

DIRECT OR INVERSE RATIO PROBLEMS- DOES IT REALLY MATTER?

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In recent PME papers we described a workshop that was specifically designed for enhancing teachers' knowledge of students' ways of thinking. This workshop focused on students' misconceptions, possible incorrect responses and their sources and presented theories and research findings concerning students' ways of thinking (e.g. Klein & Tirosh, 2000).

During the workshop it became obvious that teachers were using and teaching almost only mapping tables as means for solving specific word problems, without considering the appropriateness of such a procedure. They believed that such a technical and automatic way always works well. We challenged the automatic use of mapping tables by presenting participants with both direct and inverse ratio problems. Most teachers did not identify inverse ratio problems as such and consequently arrived at incorrect solutions when using mapping tables. We used the teaching by conflict method (Swan, 1983) in order to raise teachers' awareness of the correct use of the mapping tables procedure.

In the short oral presentation we will describe the problems we used during the workshop, teachers' responses and their beliefs. Our data supports research findings that change in teachers' knowledge without change in teachers' beliefs is not significant. After the workshop teachers beliefs were only slightly changed and they still supported the automatic use of mapping tables. These findings are in line with former research demonstrating inflexibility in teachers' understanding of ratio concepts (Klemer & Peled, 1998).

References

- Klein, R. & Tirosh, D. (2000). Does a research based teacher development program affect teachers' lesson plans? Proceedings of the Twenty fourth International Conference for the Psychology of Mathematics Education (vol. 3, pp. 151-158). Hiroshima, Japan: Hiroshima University.
- Klemer, A. & Peled, I. (1998). Inflexibility in teachers' ratio conceptions. Proceedings of the 22nd International Conference for the Psychology of Mathematics Education. (Vol. 3, pp. 128-134). Stellenbosch, South Africa: University of Stellenbosch.
- Swan, M. (1983). Teaching decimal place value: A comparative study of "conflict" and "positive only" Approaches. Proceedings of the seventh International Conference for the Psychology of Mathematics Education, 211-216. Shoshon, Israel: Weizman institute of Science.

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