

A FRAMEWORK FOR ANALYZING STUDENTS' MATHEMATICAL WRITING

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This study proposes a framework for analyzing students' mathematical writing to promote students' thinking in mathematics classroom.

The educational value of engaging students in mathematical writing has been explored in a variety of research. It helps students, for example, learn and externalize their thinking and feeling about mathematics. This study focuses on promotion of students' thinking through mathematical writing.

There has been much research focusing on writing activities, in particular, journal writing. It is necessary for students, however, to write mathematically in the process of classroom activity, as well as to look back their own thinking at the end of classroom activity. Writing activities should be incorporated into a whole classroom activity.

In this study, two dimensions of mathematical writing are identified. The first dimension is "aspect of mathematical thinking" (i.e. writing in the context of learning mathematics). The second dimension is "aspect of communication" (i.e. writing for and about someone's thought). Each dimension has some "modes" and "levels". The "modes" are used for describing what students write. The "levels" are based on the prescriptions of what teacher wants students to write.

Students' writing is expected to progress along with each of the two dimensions. With respect to the first dimension, students' writing progresses to sophisticated one. On the other hand, with the second dimension, students become more reflectively through mathematical writing. In other words, students' mathematical thinking can be promoted through mathematical writing.

Implications of the framework for teaching are also discussed. The framework can be used for developing worksheets and for planning instruction in the classroom. Classroom activity can be enriched by using mathematical writing.

Some examples of students' writing will be shown in the presentation.

References

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