

CRISS IMPROVES MATH COMPREHENSION

Analyzing Math Errors Through Writing

Beverly Krusz, an eighth grade algebra teacher in Juneau, Alaska, sent us a story from her classroom.

In algebra and pre-algebra, I have always expected my students to check and correct their work by redoing problems they missed. For some, this involved doing an analysis of their mistakes; but, for most, it meant a shrug of, "Oh, well, I missed five problems. Guess I'll do them over and hope they're right." They were reluctant to change this habit because of the time involved in analyzing their errors. Now I have tried something different. I quickly check their tests and quizzes and then give students an opportunity to raise their grades. They have to circle their specific errors on the test in red. Then, on a separate piece of notebook paper, they write in words what they did wrong and explain how to correct it. They also have to redo the problems correctly. Then, the students staple the explanation paper to the test and submit the work to me again for an adjustment on their grades.

Example: Test problem:

Solve for x and y : $3x - y = 8$; $y = x - 2$

Student's original incorrect answer on test:

$$\begin{array}{r} 3x - y = 8 \\ \underline{-x + y = -2} \\ 2x = -6 \\ x = -3 \end{array} \quad \begin{array}{r} -3 + y = -2 \\ \underline{-3 \quad -3} \\ y = -5 \\ (-3, -5) \end{array}$$

Student's correction:

$$\begin{array}{r} 3x - y = 8 \\ \underline{-x + y = -2} \\ 2x = 6 \\ x = 3 \end{array} \quad \begin{array}{r} -3 + y = -2 \\ \underline{+3 \quad +3} \\ y = 1 \\ (3, 1) \end{array}$$

When I added -2 to 8, I got -6 instead of 6 so it made both parts of the answer wrong.

Bev asked her students to react to this process of identifying and correcting their own errors, using a "fast write."

I like the new way of doing the tests; even though it takes a little longer. I like that we can redo the problem and learn how to do it and what I did wrong. The old way I really didn't know how to do it any better for the next time, nor did I get any better grade.

I like the way we do it now. You have to look back into the problem and see what you did wrong. Many times I see my mistake (many times dumb ones) and I try to be more aware of those kinds of problems or things in upcoming problems. I think people will learn more with the way we do it now.

Bev adds:

Having students write explanations does take time for me to read, but I feel it is worth it. A side benefit is the math discussions that occur among the students. I organize my students into groups of four. When returning their papers, I don't provide them with a list of answers so there is a lot of comparing of answers and work among members of the group. This is especially helpful to the student who skipped a problem originally because he didn't understand it. Now this student has to learn how to do it in order to write the explanation. Not only does the learner benefit, but so does the student who explains it.

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