able to articulate the value of studying. Sometimes the method of study chosen did not result in the predicted achievement. This lack of progress allows for change to take place by the student in order to prepare in another manner of speaking for the next test. The change must come from the student, according to Brookhart et al., 2004; learning came from seeing results from a consistent manner of feedback, whether from self, peer or expert. If these parameters are met then students will have ended up

increasing in performance and decreased in range of scores, thus helping to close the achievement gap.

Evaluation of work (by peers, experts and self)

Brookhart (2004) explained that written reflection (especially during self-assessment) was the hardest part for the students. Schunk (1996) addressed this issue with a seven-day study of forty-four 4th graders. Schunk (1996) goes onto make clear that the students must first be taught proper evaluation skills before engaging themselves in self-evaluation. "If students are not taught appropriately, the students will not be able to make accurate self-evaluations" (Schunk, 1996, p. 380). Schunk goes onto say that "This is important because low evaluations even when the student is making progress can both slow motivation and learning" (p. 380). Understanding the process is as important if not more important than identifying the progress or lack there of. If the students do not have a great concept about how to judge themselves, then the evaluations become less meaningful.

Initially Hewitt (2002) found the forty-one, woodwind, brass and percussion students rating themselves too highly initially and then searching for explanation when examined by an expert (teacher) and given lower marks. Even when the students had a highly scored model as a demonstration, rarely were the students able to accurately self-assess themselves. Nor did their self-evaluations ever improve over time. Only when the students were to rate their individual technique by use of a checklist rather than just an overall encompassing feel for their work were the students able to be more critical upon them and actually scored themselves lower than that of the expert opinions.

Falchikov (2002) suggests that using peer assessment initially will also increase learning. In order for the students to take the assessment seriously and be able to be successful at it, the

students as well as the experts must own the criteria associated with the grading. The grading should not be too detail oriented, assessing in a more encompassing way will allow for students and experts to agree upon scores. Some detail will be important in order to allow for feedback so that it is not just the grader who is learning.

Formative Assessment and the re-teaching of objectives

Schunk (1996) informs "establishing learning goals (which is how to solve problems rather than merely solving for the correct answer) will lead to higher self-efficacy, skill, motivation, and task orientation" (p.379). Torrance (2001) advises,

> In order to do so teachers need to clarify the learning goals with a clear purpose and criteria of judgment, which is then communicated to the student. Teachers must then use divergent forms of assessment (discovering what the learner knows, understands and can do) in order to open opportunities for exploring students' understanding not just looking for the "right answer" (p. 625).

This formative assessment can take many forms, including but not limited to those Torrance (2001) used in the investigation of seven teachers over two semesters. One method is to use a variety of questions, especially those that invite students to clarify and reflect on their own thinking. During feedback the inclusion of not only what has not been completed correctly but also what has been completed correctly as well.

The question of how much formative feedback is needed is addressed by Cizek (1995) who found that while interviewing 143 elementary education teachers, overall assessment practices in general were highly unpredictable, although on practice was quite common and very advantageous for student growth. That being, more informal (non-graded) formative assessment with precise feedback given was more beneficial to students in the learning process than any

number of formal assessments. Wiliam, Lee, Harrison, and Black (2004) document the amount of achievement, over twelve months in 12 classrooms found that improving formative assessment the teachers were able to produce tangible benefits in terms of externally mandated assessment. The scores took schools that normally fell below the 25th percentile nationally (in math and science) to above the 50th.

The teacher must take care during each of the informal assessments (Watson, 2000). Teachers' assessment practices, formal and informal, are strung with problems including: observation, perspective, interpretation and expectation. Watson suggests that "the best thing a teacher can do is to behave as if his/her interpretation of students' responses gives him/her adequate but tentative information for teaching purposes by: keeping an open mind and avoiding unchangeable decisions like (tracking, stereotyping, and labeling)" In this way no there is no definite or finalized amount of learning that has taken place, only what the student has or has not achieved thus far, yet leaving room in the future to revisit the objective(s) and address them again in order to enhance the learner's knowledge.

Filling a void

Out of the eight referenced articles in this review only three of them specifically dealt with mathematics: Wiliam et al. (2004), Schunk (1996), and Brookhart et al. (2004). The project that most resembles the following research is that of Wiliam et al. (2004). However the two are quite different in the area of using peer and self-assessment in order to give formative feedback. The previous research also allotted $3,000 in in-services per teacher that spanned throughout the year. In my proposed research there will be no additional professional in-services. However there will be weekly collaborative meetings (dealing with creating formative assessment) between teachers within the same subject and grade level.

Schunk's (1996) work has some similar methods to the following work, except that Schunk dealt only with self-assessment. There was no initial peer assessment or that of a professional in order to help ease the transition from purely expert assessment to that of self. While Brookhart et al. (2004) worked with elementary students on the same rote concept, not middle school students on many objectives. Similarly Brookhart et al. (2004) only used self-assessment; no peer or experts were used in the assistance of assessing.

Within the five that strayed away from mathematics only Falchikov and Goldfinch (2000) used assessment by: self, peer, and expert. This particular research however did not explore any dealings with self-efficacy or formative assessment. Falchikov and Goldfinch, specifically dealt with college level students focusing on grades of achievement, not what was needed to continue moving forward in the learner's education and/or what was needed to be done by the teacher in order to do so. This research will be unique in that the use of these specific combinations has not yet been filled: middle level mathematics focusing on self, peer, and expert assessment in order to continue the learning process after the initial lesson has been completed.

Purpose Statement

The purpose of my project is to positively influence the students' ability to understand what they know and pinpoint necessary steps to understand what they do no yet know. I examined the variables of: rate of homework completion, ability so assess peers and self to help in seeking to answer the research questions, as well as how both the student and teacher react lack of understanding by individuals and the group:

- How will not grading homework affect the rate of homework completion for students?
- How will instituting a self-assessment form affect student mastery of class objectives?

- What will my teaching look like when I incorporate students self-assessment of objectives and stop grading homework?

Method

A colleague and I began a discussion on buy-in of students in order for a greater completion of work percentage to be attained. His tactic was setting a weekly class goal for homework completion. If the class met the goal, he would provide a tangible reward (pop, donuts, ice cream, etc) in order to celebrate their success on Friday. Personal philosophy prevents me from considering what I call bribery as a means to an end, in that the students doing their job.

Rather, I started and ended the research with a survey (given the first week of school in August and the last week in December before break), which allowed the students to convey their feelings, concerns and expectations about math class. This then led to a discussion with each class about setting norms that the students and I could agree upon. Some of these norms included: homework no more than 4 nights per week, no more than 15 problems of homework per night, homework for the weekend as a rarity. I thought this, as a logical way to address the concern of how not grading homework, would affect the rate of homework completion for students. A consideration that needed to be addressed was on-time completion of work versus overall completion of work. So, two different measurements were used to collect data on the homework. First, a daily completion poll was taken. This is, the fraction of students who had completed all the problems assigned, and had brought it to class by the date that it was due. Only students that were present on the day the assignment was given and present the day it was due would count towards the percent completed. This was followed up with a completion percentage, which dealt with all kids enrolled in the class no matter when the assignment was completed, even if that meant after a summative assessment had been given.

Collecting of student work took place whenever an assignment was given. This was used as an aid to keep kids honest about whether they completed the work as well as for formative assessment for my own teaching and learning. In addition the students were given a reflection sheet two to three times per week, depending on how many assignments were given. This form allowed the students to put into words their understanding about an objective at the beginning, middle and completion of our formal working with it. As well it was expected that the students would be able to examine what aspects of a concept were missing in order that these concerns would be met before any sort of summative assessment. The self-recorder was a way for the students to monitor and make daily progress on the initial and post summaries of students' feelings, as gained from the pre and post interviews. Since the self-recorder was given daily, students should have been able monitor their proficiency on each of the different objectives throughout the units/year. Upon completion of checking the homework in class the students were then asked to take five good minutes in order to fill out their reflection sheets. In order to monitor a change in belief or attitude, by the students, about homework the pre/post survey was also given. The post survey was given during the first week in December, attempting to collect information before the students switched their brains off for winter break.

It soon became evident, within the first three weeks of gathering data, that the self-reflection sheet was too laborious and daunting due to its size. At the conclusion of September, self-reflection collection was halted in order to complete and start dispersing of a condensed version. The new reflection sheet was used starting the second week in October. This sheet was half the size of the original and only asked the students to pinpoint the areas where understanding was lacking, instead of asking for a detailed explanation of all steps for each objective. The students were also asked for a single rating of their proficiency on the objective. Instead of

monitoring for growth in knowledge, the focus was to give one formative reflection that then indicated how much or little the student was expected to do in the continuation of their understanding.

Thus far, the aim in data collection has been aimed at how or what the student would do when given supportive means in order gain understanding of the objectives. The final piece dealt with how I, as the teacher, would be able to make adjustments based on the information that the students were passing onto me. The passing of information took place through many forms, including: the student reflection sheets, a variety of daily formative assessments administered throughout, which were then formed into portions of a self-journal. The teacher journal also included reflections on my interpretation of what took place during given lessons. At this point it was noted what, if any, additional explanations or re-teachings were needed in order to help clarify understanding before moving on.

Findings

- What would my teaching look like when I incorporated student self-assessment of objectives and stopped grading homework?

As students begin to filter into the classroom, reminders of having all necessary materials are continuously delivered. Once the tardy bell rings I close the door, which the students and I have agreed as the signal that conversations should stop and class will now start. Students at this time should be getting out their homework from the previous night in preparation for correcting homework. Homework is checked many ways, but mainly the students provide the answers by simply going around the room in a random fashion. This allows me to get a formative survey of who got their work done, who struggled with what, and finally which problems the class as a whole struggled with.

Depending on the assignment it is possible that students switched papers with a neighbor, I read the answers out-loud or have the work and answers posted on the overhead projector. Not always are we checking answers; often we are simply looking for correct work, steps, equations or labels. It often depended on what I was attempting to emphasize to the students as the most important and/or most often missed parts of the objective.

Regardless of how the homework was checked, we then did a question and answer session where the students were to provide the questions to help lead the discussion. Often times, this was the point where the students would have rather filled out their reflection sheets if they had not already done so. As a part of preparation, I already had an idea of which problems we would need to discuss in the form of an oral classroom conversation or that, which needed to be written out step-by-step on the board. Nevertheless, I encouraged students not only to ask the questions, but to help fill in the answers or necessary steps so that it was not just my usage of words, but perhaps those of their peers, which might have been more meaningful. If questions were sparse, then I asked given students to tell which problems they missed, because chances were someone else missed it too. The students were often encouraged to explain, orally, their initial work and then what should have been done, not just for me, but also for them to see that in fact they were learning. As soon as I was satisfied that students were through asking questions, I started to pass out their reflection sheets that will be used on today's objective. Meanwhile, students were expected to finish filling out the pervious objective sheet, start the new one and get out their math notebook in order that they would be ready to take down information that I deemed important.

The class started off with a story problem, which dealt directly with the new objective. This helped alleviate any "how will we ever use this" detour that the students might bring up. As

well, it got the minds of the students going in terms of connecting the new question to previous work that we may have already done. The students were expected to solve the problem in their notebooks. Ideas for approaches on how to solve the problem were taken, but no definitive answer was given by me, even though students had often figured it out. I tried to leave them hanging so their minds are not turned instantly off for the rest of the day. As long as there was the slightest amount of uncertainty, I knew their attention would be held that much longer.

As for the direct approach lesson plan that were most often used, vocabulary is often introduced at the beginning, depending on the complexity and/or unfamiliarity of the words to the students helps determine if the students need to write the words into their notebook. At this point, there was usually a discussion or justification of what the students would be expected to be able to do by the end of the class. Students were asked to watch and interject ideas and questions while I took them through the first two problems. The first problem was just for watching and thinking, whereas the second practice problem allowed for interaction. Not until the third problem were the students asked to write anything down. I often found in school that I was so busy trying to copy what the teacher had written down that I did not take the time to think about what was going on. In order to promote the thinking I do reinforce the idea that no one was to write and that all writing utensils were to be down until the third problem arose.

The third problem was saved for the students to simply write down all necessary work with me. It was a watch and then duplicate method. In order that the students saw exactly what and how much was expected of them in terms of completing a problem. Upon arrival of the fourth problem, depending on the comfort level the students were showing determines whether I allowed them to take the lead or I continued to do so. When the students started doing practice problems independent of me leading them discussion was allowed and encouraged between the

students. Normally students who picked up on the concept more quickly are interested in either showing the work on the board or going around and helping others by answering questions. It was very clear that the students who got up to help were not there as answer givers but as teachers making sure their fellow students are able to achieve and be successful.

Once the guided practice problems were over is when independent practice, or homework, began. The students were allowed to move and work with their friends at this time as long as the main discussion of the group centered on the work at hand and not other topics. Roughly ten minutes was left at this point where the students would get to work on class/homework. The students could also choose to fill in their new reflection sheet. Normally, I wandered around the room to those who had questions or I knew were having trouble getting started, due to lack of motivation or uncertainty of how to get started. When there were two minutes or so left, I asked if there were any problems that it would be worth our time to go over before class ends. Story problems seemed to be the problem of choice, but the individual students determined if they wanted to continue to work at their own pace or follow along with a discussion of a problem raised by their fellow classmates. Once the bell rang, the class-work turns into homework (if it was homework the whole time, no one would do it because it was called homework, that means one was to do it at home) that the students were expected to finish and bring back at the beginning of class the next day.

- How will not grading homework affect the rate of homework completion for students?

The completion rate of homework was directly related to many variables, including: level of challenge, size, and amount of time allotted in class to start and/or finish the daily assignment. By level of challenge the task could not seem too daunting that no matter how much effort was

put in by the student, completion, in the students' eyes, would be nearly impossible. The opposite was also true; if the assignment was too easy then there was a lower completion rate because the students saw it as busywork rather than something that would be meaningful to them. The size of the homework assignment was never really an issue since we agreed that there would be no more than fifteen problems on any one assignment, which was well below their initial expectations. Finally there was the positive relation of the more time allowed in class to work on an assignment the greater number of completed assignments that came back the next day.

After what some would call a negotiation, others could see as a setting of norms, the students and I agreed that 15 homework problems per night would be agreeable as the maximum number per night. Of course the students' first answer was none, which I tried not to laugh at as a realistic possibility, but instead mentioned that none might not be enough to prove understanding about a given concept. After having gone through 6th grade at the school the students thought 25 to 30 would be appropriate, since many complained that often in 6th grade they were given up-words of 30 to 40. Then I asked them to really think about what they were committing to. Would they really complete 25 to 30 problems per night? Many were quite honest and said "No" but 15 would be more enticing as a possible number that would be within the realm of possibility, even for those who were labeled at the beginning of the year (by the 6th grade teachers) as intelligent but suffering from a bad case of laziness. Initially many of the students were on board with the idea of homework three to four times per week, with an aim that homework would seldom come on Fridays, rather we would use Friday as a day of formative assessment.

As always there were a couple of students who did not get any work turned in on time, even though they originally agreed to do so. The homework completion percentages for the first

couple of weeks ranged from percentages in the low 80's to the low 90's. Patterns began to emerge as to how much homework could be expected completed the next day. Two of the key factors as to whether or not homework would be expected returned the next day were: how much time was given in class to work on the assignment, and whether the objective was a repeat from last year or it was brand new.

After the first four weeks of data collecting I started marking whether the students had been given more or less than 10 minutes to complete the assignment. This number was selected arbitrarily but made up nearly 20% of the total class period. The numbers helped tell the story. If the students were given more than 10 minutes on the assignment and it was a repeat objective from the previous year the students ALWAYS had a completion percentage above 83.5%. If given more than 10 minutes on a new objective the percentage dropped to an average completion of 74.1%. If the students were given less than 10 minutes on a repeat objective the completion rate was 78.6% while on new objectives slipped to 54.2%. Overall the homework completion percentage was 64.59.

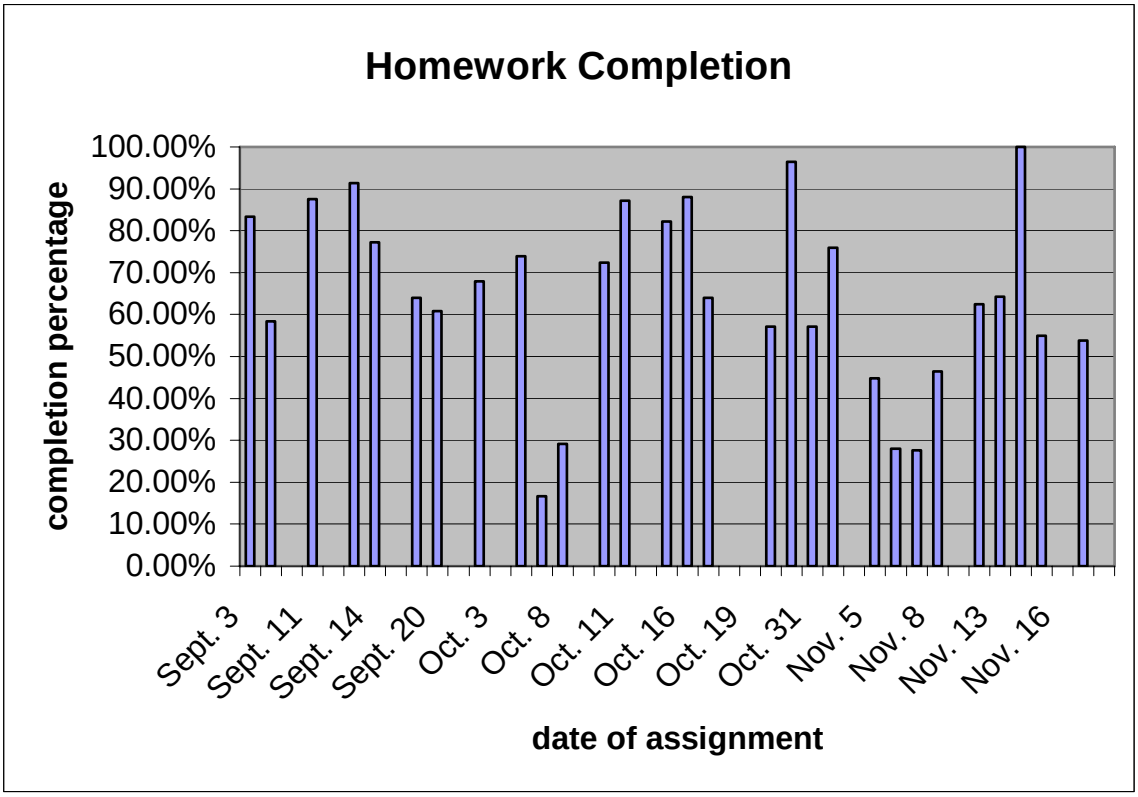

Figure 1. Completion of all homework assignments by 7th graders in the fall of 2007

Figure 1 shows on-time homework completion; those students who were gone on the day of instruction would lower the overall percentage for students' completion. **Not once** did a student come in post school hours to receive instruction of material after being gone for a minimum of one class period, no matter how many offers and suggestions were made that students would need assistance in order to complete the work and understand the objective. In fact, many students who inquired beyond the minimum of "what did I miss," in terms of what assignment was missed, expected the days lesson to be stopped and that I would individually work with them while the other students sat and waited for them to catch up. Tom[1] is student who has trouble getting to school on Mondays and Fridays, and is not always excused for these absences by the guardian(s) in his life. According to journal entries on September 25 and

[1] All names are pseudonyms.

October 26, which are days that followed absences by Tom, he addressed me in front of the class by saying, “I want to know how to do this, just teach me right now.” My reply was that by writing down or at least listening to our conversation on the previous night’s homework he would be able to get a start on what we had been doing. In addition to this, I would also need him to come in at lunch or after school in order to have a conversation with him about the material. To this I received an eye roll and a “sure” which was not whole-hearted, considering he did not come in, ever, to get assistance after he had been gone. There was the understanding that something was missed, but unlike some subjects where being present is not always necessary; this is rarely the case in mathematics. However there was not the understanding that you may have to stay and make up a portion of the time you were gone in order to catch up. Thus most often the student missed out on the objective.

In order that as few students miss out on opportunity to practice each objective, homework was given with the understanding that it would be checked by the student the next day, any appropriate corrections could then be made, and the fixed work would be handed in. The understanding of why the homework will be handed in can be a blurry line depending on the student. For instance, although I told the students that the homework was not counted towards their grade I still collected it to monitor progress in order that adjustments in teaching could be made as well as necessary computational practice is completed, many still believed that it went in the grade book and had an influence on the students overall academic grade. Even though on the grade printouts it was clearly stated (as it was on the initial parent letter home prior to starting the research) that homework would carry no weight on the overall academic grade. Still, a frequently asked question was “if I do my missing work, will that bring up my grade?” Each time the student is met with the same response, “no, because homework doesn’t count. Upon

completing the homework you are able to retest on the objectives where you are currently not proficient." This was a quick turn-off to improving a grade, due to the fact that not only would the student have to complete the assignment that was missing, but also they would then have to do more problems to retest, which was considered by many too much work to simply have a different letter grade on their academic progress. This message did not become clear to all students since on the post survey two students wrote that they were unhappy with their grade and the grade was low because they did not do their homework. This could have been taken a variety of ways, such that, if the students had done their homework, they would have done better on the summative assessment thereby raised their grade. But my feeling was that the students are actually saying that the low grade is directly related to the number of missing homework assignments, not to the knowledge that was not solidified by doing the independent practice.

I believe that the students who would be completing homework for a grade are the same students who would be completing the work for no grade. These are the students who will do something just because an adult asks them too, and/or they have comprehended and believe that in order to get better, one must practice. The same is also true for those who will not complete the homework, regardless of whether or not their grade is involved. Some of these students find the independent practice unnecessary and/or have prioritized homework/school low on their agendas.

For those middle school students who have started to challenge the system, most frequently was heard "well if it doesn't count why do it?" By having some rapport with all students this topic was quickly defused by countering with an analogy to something within their lives where practice was necessary prior to being successful (i.e. sports, dance, music, etc). Although the situation may have been defused, there was not always the buy-in by the students

due to less interest in math than in other things that they volunteer to participate in, thus this did not solve the problem of students completing their work. The failure to buy-in to completing daily assignments could have some support from Chris, who is a self-proclaimed human sponge. His view on rote work is best summarized in his post-survey question dealing with how does the student know whether or not they have learned the day's objective. Chris suggested that if he knew how to do the problem in his head, then there was no need to practice it, thus do the assignment. Now this may have been true for some students in some classes, but the reality of understanding may need to be called into question considering we are dealing with twelve and thirteen year olds. Like many adults, Chris and others with similar thought processes could be telling themselves that they know how to do something, when in fact they did not, in order to get out of doing work. Or quite possibly the students may in fact believed they understood completely and did, but were unable to transfer this knowledge to paper and pencil when it was necessary to do so.

For a majority of the students, they will work diligently in class when given an appropriate amount of time to start the assignment (this differs from student to student). Journal entries contain data dealing with how hard the students would work during allotted time for individual practice. There was nearly 100% buy-in by the students to work on an assignment whole-heartedly if a comment about the likelihood of completing the assignment within the constraints of the class time, as is witnessed on October 30 journal entry, "As I looked around the room today, all heads were down, but in a good way. All the students seem to be working quite hard and even the small amount of chatter was about math." The students were informed that everyone in the class before them completed the assignment and had less time than the current class did. If the students worked hard there was no reason to believe that they would have

to have homework that evening. The completion percentage would have been 100% except that a student took their completed work home and did not bring it back to school. On October 29 the students were told that they could get near half of the assignment completed if they got started right away. For that particular assignment the only thing that was half, was the amount of students who completed the work and brought it back the next day. This helps explain how if the likelihood of completing the assignment during class-time was low then there was far less buy in for students to get started with the assignment in class, let alone take the work home to complete it. This situation is the opening door for the comment made by students "I'll do it at home" which is a subtle way of saying I am not going to get started here. Even though full well both student and teacher know the odds were not in the favor of completing the assignment, as seen in the 58% completion when less than 10 minutes was given to complete an assignment on new material. There is support for this belief based on a journal entry from October 8, 2007, where two students, Shelby and Michelle, refused to start an assignment with 5 minutes left in class. When I addressed getting started to them they explained to me that they would complete it that night and bring it in the morning. The next day, October 9, both students came without assignments but with the excuse that they had forgotten to do the assignment. When I reminded them of their comments from the previous day all I received was an eye-roll and the comment that it would not happen again. In fact maybe they did forget, but I believe they would have had a better chance at remembering if the assignment had been started or at least written down on a piece of paper or in their planners.

Although academic grades in 7th grade do not account for anything, technically, in the long run, homework completion is determined by the buy-in of the student. Some will do so just because completion is expected (a way of pleasing the teacher), others will do it for the

understanding that homework completion directly correlates to higher test scores, still others will refuse to complete work no matter what.

- How will instituting a self-assessment form affect student mastery of class objectives?

People, in general, want to do well, no matter what the situation. It is human nature to instinctively want to have as many positive experiences as possible, whether playing a sport, attending a concert or solving math problems. Young students are no different; they want to do well, even in school. It seems the many varying means and personal philosophies by the individual dictate as to what kind of effort is put into creating a positive experience. Some people seem fortunate and appear to always have an experience that is positive and nothing other than minimal effort seem to be needed in order to do so. For most people, some things come easily others not so much. But it is those things that do not come easy that are the most satisfying, for me at least. However, that is coming from a point of view where hard work and dedication seemingly always pay off, reaffirming the idea that where there is a will there is a way. In the mind of a twelve or thirteen year old who is still trying to figure out who they are and how they fit into this world, this point may or may not yet have been internalized.

In my class, as I observed the students working, nearly all students being observed admitted the need for help and were accepting of that help, when the giver was sincere and working at a scaffolding level that was appropriate for the individuals. This was especially true on objectives that were new to the students and posed a challenge as opposed to those that were repeats from last year and thus in the students' eyes were wasting their time. Upon viewing the daily self-assessment forms it was clear that students took more time in filling out their answers especially on their understandings and lack of understanding when the discussion of the previous

night's homework lasted more than five minutes. In cases where the discussion of homework was lengthy, rich in conversation, and instigated by the students rather than the teacher, often due to lack of full understanding in the objective, I feel that the students were better able to articulate what went right and wrong because they were better focused because the students had something to gain by paying attention and participating. Additionally, since several people made the same mistakes, the questions, answers and findings through discussion were applicable to more than the one person asking the question. The times when the largest gain in believed (by the student) understanding took place, according to the increase in self-evaluated proficiency, were immediately after the discussions of homework and while going over summative quiz and test results. I believe this to be the most appropriate time for large gains in understandings because it is a crossroads of sorts where questioning in one's abilities meets explanations and certainty. Students are then able to reaffirm their correct beliefs or are made visually aware of inadequacies in an effort to fix them.

I believe that students more often than not can identify what issues they are having with any given objective. The inherent nature of people, students included, is to fix the mistake once in a mental form and think that no further practice is necessary. Just because growth or believed growth in understanding has taken place does not equate to a proficient understanding of a given objective at the current or a later time. I saw this as the most crucial point, somewhat a closure to the current objective before moving onto the next. Although the students have been given formative feedback about their work, the new found knowledge was not always able to be put into immediate practice to verify that the gap in understanding had been bridged. This allows for a certain amount of confidence to be built within the student and their abilities. However, this is not reaffirmed until the next quiz or test, at which point some regression has occurred. According

to a journal entry from September 18, 2007 students were asked to compare mistakes made during formative quizzes and those made on the summative test covering the same material. All students who volunteered their findings concluded that in fact the same mistakes were made on both the formative and summative assessments. Some of these students who volunteered information did notice an increase in knowledge, from formative to summative, but not necessarily a complete understanding of the gap in knowledge had been bridged. This is similar to a coach telling a player about necessary corrective moves while swinging a bat. The player understands what the coach is saying and makes every intention to approach the desired method but fails to practice until the next game, at which point the player continues using the old mechanics because his or her body is not conditioned, through practice, with the correct way of doing things, even if the mind was focused on correcting the mistakes during the game.

It was noted that few students would make the needed corrections at the time of feedback, which helped with the practice of doing something correctly. By viewing completed and checked homework, it was clear that a small percentage of students went back and made corrections to their homework. This became evident by the use of different writing utensils on their work, eraser marks or the student explaining as they handed in the work that they had made the appropriate corrections. However, NO students admitted to practicing problems at a later time on their own in order to better their understanding or continue working using the correct steps, even as review prior to tests. Students were asked this question before each test (of which there were four) in preparation for journaling. The small group of self-motivated students, those that took the time to correct their mistakes, were far outnumbered by those who gave the homework an initial shot and were ready to move on regardless of how that attempt went.

According to three individual post-surveys students conceded that the teacher can help them learn the objective by giving more homework/practice problems. Upon seeing these responses, all by students who normally sit together, I inquired their meaning of more problems. I said more problems the night we talk about the objective or the night after we have discussed the homework. All agreed that the night after discussing the homework would be more beneficial. I further inquired, whether they would truly complete the problems if they were not checked in class or picked up as an assignment. To which again all three agreed, in truth, probably not. Clearly, at least a few of the students would find it beneficial to have supplemental problems, as dispersed by the teacher, to aide in the solidifying of their corrected thoughts and/or processes.

Just because something is good for a person, does not guarantee it will be done. Students need a buy-in to everything that they do. If there is no buy-in, the job becomes meaningless and less and less effort will be put into it. Take the self-assessment forms for instance, the buy-in for many students was to fill out the form, so that the teacher would deem it acceptable, as quickly as possible with as little effort as possible. This became evident during the week of September 10, 2007, when a group of boys would finish filling out their forms and quickly survey the rest of the class, by looking around, to see who else was finished. When a student was told that certain answers were unacceptable and needed more input, the other friends would laugh. I took this as a sign that the completion of the reflection sheets were for me, the teacher, rather than their designed purpose of being influential for the students.

Initially the students kept their homework, for future reference, and only turned in their reflective sheets upon completion. Partnering up the ideas that I would be collecting them for what looked only like my purposes and the belief that the reflection sheets did not to benefit the

students, the students had no problem filling out the bare minimum. Within two weeks the platform changed in that I now collected the homework and only left them with their reflection sheets, which were to be kept and used as feedback for the students on any given objective. The reflection sheets were to be kept until the summative test had been taken, and then handed in after the students were able to reflect on whether any progress had been made from the initial encounter of the objective to the summative exam of it.

This concept worked a little better in that during review periods a small number of students would use their reflective sheets as an aide in solving problems that they had forgotten how to solve, as taken from a Journal entry on September 17, 2007, the day prior to a summative assessment, “Today I saw Stacia frantically searching through her old objective sheets for help when she got stuck on problem eight.” But a greater abundance of students found little use, even though the reflection sheets were constantly mentioned, as not only aides but also determining factors as to how well the students would do on any summative quizzes or tests. While giving feedback on summative quizzes which covered anywhere from two to four reflection sheets the students had trouble making connections as to what progress had or had not taken place due to the number of students who used the term IDK (I don’t know) to explain what steps they were still needing help with. How could any improvement be made or acknowledged when there was no baseline data for the students to compare with? If the students were unable or unwilling to put a finger on what had been giving them trouble with a given objective, what possible growth could be expected? The majority of the students found little use for the reflective sheets after the initial time filling them out. There was often a feeling given by the students that comprehension of the objective was based on how smart the individual student was and/or what kind of person they were. For instance the “good kids” always seemed to do better than those who had been

busy writing notes of gossip or text messaging. This is seen in the students' post surveys where the many students who saw themselves as "bad" at math were the same students who had difficulty in filling in their reflective feedback sheets with any detail. Seldom did the students who struggled ever look to themselves as any part of the key factor to increase their knowledge, because after-all they had given it a shot once and it did not work out, what more could be expected from these students?

- What effect will students using self-assessment forms have on classroom instruction and re-teaching of objectives?

By having students confront their own understandings, or lack there of, my intentions were that the students would be self-motivated enough to seek additional support in order to achieve better understanding about any given objective. Both the original and revised self-reflection sheet emphasized not only what the student did not know, but gave an opportunity to acknowledge the necessity that further work in this area was needed. I believe that students will often tell the teacher what the teacher wants to hear in terms of needing and seeking help, but unless held accountable, and not with grades, the students will slide on any individual obligation to enhance their learning.

On 72% of the reflection sheets, "ask the teacher" was the response for the question, "what will you do to get this help?" The next most supplied answer was to "get help from a friend" with 24%. In theory these two approaches should satisfy the situation, considering a friend who understands the material is asked and is able to communicate it clearly. For the 72% of students who said that they would get help from the teacher, all 100% of them chose (by their actions) in class as the only time acceptable to get the needed assistance.

I noticed this trend in many journal entries. I was able to determine that the students expected me to ask them questions for understanding and to straighten out their thinking by probing for which problems they, the students, struggled with. By this, I mean that more than 60% of the problems discussed while we checked homework were brought to the class's attention by the teacher, who was asking individual students which problems they missed, rather than the students letting the teacher know which ones were missed. Seemingly, what I was witnessing in class directly contradicted what was being written on the reflection sheets. Perhaps the students felt that as long as the teacher asked them directly which problems they missed, that constituted seeking help from the teacher. The students were writing quality methods to solve their problems, but took little to no ownership of pursuing mistakes unless pushed to do so. Seemingly, the reflection sheets in the students' eyes were for show, or at least to comply with teacher requests and nothing more.

The feeling I received, as teacher, was that it was my job to inquire into student knowledge and supplement anything that needed it. There was little to no responsibility or ownership by 60 to 70% of the students to increase their knowledge and understanding from day-to-day topics. The lack of student ownership also reaffirms what the district and teachers within that district instill in their students, that is, "well you gave it a shot, we hope you got it, but it is now time to move onto something else." This contrasts with halting the progression and allowing for needed time, energy, and available resources to address the student issues, by which teachers would be telling the students "this material is important and I care enough to slow down to make sure each and everyone of you gets it before moving on."

Contrary to what is being said here, the district leads the public to believe that the math card used by Lincoln Public School teachers allows for wiggle room with lesson plans and to add

extra days when necessary to accommodate lack of understanding. Clearly this extra time is not granted for all objectives because it would then be impossible to complete all objectives on the objective card within the school year. True, as witnessed in my daily plan book, there are arrows for new lessons to be pushed back a day due to lack of understanding or need for more time with a given objective. There is at least one push back every eight days where extra time was needed to cover an objective. These extra days are on top of the approximate number of days the district suggests for each topic. At this pace and total number of objectives covered, it is no wonder that to pass a district Criterion-Reference Test a student need only to receive a 55% or higher. That is just understanding and being proficient at little more than half of the daily objectives we go through.

Spring training for baseball is like the beginning of the school year; every team (student) comes in with high expectations of what the season could be. However, realistically speaking, the coaches (teachers) should already be figuring out what slowed the team down from succeeding last year in order to improve on it this year. Unlike in baseball, where most of the team from the previous year is returning, all the faces are new and often times it is just like starting all over again. The instructor is so busy trying to figure things out for each student that by the time this is accomplished some of the students are already set in their same ruts (common mistakes, work ethic, outlook on school) from previous years that making ground is quite difficult. Take, for example, the ability for students to re-test. Some students saw this as a fall back just in case they did not do well on a test. But the test (Casey striking out) should clearly not be the first indicator for the student or teacher to acknowledge there may not be joy in Mudville (math class).

In order to aid the students in this self-reflective process, the reflection sheet was designed for the students to interact early and often with what concepts they know well and those that they struggle with. Most of the time, the students did so. There was a realization that certain skills or concepts were missing thus preventing the student from being proficient on the skill. On countless reflection sheets every day students wrote one or more skills that were lacking and then the students continued on by explaining on how they would get the help that was needed. Unfortunately, not one time did a student come in to get additional assistance until the student witnessed a summative test (not even after a summative quiz) had taken place and the letter grade of an "F" was received.

Perhaps I was not suggesting that students could come in to get help on homework, rather after school help was specifically for re-testing only. This however was not the understanding with everyone. Within the window of when the research was completed, two different students were often included within the pages of my journal. Richard was a student who was often gone (once to twice per week) but was responsible enough to ask (once and once only) for his missing work. His idea of completing the missing work was to copy all the answers from the board, as we checked the homework, and attempt to hand it in (that day) without doing any thinking or work on the concept. When I would not accept the answers, because it was obvious what he was doing, and there was no actual work to the problems, except those, which he had asked about, he would start to get upset and say that it was the my, the teacher's, fault for not being willing to explain it. At these time I did not try to defend myself, I agreed with him and said "you are right, since you were gone, you will need to come in and I will gladly work with you so that you do understand", (Personal Journal, October 9, 2007). The offer came off more as a sentencing to a crime than it did a student being absent and needing to be filled in on what he/she had missed. Needless to

say, for each of the days (which was once to twice per week) that Richard was gone, he never once came in to get help. Each time I gave my response about offering help he simply replied in one of two ways, “oh I get it” or “I’ll just ask…(insert the name of one of Richard’s friends here).” Even on Wednesdays, when I had outside duty after school and would see Richard hanging out waiting to walk home, he refused any offer to receive additional help with his studies. I even spoke with Richard away from his friends (Personal Journal, November 14, 2007) in attempt to alleviate any peer pressure or stress that might come with receiving help after school.

The second student who was continually offered individual help prior to any summative exams was Sarah. Sarah paid attention (for the most part) and tried in class but was often distracted and felt embarrassed about asking questions, I know this because she told me (November 6, 2007) at one of our MANY re-testing sessions set up after her mom saw her report card. Sarah’s homework completion rating prior to summative assessments was quite low, around 42% on-time completion, each time she would tell me “I didn’t get it” and after looking at her reflection sheet it was seemingly always filled with “IDK.”

Upon completing yet another set of retests (Personal Journal, November 9, 2007) with Sarah I finally mentioned to her, “you know you could come on the night you don’t understand the objectives, or the following night, rather than waiting until after the test.” Her response even though worded differently than Richard’s held the same meaning, no that is okay I will wait to come in until after I figure out on the summative test what I need help with. This is even though both students were getting constant feed back multiple times per day from multiple sources, it was in their best interest just to make sure they had to come in. Why they thought this I am unaware, perhaps because they thought they would improve on their own, or perhaps the test

would be easy. Whatever their thinking, it clearly was not working according to their academic grade and their confidence displayed on a day-to-day basis. At one point in the spring upon picking up one of Sarah's summative tests she was already asking when she could come in to retake all the sections even though I had not graded the exams. Instead of being reactive, if Sarah would have been more pro-active about her understanding not only would have she done better on the initial summative assessment, but possibly been able to add some self-confidence in her abilities as well.

I find that math teachers are the most flexible of any curriculum; I have concluded this by way of their choice of writing utensil. Check with any math teacher and he or she will more likely be carrying a pencil than a pen. A pencil suggests that failure or setbacks are necessary, in order to proceed forward. Instead of canceling out our thoughts (like with pens) math teachers go back and erase, to show a change of thought in order to improve initial thoughts/work. When filling out our lesson plan books, the district allows very little wiggle room to play with extra days here and there for students and teachers to revisit topics while they are still somewhat warm in the mind. Having taught the same set of objectives for four years in a row, my colleagues and I have a pretty good feel for the number of days needed and allowed by the district for each section. For the sections which are repeats from the students' previous years work we may skip or very slightly skim the surfaces of these materials, but only the ones they truly know well, in order that we can spend the maximum amount of time on new materials which the students seem to struggle with each and every year. For students who are unable to find success within the allotted time during class, I ask them to come in after school to receive additional assistance. This helps with time concerns as well as my own inabilities to use small group activities to help students focus in on what they need help with.

Throughout the study, there were exactly two objectives that received an extra abundance of time, as visible in my lesson plan book which had many lessons with arrows being pushed back so that we could allow more time, as compared to what the district suggested teachers should spend on these objectives. The two objectives that got special attention both came from the pre-algebra class and they were: writing and solving two-step inequalities and multiplying/dividing fractions. The first proved to be very difficult due to issues dealing with reading ability and that it was the students' first experience with it. The second objective I believe should have been a basic skill that the students had mastered, but apparently not. Both the other 7th grade math teacher and myself felt as though we really had to spend more time, during class, on these objectives in order to feel that at least a majority of the students were able to be proficient at the skill. For each objective, much time was spent on formative feedback and it started to show that the feedback was helpful according to the self-reflection sheets. Initially on these two objectives only one to three people felt their level of proficiency was a 3 or 4. But after allowing a lot of time to discuss and work with other students, progress was being made in terms of identifying what the students were still having trouble with and who, other than the teacher, was being successful and that they could go to them for help.

But, what of the mass of students who still did not understand concepts but the class had to continue moving forward in terms of covering the objectives? I, as the teacher, provided two possible answers, these answers happen to be the answer found on 96% of the reflection sheets. One, come in after school to get help, two speak with a friend who understands. My preference was to come in after school, but, as pointed out previously, there was not enough motivation (internal or external) to do so until after a summative test. One known exception was Katie. Katie was a student who was picked up immediately after school in order to be taken home to care for

her two younger siblings while her mom went to work. Katie was never able to come in after-school but arrangements were made that she could come in at lunch if she wanted to in order to get help. It turns out Katie rarely needed help (in her mind at least) even after multiple passes were written but were never followed through with by actually showing up (Personal Journal, September 20 and 25, 2007).

In order to give the students some fallback option, they were to speak with a friend, but due to "coolness" constraints in the twenty-first century this decision turned out to be very inefficient as well, as determined by seeing the lack of progress from the reflection sheets to the summative tests. After the summative test given on November 9, 2007, I looked to see if any of the students who said that they would get help from their friends actually brought their grade up in terms of going from not-proficient on their homework to proficient on their summative test. One of eight students who claimed that they would get help from a friend went from not proficient-to-proficient. I cannot be sure that this person became proficient because they asked a friend for help. I can be sure that the other students did not become proficient whether they asked their friend or not.

Perhaps my inexperience or pedagogy prevented me from using peer tutoring, especially during class, as a more effective tool. At all staff meetings, I hear of other teachers grouping their students by skill and have them help each other. My mind struggles to imagine how this works with so many objectives in a given chapter. How does a teacher group the students so that everyone gets the desired help they need within the given restraints of time? However, I have not asked another teacher for help on this particular skill due to embarrassment for myself. If this fear stays instilled within me I will not be able to help the students by using a method that other teachers insist works.

Conclusions

Through use of self and peer assessments the students gained valuable insight as to what objectives (and the parts that lie within a given objective) that the students did and did not understand. At this point for each student there had to be an internal evaluation of self and self-knowledge as far as what if anything needed or was willing to be done in order to meet the perceived goal of level of understanding by the student.

For many students, this overt lack of knowledge was pinpointed in a conscious manner held in conversation between student and teacher. The students knew some manner of intervention must take place in order to close the gap in understanding between performance and desired performance as was supported by Brookhart et al. (2004). In the work by Brookhart et al. the gap could be closed often times within the confines of the classroom, during the school day, over consecutive days.

The research performed here only had two perceived methods of closing the gap; peer conversation and post school time with the teacher. Data shows that the latter option really was not a viable option since it was never used. The peer option was monitored only through honesty of reflection sheets, which suggested that the students did seek help but the assistance received did not bring the students level of knowledge to proficiency. Through the eyes of many students and the teacher, the only valued method of closing the gap in understanding took place during class time. If there is to ever be true closing of the achievement gap understanding of an objective, priorities must be shuffled by students, teachers, the district and the community of the school.

The gap in performance and desired performance was often miscalculated and presumed closer than what reality shows for those who failed to complete the homework by the assigned

deadline as supported by Hewitt (2002). These were the students who believed in their understanding without having to prove it through work. Although formative and summative test results proved otherwise the inherent belief in self was to overwhelming that modification may be needed in order to match actual performance with perceived. Those who completed the homework on time miscalculated their performance based on the number of correct answers on the assignment, thereby overstating the gap in understanding.

The students would exclaim that they do not get any part of the objective. This belief comes from the fact the answer did not match that of the teacher. But during any sort of exploration into exactly what went wrong, the students would realize that in fact they knew more than they expected. In reality, more often than not, the issue came from computation problems and/or having very little to do with lack of understanding the objective. In order for the realization to occur like with Hewitt's work (2002), a checklist of sorts was needed for the students to identify the positives and negatives of what they had accomplished. Upon doing so, belief in self was increased as well as true understanding, thereby closing the gap.

By not formally establishing individual learning goals for each student everyday and multiple times per day, the struggling students focus was on simply trying to arrive at the correct answer rather then figuring out how to approach or solve the problem, just as Schunk (1996) said would happen. I, as the teacher, did not insist that goals be set at the beginning of class or at points along the way, where formative feedback could help reshape personal goals when necessary.

The individualization of completing the objective should have ranged from the emerging student all the way through the highly proficient students so that a goal for progress could be made and then hopefully accomplished by everyone, not just some of the students. Instead, the

objective for the day was written on the board and the students were all to have the same goal in mind. Some students had already completed the goal and were on cruise control because they were not formally expected to do anymore or learn anymore than they already had. While other students had not yet reached the class-wide goal and were expected to do better without any prescribed remedy for what they were struggling with.

Implications

After giving corrective feedback on homework, the next night's homework needs to include some practice in the area of problems where the feedback was given. After considering that Brookhart et al (2004) were able to see success by allowing students to work on the same skill for multiple days, clearly my classroom needs to follow suit in some manner of speaking. Implementing follow-up homework after revisiting a topic in addition to the new objective is a possibility. By this, I mean that not only would the students be responsible for completing the assignment on the new objective of the day, but also, an additional five problems based on the previous day's concept would also be included. Taking into consideration that some time and discussion has gone into formatively assessing the students completed work (by: peer, self, or teacher), there should an opportunity for the students to witness first hand whether there has been any knowledge growth since the initial individual practice. If growth has occurred internally the student should know immediately. However, if growth has not occurred (for those not yet proficient) an alarm bell should go off in a students' head as well as that of the teacher that something more must be done, or something different must be attempted so that gain can occur.

How do teachers give the grace of letting kids decide how much they learn meanwhile being accountable to the students, parents, district, and society that they do learn?

Overall, most students will put in what they consider a good initial attempt into an objective; the teacher may differ in opinion as to what a good effort is. It is not the first attempt

that sets the bar for how high any follow-up attempt may be. If the bar is set low, often the second attempt may not be perceived as an attempt at all. Or, there may not be a second attempt depending on the persona of the student as well as the rapport with the teacher. What can be done for students who think they understand a concept, therefore refrain from completing the assignment “busy work” but then disprove their belief on every formative and summative assessment?

A concept that I have been a part of is positive peer pressure. That is to allow the students to be members of study groups ranging in size of three to five people. When any one member of the group is below expectations of the group (which are the norms of the group) that individual student must take actions, deemed by the group that he/she is a part of, in order to bring up that students academic grade. When any two or more students in the group are falling below the group’s expectation then the whole group will be held accountable and need to find, propose, and follow through on a solution that the whole group must participate in. The organization and set-up for such a group would take some planning and some buy-in by the students to establish ways for all students to succeed. But by using peer pressure, and the ideals held in writing by the group members there is not only a chance that more students will be successful, but also the students themselves will be responsible for that success.

Which is a better choice: spend a day reviewing the chapter’s material before the test, or spend a day after the test allowing the student to relearn specific objectives applicable to what they struggled with on the summative test? Prior to summative test taking, the students, when asked, prefer a day of reviewing all the material that will be held on the test. Initially, I could understand the reasoning that since I was collecting the self-reflection sheets everyday, it made sense the students may have forgotten the individual objectives that were to be included. Part of

the change in the research was to allow the students a record keeping method so that they would be able to view, at any given time, all the objectives in a given chapter/unit, hence the reason they were to keep their objective sheets until the summative appraisal. However, due to physical evidence (i.e., computational math problems on the self-recording sheet) the students' own words ten or twelve days later had little meaning or ability to jog memories of what problems would look like. Hence, the need for a day to completely review all the material.

Strikingly, this day often times turned into an activity day where the material seemed to be outweighed by the means in which it was presented, for instance jeopardy or group problem solving, where in both cases, the fact that students were working in groups negated much of the students' focus and need for clarification on sections they needed corrective teaching in. Additionally, the next day when the students entered the class they wanted another problem of each type that would appear on the test so that they may "get warmed up" or get some "last minute clarification." In other words the students did not get all the review/corrective teaching the day before so they were hoping for some last minute cramming.

What may be more beneficial is allowing the review on the day of the test just prior to taking it. Followed up by immediate feedback the day after the summative test which would allow the students to focus in on their actual knowledge, or lack there of, rather than over-confidence in their perceived knowledge the day before the test. A jumpstart on the retesting process, which was so very rarely used during the time of this research, may be a more practical or at least beneficial means for the students to work in an activity (in groups by student deficiency) based strategy, again emphasizing the peer, self, and teacher interactions to boost re-learning.

At our school, math test scores rank lowest when compared to reading and writing. In my perception other classes heavily emphasize reading and writing everyday, while rarely including math within the daily content. One thing I would like to do is emphasize writing in my classroom. I will need to seek the help of the English teachers because when it comes to teaching writing, my skills are limited and would need some drastic help in order to make writing not only a common activity within the math classroom but one which is meaningful for the benefit of the students. Overall, I know that the students can be good writers and if their strengths are emphasized in the math class that may help translate into greater understanding as well as more confidence within the field of math.

Lastly, I also believe lack of basic skills are preventing students from being more successful in math class. By this, I mean that students are more fearful of complex or multi-step problems due to the fact they fear any computation that may be involved. One possible solution would be to more heavily stress and work with these basic computation facts/skills until confidence is built and the students could then move onto higher-level problems. The problem with this is that, more than likely, the students have already had this training for much of their elementary school lives, obviously, for many, it did not have a positive influence. Rather, by setting professional learning community (PLC) goals that emphasize both computation and conceptual understanding teachers can tackle both issues at once. As an upcoming goal our PLC has spoken of working on computation as the mainstay of our work. However findings here suggest that while this may need to be a part of our goal, it should not be the entire focus. To a certain extent, our group should emphasize multiple skills, at different times if necessary, to enhance not only computation but thinking skills, effort, goal-setting, and better use of formative

assessment in order that our students become more well rounded as mathematical thinkers, not just computational problem solvers.

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Appendix A

Name: _____ Student pre/post interview questions:

1. On a scale of 1 to 5 (1 = bad, 5 = good) rank your feelings towards each core class.
English:

Health:

Math:

Science:

Social Studies:

2. Why did you rank math class the way you did?

3.Do you consider yourself to be good at math? Why or why not?

4. What are some of the things you like about math class?

5. What are some of the things you do not like about math class?

6. What could be done in order to improve your feelings about math class?

7. Are you satisfied with your grade in math class right now? Why or why not?

Appendix A continued

8. Are you satisfied with how much you understand what we are doing in math class right now? Why or why not?

9. What does it mean if you have learned the day's objective?

10. How do you know when you have learned the day's objective?

11. How do you let the teacher know you have learned the objective?

12. What do you do if you have not learned the objective?

13. How do you know what else to do if you have not learned the objective?

14. What does/can the teacher do to help you learn the objective?

15. If a new student joined our class, what would you tell them it takes to be successful in this class?

Appendix B

Name: _____ Self-Data Recorder

Section: _____

The "Book" **Objective**:

1. In your own words, what was the objective(s) for this section(s)?

2. At the beginning of this section, rate your ability to do the warm-up exercise.

0 1 2 3 4

After Completing the Homework

3. Rate your level of proficiency
Why do you say this?

0 1 2 3 4

4. Did you complete the homework by the assigned due date?

Yes No

5. List all the steps necessary to solve the problem.

6. Name all the steps you can do by yourself.

7. Name all the steps you still need help with.

8. What are you willing to do in order to get the help you still need?

Appendix C

Name: _____

The Objective:

1. Rate your level of proficiency

0 1 2 3 4

Why do you say this?

2. Name the steps you still need help with.

3. What will you do to get this help?

4. When will you get this help?
Set a deadline.

5. Did you meet the deadline for getting help?

YES NO