

TEACHERS CREATE MATHEMATICAL ARGUMENTATION

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The purpose of the present study is threefold: (a) to compare the kinds of mathematical argumentation that different teachers create in mathematics classrooms; (b) to explore how teachers' mathematical argumentation develops over the school year; and (c) to examine the way teachers change their mathematical argumentation under different conditions.

The importance of enhancing mathematical argumentation in the classrooms has recently been emphasized by researchers and educators (e.g., NCTM, 2000). There is also rich research showing how students construct their mathematical argumentation. In addition, a few studies reported the changes in students' mathematical argumentation under different instructional conditions (e.g., Kramarski & Mevarech, 2003). Yet, little is known at present on issues relating to the kinds of mathematical argumentation that teachers create in mathematics classrooms. Given the important role of the teachers in developing students' mathematical reasoning, it is essential to explore how teachers create mathematical argumentation, and how they change (if at all) their mathematical argumentation over the year, or when they implement different instructional methods.

To address the above issues, we observed two mathematics teachers over one academic year. Both teachers are female, having the same level of education (B.Ed.), and similar years of experience (about ten years). They both taught eighth grade classrooms in the same school. Once a week, we video-taped each teacher over one study period. During the year, from time to time, as teachers thought appropriate, they implemented metacognitive instruction method called IMPROVE (Mevarech & Kramarski, 1997) to which they were introduced during an in-service training. The video-tapes were analyzed using qualitative methods. Teachers' mathematics argumentation was classified into categories on the basis of these data.

The findings show interesting differences between the two teachers in the way they create mathematical argumentation. Furthermore, the teachers were quite consistent in the way they use mathematical argumentation in the classroom. Some differences were found, however, when they implemented the IMPROVE method. The advantages and limitations of such studies will be discussed at the conference, as well as the theoretical, methodological, and practical implications.

References

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- National Council of Teaching Mathematics (2000). *Principles and Standards for School Mathematics*, Roston, VA.