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Improving the Effectiveness of Independent Practice with Corrective Feedback

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Abstract

In this action research study of my 8th grade Algebra class, I investigated the effects of teacher-to-student written corrective feedback on student performance and attitude toward mathematics. The corrective feedback was given on solutions for selected independent practice problems assigned as homework. Each problem being assessed was given a score based on a 3-point rubric and additional comments were written. I discovered that providing teacher-to-student written corrective feedback for independent practice problems was beneficial for both students and teachers. The feedback positively affected the attitudes of students and teacher toward independent practice work resulting in an improved quality of solutions produced by students. I plan to extend my research to explore ways to provide corrective feedback to students in all of my mathematics classes.

In searching for a topic for this research project, I decided to dissect an average mathematics lesson, looking for an everyday classroom activity that warranted this type of attention. I wanted to find a teaching activity that would potentially impact all of my students. As I performed a mental walk-through from beginning to end of a typical lesson, I was able to narrow my focus to three major activities, each demanding a substantial amount of precious class time: anticipatory set problems, guided practice problems, and independent practice problems. Although I feel that each of these activities is crucial to student learning, I felt most compelled to explore the effectiveness of my procedure for assigning and assessing independent practice problems.

As a veteran educator of 17 years, I have taught a variety of math classes to students ranging from grades 7 to 12. During this time, my teaching practices have substantially evolved and improved. One exception concerns independent practice. Independent practice is an area in my teaching that has experienced very little change even though it fails to produce tangible evidence supporting its worth. Independent practice has been an important component of my teaching for two reasons. One is because I believe students must independently practice new skills to master new content. The other is to provide me with a means for determining if the students understand the new concepts, and whether I can proceed with the next lesson. Since a substantial amount of time in my classes is spent each day discussing, grading, and assigning independent practice problems, I decided this topic was worth researching.

As I began to develop an action research project, I wondered what aspects of independent practice I needed to change. I decided that independent practice was only effective if students learned from the mistakes they made. For this to happen, I must increase the amount of feedback students received on their work. Instead of the general feedback I had been giving, I must make

the feedback personal and corrective in nature to maximize its effectiveness. My research would study the effects of changing the quantity and quality of corrective feedback on independent practice problems.

Problem Statement

This problem of practice is important because independent practice is a central teaching component for most teachers of mathematics. There is little debate about the worth of independent practice as this has been thoroughly researched. Many teachers agree that independent practice is an integral component in the learning process. My research will provide information for my colleagues in Math in the Middle, at my school, and in my district, to help improve their use of independent practice.

In my teaching experience, the independent practice I assign has become less effective each year. One reason for the decline is students lacking motivation to exert an adequate effort on their work. This lack of motivation is caused, in part, by the continuous cycle of students completing homework then grading the work in class, with little probing discussion occurring or corrective feedback given. The only feedback students receive for their work is a checkmark next to an incorrect answer and an overall grade for the assignment. I believe that if I were able to improve the feedback students receive by making it more frequent and making it corrective in nature, students would be more likely to put forth a good effort because the homework would be much more of an individualized learning experience.

In addition, class time is extremely valuable and every second must be used as effectively as possible. It makes little sense to have students participate in an activity that occupies nearly 25 percent of class time during which minimal learning occurs. Using a teaching practice just

because “it is what I’ve always done” or because “it was how I was taught” without at least investigating possible alternatives is irresponsible.

Finally, this problem of practice is important because math teachers use independent practice as an activity to help meet the requirements of No Child Left Behind (NCLB) legislation. Since meeting the assessment requirements of NCLB has become the primary focus of many teachers, effective independent practice could help reach these goals.

Literature Review

I found a substantial amount of research literature related to the use of corrective feedback. The research provided information on the following themes: types of feedback, the forms of corrective feedback use and their effectiveness, the timing of corrective feedback, and the role of self-regulation in a corrective feedback process. Most of the research did not result from work done by students in a school setting. My project is different than the projects described here in that it specifically studied the effects of corrective feedback for middle level mathematics students.

The two types of feedback are criterion-referenced or norm-referenced feedback. Criterion-referenced feedback informs students where they stand relative to a specific target or skill. Norm-referenced feedback informs students where they stand in relation to other students. Research by Crooks (1988) and Wilburn and Phelps (1983) as cited by Marzano, Pickering, and Pollock (2001) explored the effects of feedback on learning. Their findings indicated that criterion-referenced feedback, also known as performance-based or corrective feedback, has a greater impact on learning than norm-referenced.

Corrective feedback can take many forms. The feedback could be a checkmark or other notation near an incorrect answer or a checkmark with a correct answer near the problem.

Corrective feedback also occurs when a student reworks a problem until it is correct and when an explanation is provided as to what is correct and incorrect in a problem's solution. Research performed by Bangert-Downs, Kulik, Kulik, and Morgan (1991) as cited by Marzano, Pickering, and Pollock (2001), revealed the following results about these forms of feedback:

Research Results for Corrective Feedback				
Synthesis Study	**Focus**	**No. of Effect Sizes (Ess)**	**Ave. ES**	**Percentile Gain**
Type of Feedback	Right/Wrong Answer	6	-0.08	-3
	Correct Answer	39	0.22	9
	Repeat Until Correct	4	0.53	20
	Explanation	9	0.53	20

The researchers found that right/wrong answer feedback decreased student scores; giving the correct answer increased student scores slightly. The most significant gains resulted from a "repeat until correct" process and a "teacher-generated" explanation which increased student scores by 20%. I incorporated each of these methods in my research although time constraints prevented me from using the repeat-until-correct feedback method as much as I would have liked.

Corrective feedback can be immediate or delayed. Immediate corrective feedback is given as soon as the error is made, before time has been provided for students to fix his or her error. Delayed corrective feedback is given after a set amount of time has been provided for learners to detect and correct their own errors as in a repeat-until-correct scenario. During my research, students were allowed to work on their problems for an extended period of time. Since

students had time to check over their work before feedback was given the following day, I was providing delayed feedback in my study.

Proponents of immediate feedback argue that immediate feedback prevents the learner from floundering and keeps the learning process efficient. Research on immediate feedback, done by Corbett and Anderson (2001) as cited by Mathan and Koedinger (2005) found that any type of feedback was better than no feedback. Another study of immediate feedback, performed by Lee (1992) as cited by Mathan and Koedinger (2005), showed that students given immediate feedback during training completed problems significantly faster that those given delayed feedback and both groups performed equally well on a posttest given the following day. The study also found that those given delayed feedback exhibited better retention as they performed significantly better on a fact transfer task.

Opponents of immediate feedback argue that it may detract from individual control over the problem-solving process. One study pointed out, “Immediate feedback may reinforce the belief prevalent among many students that problem solving is an immediate and single-step process rather than the deliberate and reflective process described by educational researchers” (Nathan, 1998 as cited by Mathan and Koedinger, 2005).

Purpose Statement

The purpose of this study was to explore the effects of teacher-to-student written corrective feedback for independent practice problems on student performance with mathematics. In particular, I explored changes in the quality of work done by students and changes in student attitude about doing mathematics that resulted from corrective feedback provided on independent practice problems. Data collection took place during the spring semester, 2007, in the researcher’s classroom. I found that the data I collected forced a change in

my research direction. During the study, I found myself contemplating whether the effort I was making at providing feedback was making a difference in the quality of student work and in student effort. The original research questions failed to fit my thinking. The original research questions were the following:

- What effects will teacher-to-student written feedback for independent practice problems and teacher-to-student/student-to-student oral feedback on oral student presentations of independent practice problems have on the quantity of corrective feedback received by students and teacher?
- What effects will teacher-to-student written feedback for independent practice problems and teacher-to-student/student-to-student oral feedback on oral student presentations of independent practice problems have on the quality of corrective feedback received by students and teacher?
- What effects will teacher-to-student written feedback for independent practice problems and teacher-to-student/student-to-student oral feedback on oral student presentations of independent practice problems have on students' attitudes toward mathematics?

In addition, it is important to note that I chose not to report the effects of feedback on oral student presentations of independent practice problems because I felt my research was becoming too broad, and I wanted to streamline my focus to help ensure my study would explore the effects of written feedback more thoroughly. Also, I decided to combine the first two original questions into one question and re-word it to focus on an important outcome, the quality of student work. I made no major changes to the third research question.

This study will attempt to answer the following research questions.

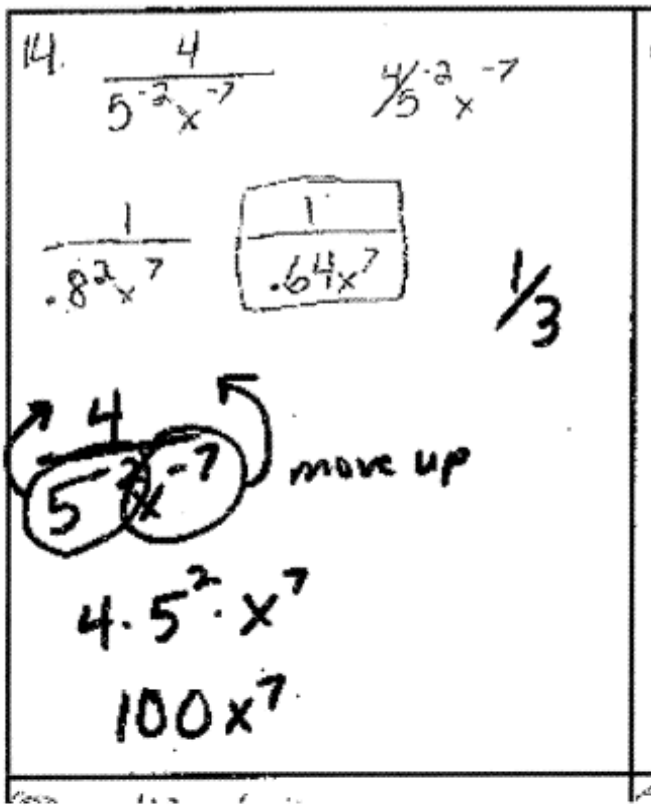
- What effects will teacher-to-student written feedback for independent practice problems have on the quality of student solutions to independent practice problems?
- What effect will teacher-to-student written feedback for independent practice problems have on students' attitudes toward mathematics?

Method

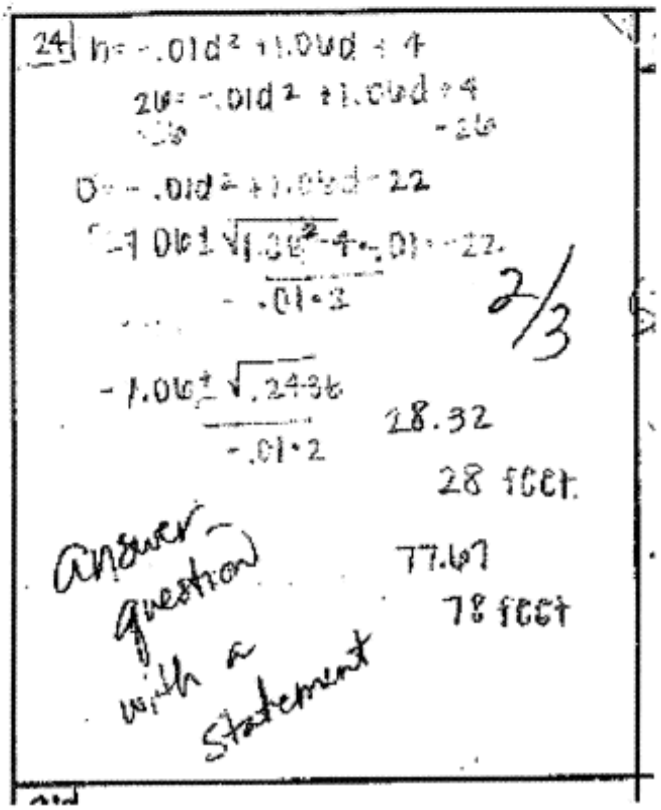
In order to gather information about my students' opinions regarding the importance of independent practice and their overall attitudes toward math, I asked them to complete a pre-research survey (see Appendix A) on February 20, 2007. My data includes the responses on this survey by 24 students. The survey consisted of five rating questions, each answered with one of the following responses: strongly agree, agree, neutral, disagree, or strongly disagree. These questions were followed by two open-ended questions. At the end of the research, on May 2, I asked the students to complete a similar post-research survey (see Appendix B) to enable me to assess the change in student perceptions about independent practice. The surveys included additional questions about oral presentations of solutions to independent practice problems. My data includes the responses of 23 students on this survey. I chose not to explore the effects of oral student presentations of independent practice solutions as a means to generate correct feedback due to insufficient research literature, weak data collection in that area, and a desire to explore the effect of written corrective feedback more deeply.

Following the completion of the pre-research survey during the last week of February, I implemented changes to my independent practice system. I developed an Algebra homework sheet (see Appendix C) for students to use for independent practice work throughout the remainder of my research. The homework sheet consisted of a set of 10 identical small boxes on

the front and 4 large boxes on the back. At the completion of a lesson, approximately 14 – 24 problems were assigned as independent practice to be completed before the next class period. All of the problems were to be done on the front except four to six problems that were designated for the back of the homework sheet using the four large boxes. The problems done on the back could be single-skill and computational or multi-step and complex in nature. Students were given a 3-point rubric (see Appendix D) defining how the problems on the back would be scored. The following class period students traded their assignments and graded the problems on the front side of the homework sheet. These problems were worth 1 or 2 points each, and the grader would only write how many problems were missed at the top of the sheet he or she was grading. The homework was returned to the owner, time was given for students to look at the graded work, and the assignments were handed in. Before the next class meeting, I would grade the problems on the back of the homework sheet using the 3-point rubric. The rubric was used to provide three types of feedback described in the literature review. Feedback was a score, a score with the correct answer, or a score with corrective comments. A student would earn 3 points if a problem's answer was correct and evidence was provided to support the answer. I combined the score on the front with the score on the back and recorded a final grade on the homework sheet. The difficulty level of the problems I assigned and my expectations for quality work both rose as my research progressed. Samples of student work were collected in late February and again in early May. A few samples of typical student work with written feedback follow.

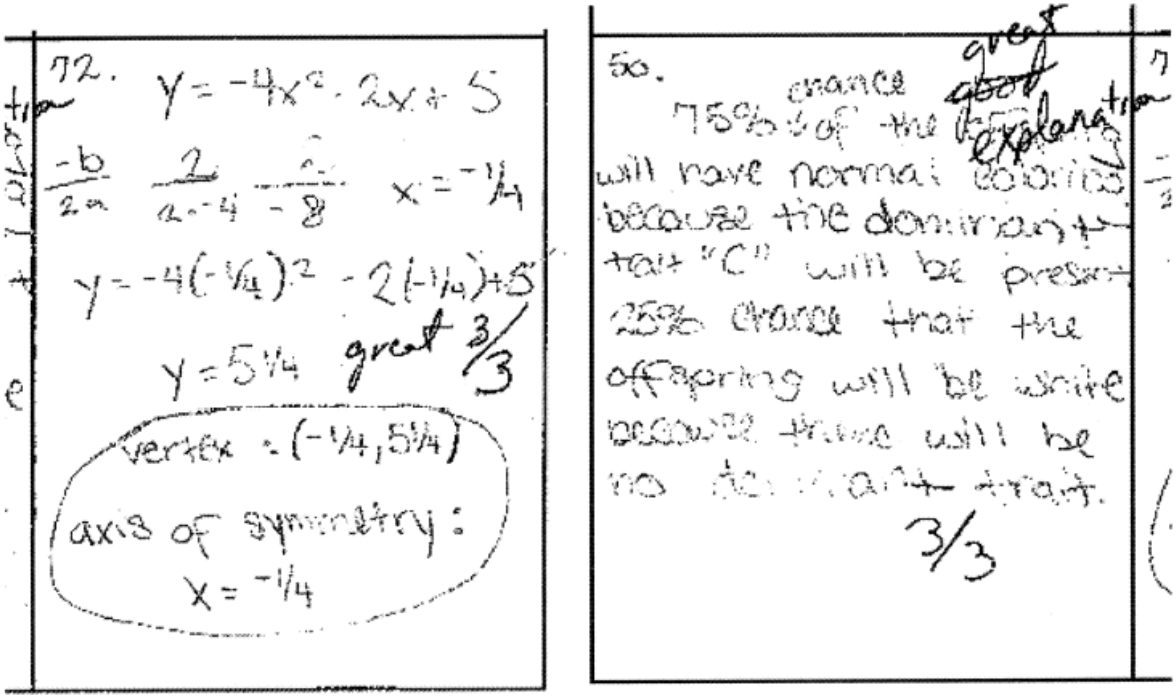


The first student sample shows work done on a calculation-based problem. Students earned a point of credit for demonstrating some understanding. I provided one possible way of solving the problem as feedback.



This student work sample is typical of a solution showing strong calculation ability but not containing an explanatory statement clearly answering the question asked.

These examples illustrate high quality solutions. The first problem required mostly calculation while the second needed an explanation to earn full credit.



Additional data were gathered by keeping a personal journal of my classroom observations throughout the research study. Since feedback for independent practice work was not given each day, I did not make a journal entry every day. Journal entries were made on average two to three times per week at the beginning of the study and less frequently toward the end. I recorded my thoughts about changes in student behavior and performance after implementing the changes to my independent practice routine.

Finally, student interviews (see Appendix E) were conducted during late April and early May. Seven students were interviewed and their responses recorded and transcribed. The interview questions assessed student beliefs about independent practice, confidence in presenting solutions to independent practice problems, and overall attitude about math.

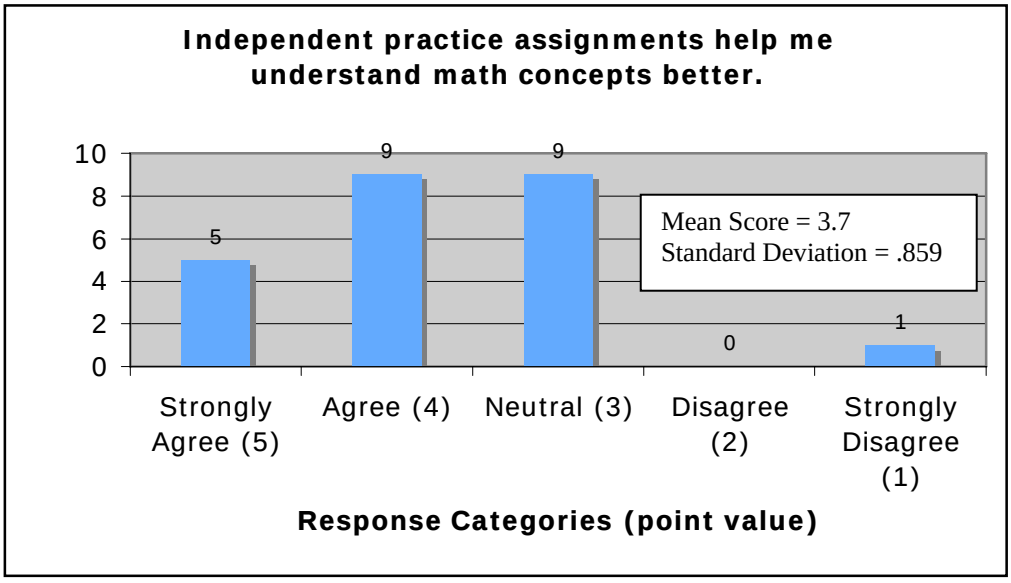
Findings

The qualitative and quantitative data I collected support my initial assertion that students would be positively affected by teacher-to-student written corrective feedback. The majority of the data collected addressed change in student attitudes; therefore, I will analyze these data first.

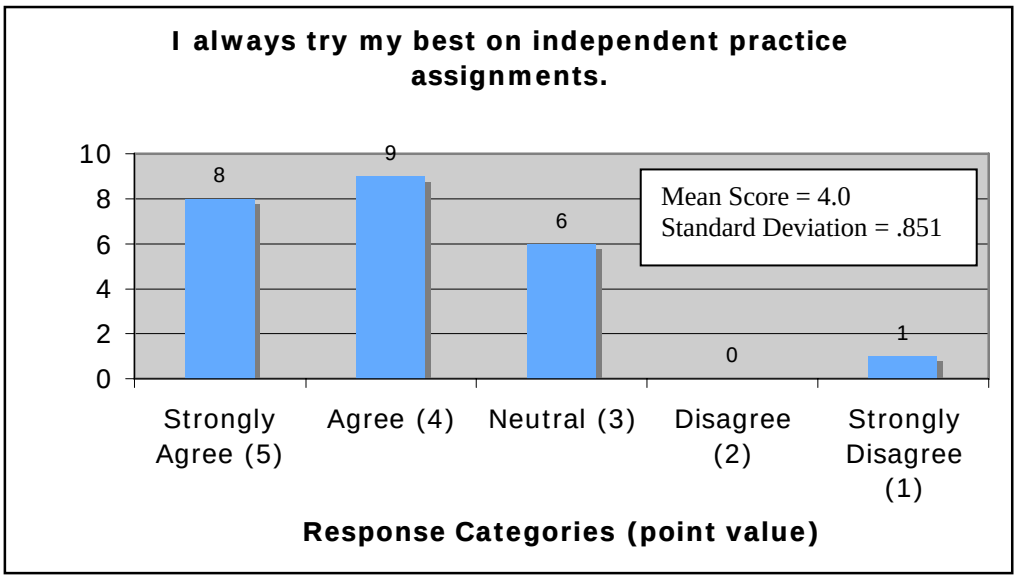
- **What effect will teacher-to-student written feedback for independent practice problems have on students' attitudes toward mathematics?**

My feedback study produced mixed results regarding this research question. Student responses to survey items and interview questions did not appear to describe the behaviors I witnessed and recorded in my personal journal. First, I will discuss the data from the pre- and post-research surveys and student interviews.

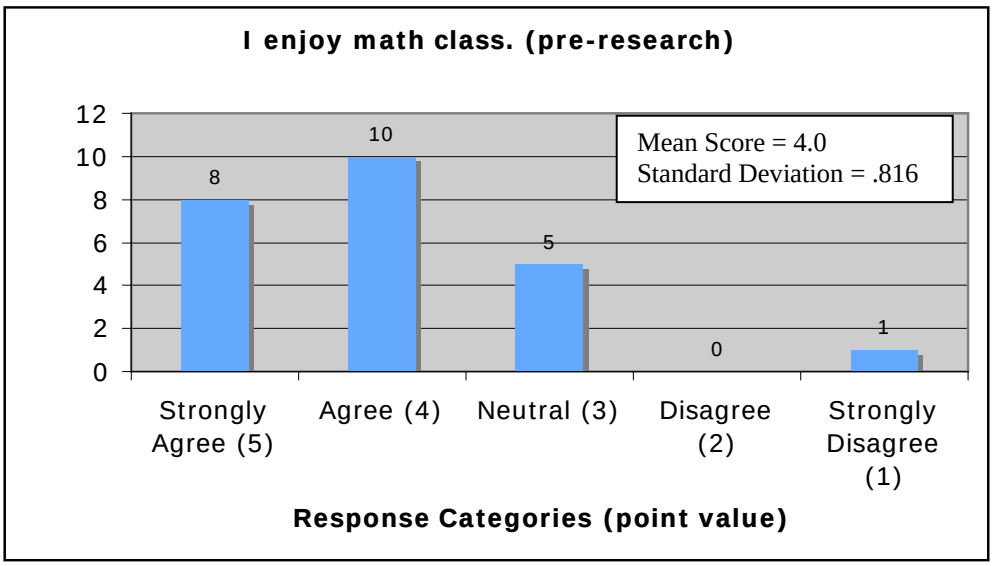
The pre- and post-research surveys showed that the students from my Algebra class participating in the study were largely high functioning students, motivated to learn. The following bar graphs help illustrate the type of student participating in the study. When asked to respond to the pre-research survey question "Independent practice assignments help me understand math concepts better", over half of the students either agreed or strongly agreed.

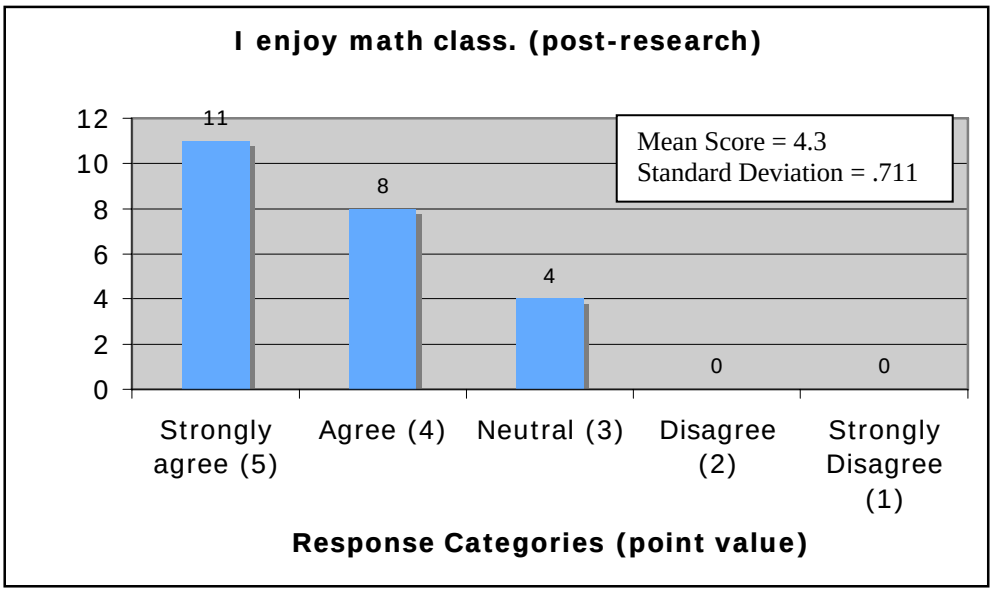


The pre-research survey question, “I always try my best on independent practice assignments.” elicited a similar response, showing nearly two-thirds of the students agreed or strongly agreed.

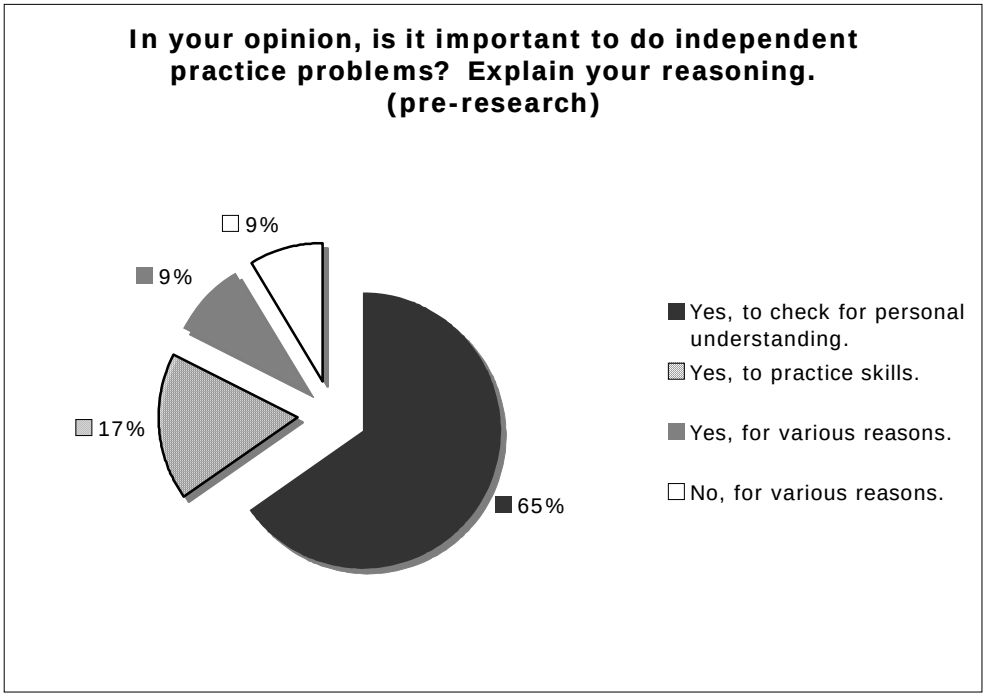


The next two charts compare the general feeling the students had about math prior to the study and after the study. Although the graphs show a minor shift toward strongly agree from agree, the small jump in the mean provides evidence that the surveys did not report a significant change in student attitude toward math.

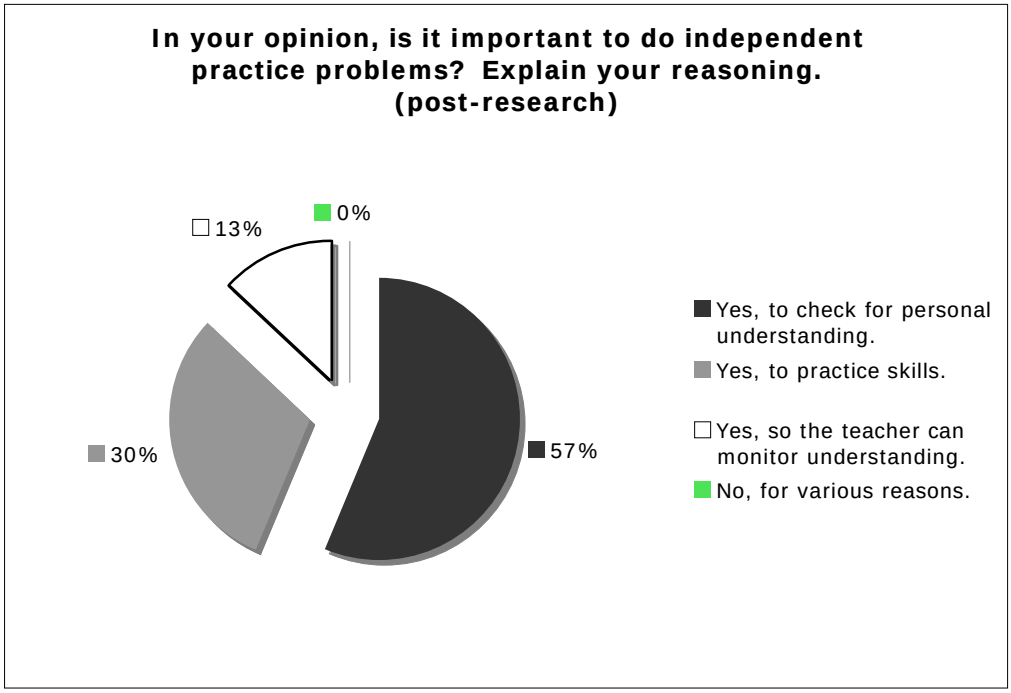




Another survey question, included on both the pre-research and post-research surveys, produced somewhat surprising results. When asked “In your opinion, is it important to do independent practice problems?” on the pre-research survey, more than 80% of the students thought independent practice was important. Sixty-five percent of the students surveyed indicated they believed independent practice was important as a check for personal understanding while 17% of them believed it was important as a means to practice skills.



On the post-research survey, this question produced similar results as 87% of students indicated they believed independent practice was important. It was interesting to see a shift away from the belief that independent practice was important as a check for personal understanding toward the belief it was a means to practice skills.



A major reason the student data didn't show significant growth had to do with the type of student in 8th grade Algebra. These students were confident and goal-oriented. The maturity of these students was a benefit to my work as they understood the importance of the research and were extremely cooperative with every activity of the study. Their attitude toward learning had a strong influence on the results of the survey and interview data I collected. There wasn't the same room for a change in attitude with these students as there would have been with a lower functioning class, such as one of my Pre-Algebra groups. Potentially, the corrective feedback itself could have had a more significant impact on the attitudes of less gifted math students thus producing data that represents a more obvious improvement.

My observations of changes in student attitude during the study differed significantly with the student responses on the surveys and interviews. Prior to the research student effort on independent practice varied greatly and effort on the most difficult problems was minimal. During the study, one of the most significant student gains from the corrective feedback was manifested in an increased level of concern exhibited by the students. This finding is supported by what I wrote in my teacher journal, "I have (also) noticed an apparent increase in the level of concern toward independent practice assignments. When I enter the classroom, students are often very busy comparing answers and discussing solutions" (February 27). The increased level of motivation enabled students to engage word problems in a way that I had not seen all school year. This observation was also supported by my April 3 journal entry.

> I was surprised today at the engagement I observed with the word problems I assigned today. In the past, I have been reluctant to assign many word problems because I didn't want to spend the time necessary to have a productive discussion about the problems. I have found that since I have changed my independent practice homework sheet's format and the way I have been assessing the homework (giving feedback) that I have wanted to assign word problems that require deeper thinking by the students and me. I have been stressing the importance of application much more than I had in the past when I would take an easier route and stick to mainly the skill and drill practice.

In addition to the corrective feedback increasing student concern and motivation, student oral presentations of solutions, originally planned to be part of this study, helped as well. On March 7 I wrote in my journal, “I am pleased with the quality of work shown by the students presenting. My initial feeling is that these presentations will further raise the level of concern and commitment to quality effort and work in Algebra class.”

The process of providing feedback had a profound impact on my teaching practices and attitude toward teaching the course as well. The information I gained from closely examining student work on a regular basis enabled me to identify weaknesses in the students’ math skills and helped shape the planning of future lessons. Also, I was able to identify struggling students early therefore having the opportunity to provide intervention if necessary. Also, exemplary work was discovered so those students could be recognized. In addition, the overall effect of the wealth of information I received from the feedback process was an improvement in my attitude. I found myself having a fresh, rejuvenated approach to teaching. I was willing to push students harder than I had before because I felt like I was more in control of the course.

- **What effects will teacher-to-student written feedback for independent practice problems have on the quality of student solutions to independent practice problems?**

The results of my study showed that corrective feedback is effective for improving student performance but not for the reason I expected. Prior to the study, I thought that if I provided specific corrective feedback on independent practice problems the students would benefit from the information about errors made which would improve student performance. Unfortunately, time constraints limited the amount of detail I could provide in the feedback for each of the 30 students in class. The resulting feedback was not as remedial as I had originally wanted, especially for use by lower-ability students. There were many instances in which

minimal marks were given, leaving only a score for the problem or the score with a correct answer as feedback. This assertion was supported by a response from a struggling student during an interview. The question was “Do you read the comments written on your independent practice assignments? If so, are the comments useful for you?” She replied, “I read the comments but I don’t feel like they are useful for me because it doesn’t tell me enough about what I did and what I did wrong or right.” When a student did find feedback helpful, it was usually to make a minor correction. The interview response “I think they are definitely useful. I can say, ‘oh, that should be negative’ or things like that.” for the same interview question further illustrates my contention that the feedback I provided was helpful to those who already had a solid understanding but made the occasional minor error. Additional activities would have been necessary, such as repeat-until-correct process or a more thorough explanation, for the feedback comments themselves to be useful for all students (Bangert-Downs, Kulik, Kulik, and Morgan (1991) as cited by Marzano, Pickering, and Pollock, 2001).

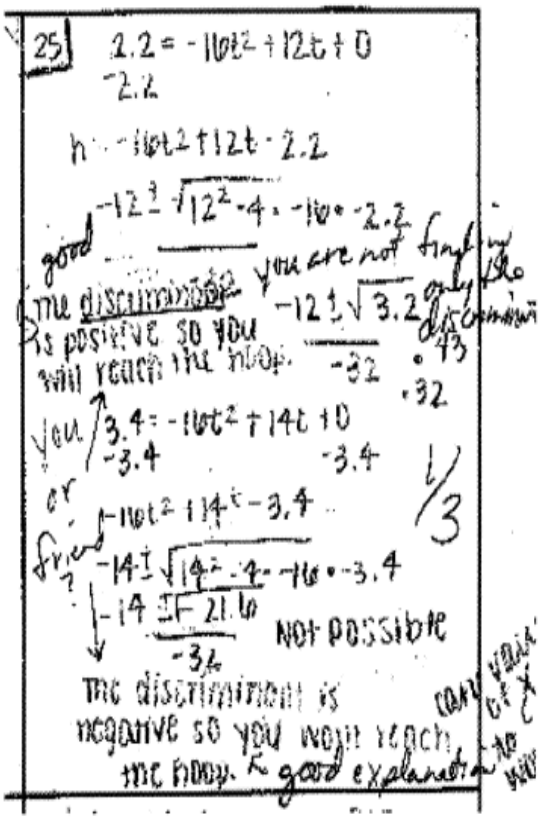
As I observed student behaviors during work on independent practice problems, and as I examined written student work, I did see a significant improvement in quality. The improvement I witnessed tied closely to the improvement in student attitudes. I believe that the attitude change improved the work quality due to the type of problem students were solving. For the first time during the year, students were willing to put forth a solid effort on difficult word problems. I consider a correct solution to a difficult word problem of higher quality than a correct solution to a single–step, calculation problem. This belief is supported by the May 2 journal entry:

> Not only were the students beginning to solve fairly complex problems, they were learning how to write out thorough explanations within their solutions (for the first time). Pre-teaching and modeling are key here. I found that the first attempts at writing up a solution were poor due to a lack of understanding of what constituted a good write-up. When the students clearly understood what to do (written feedback was instrumental

here) most students were willing to put forth a strong effort to produce a very thorough solution.

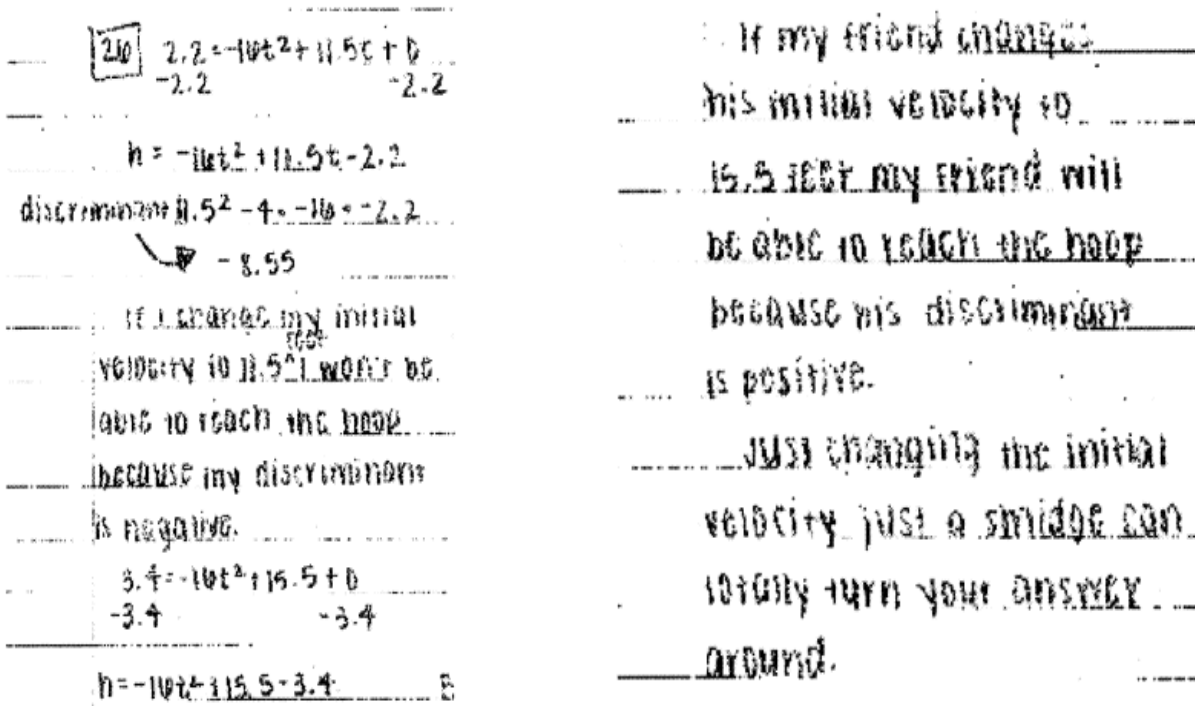
This change in work quality motivated me to continue to push students to produce complete solutions on even tougher problems.

Evidence of an improvement in student work quality was illustrated by student work. Near the end of my study, I assigned students a set of independent practice word problems on which I provided written feedback. The following class period I asked students to use the feedback to help solve a set of similar word problems. The following student work sample is typical of the changes I witnessed in solution quality.



This student work sample (left) showed excellent calculation skills but was not written in an organized fashion with a clear, concise explanation of the answer. I made the decision to have the students complete a similar set of practice problems as a sort of "repeat-until-correct" feedback scenario. The same student produced the following work on this new assignment. In addition to this written feedback, all students received some general verbal feedback addressing common solution weaknesses.

The second attempt shows a deeper understanding of my expectations for a quality solution which were communicated to the student through the feedback written on the first assignment.



20 $2.2 = -16t^2 + 11.5t + 0$
$-2.2 \qquad -2.2$

$h = -16t^2 + 11.5t - 2.2$

discriminant $11.5^2 - 4 \cdot -16 \cdot -2.2$

-8.55

If I change my initial velocity to 11.5^1 would be able to reach the hoop because my discriminant is negative.

$3.4 = -16t^2 + 11.5t + 0$
$-3.4 \qquad -3.4$

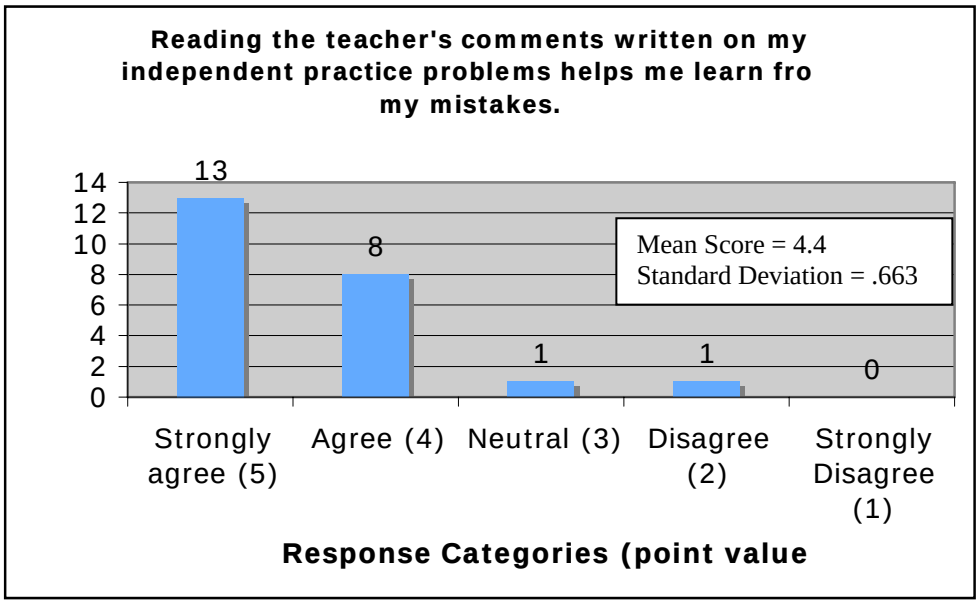
$h = -16t^2 + 11.5t - 3.4$

If my friend changes his initial velocity to 15.5 then my friend will be able to reach the hoop because his discriminant is positive.

Just changing the initial velocity just a smidge can totally turn your answer around.

The student made changes to her solution structure by clearly labeling work and by providing a clear explanation of her solution in complete sentences.

An additional finding that lends support to the connection between feedback and improved quality of student work came from student responses to a post-research survey item. Students were asked to respond to the statement “Reading the teacher’s comments written on my independent practice problems helps me learn from my mistakes.” Twenty-one out of the twenty-four students’ surveys either agreed or strongly agreed. These results lead me to believe that improvement in student work was directly affected by feedback.



See appendix F for additional survey results.

Conclusions

The results of my study compared most closely with the research performed by Bangert-Downs, Kulik, Kulik, and Morgan (1991) as cited by Marzano, Pickering, and Pollock (2001). In their study they found that only repeat-until-correct and written explanations produced the most substantial gains in learning. While I agree this is true, I am convinced that any feedback given regularly, including right/wrong and correct answer only feedback, can lead to improved attitudes for students and teachers. As a result of improved attitudes toward mathematics, the quality of work can improve as well.

Implications

As a result of the findings of my study, I plan to continue to provide feedback to my Algebra students in a similar fashion although some changes will be made. I will continue to use the independent practice homework sheet and not make radical changes to its design. The more I practice the art of providing feedback, the more efficient the process will become; therefore, it

will be possible to be more specific. I have considered producing a student key of shorthand symbols to help students decode abbreviated comments for errors in rounding, labeling, reducing, and other common mistakes.

I am also considering expanding this practice to my Pre-Algebra classes. If I do this, I will need to develop some type of rotation schedule to make giving feedback to over 100 students feasible. For example, I could give feedback to one class each day and continue this type of rotation continuously. I am not certain that doing this would provide enough feedback for each student. I have also considered targeting certain students for feedback but I must be careful with student perception of being “singled out for the dumb group.”

I encourage others to give written feedback to students on independent practice work as often and in as much detail as time permits. Previously, I had the misconception that written feedback must be detailed for it to be effective, and therefore I rarely gave any. Through my research, I found that any feedback you can give is worth the effort. Keep in mind that the feedback you provide can improve learning in multiple ways. Not only can it be instructive in nature, but it can improve attitudes of students and teachers as well. I suggest starting small by picking one class to pilot a feedback study. As you get a feel for how much feedback (in detail and frequency) works for you, expand your practice to other classes.

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Appendix A
Pre-Research Student Survey

Please give an honest response for each question.

Survey Question	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1. Independent practice assignments help me understand math concepts better.	**1**	**2**	**3**	**4**	**5**
2. I always try my best on independent practice assignments.	**1**	**2**	**3**	**4**	**5**
3. When students present solutions to problems it helps me understand math concepts better.	**1**	**2**	**3**	**4**	**5**
4. I am comfortable presenting solutions to the class.	**1**	**2**	**3**	**4**	**5**
5. I enjoy math class.	**1**	**2**	**3**	**4**	**5**
Please answer the following:					
6. Describe what you do after an independent practice assignment has been handed back to you.					
7. In your opinion, is it important to do independent practice problems? Explain your reasoning.					

Appendix B
Post-Research Student Survey

Please give your honest response for each question.

Survey Question	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1. I always read the comments from the teacher on my independent practice problems.	**1**	**2**	**3**	**4**	**5**
2. Reading the teacher's comments written on my independent practice problems helps me learn from my mistakes.	**1**	**2**	**3**	**4**	**5**
3. Presenting solutions to the class helps me learn from my mistakes.	**1**	**2**	**3**	**4**	**5**
4. The comments made during a **classmate's** presentation of a solution help me understand math concepts better.	**1**	**2**	**3**	**4**	**5**
5. The comments made by classmates while **I** present a solution help me understand math concepts better.	**1**	**2**	**3**	**4**	**5**
6. Watching students present solutions helps me understand math concepts better.	**1**	**2**	**3**	**4**	**5**
7. I am comfortable presenting solutions to the class.	**1**	**2**	**3**	**4**	**5**
8. I enjoy math class.	**1**	**2**	**3**	**4**	**5**
Please answer the following:					
9. Describe what you do after an independent practice assignment has been handed back to you.					
10. In your opinion, is it important to do independent practice problems? Explain your reasoning.					

Appendix C
Algebra Homework

Name: _____

Period: _____

Assignment:

Date: _____

Appendix C (continued)

Appendix D

Algebra Spring 2006-07

Independent Practice

Grading Rubric

Points Earned	Description of Work
0	no meaningful work is shown
1	some understanding is demonstrated work is incomplete and answer is incorrect
2	work is complete but there is a minor computational error resulting in an incorrect answer **or** answer is correct but work leading to the answer is incomplete.
3	work is complete and the answer is correct

Appendix E
Post-Research Student Interview Questions

1. How much time on average do you spend on independent practice assignments?

2. What do you think is the purpose of independent practice in math?

3. Do you read the comments written on your independent practice assignments? If so, are the comments useful for you?

4. Do you like doing problem presentations? Why or why not?

5. Are the student comments made while you are presenting a solution helpful? If so, explain how they help you?

6. Has your attitude about presenting solutions to the class changed during your 8^{th} grade year?

7. What do you like best about math? What do you like least about math?

8. What makes math easy or difficult for you?

9. Have you ever had a really bad experience with math? If so, what happened?

10. What could I do to help you with your math?

Appendix F
Additional Charts