

A Student-Friendly Rubric for Writing about Math

Summary: Teachers know that in math instruction it's effective for students to write about their mathematical thinking and that in writing instruction it's effective to use clear, student-friendly rubrics. In an article for *Teaching Children Mathematics*, a mathematics education instructor at Bucknell University and a classroom teacher discuss a useful way to combine the two practices.

Practical Applications

The teacher conducted action research in which she adapted a rubric (original rubrics from Illinois State Board of Education available at <http://www.isbe.state.il.us/assessment/math.htm>) with focuses on three areas:

- Understanding of mathematical concepts
- Planning and using strategies to solve a problem
- Explaining mathematical actions and thinking through writing

Each category had a possible score of 1 to 5. To make the language student-friendly for her 3rd graders, the teacher “replaced the pronoun ‘it’ with ‘the problem’... and the phrases ‘do the problem’ and ‘work it out’ with ‘solve the problem’,” as well as other steps to fit her classroom. To get the students familiar with the rubric, the teacher took a series of actions including:

- Grading student work using the rubric and returning it
- Having class discussions about sample student work and grading it using the rubric together
- Having individual conferences with students with questions focused on the rubric

The teacher then gave students five identical problems and had them utilize the rubric in solving them, one a week, with conferences, etc. in between. She specifically followed one student that was representative of below-average, average and above-average student groups. What she found was that:

- There was significant improvement in all students’ ability to explain their mathematical thinking over the course of five weeks. Below-average and average students took longer than their above-average peer (all 5 weeks for the former) to get familiar with the rubric and improve.
- The individual conferences were key for the improvement of the below-average and average students.
- Student became more confident learners and were better able to catch mistakes as well as use precise mathematical vocabulary to explain their reasoning as a result of the rubric.

Conclusion and Citation

While having students write about math is a known strategy, the thoughtful and deliberate use of a student-friendly rubric can deeply enhance the impact of having students explore and explain their mathematical thinking through writing.

Breyfogle, M. & Parker, R. “Learning to Write about Mathematics.” *Teaching Children Mathematics* (Sept. 2011), pp. 91-99. <http://bit.ly/pgI2St> (subscription only).