

Estimation - Research and Curriculum Development

Thesis for the Degree of Doctor of Philosophy

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Abstract

Although it has been often recommended that estimation should be included in the regular school maths curriculum, very little seems to have reached the classroom. Research on students' concepts and learning difficulties is also very limited.

Therefore this thesis had as its main purpose to develop estimation topics suitable for junior high school. In particular we set out to:

- determine topics in addition to those one or two mentioned in the literature, which should be included in the subject of estimation;
- investigate student, preservice and inservice teacher behaviour in estimation tasks;
- produce a short unit on estimation to be used in the junior high school maths programme;
- investigate the influence of a short treatment on sixth and seventh grade students.

As a result of the research undertaken, we found that:

- students (before treatment) and also preservice and in service teachers have considerable difficulty with estimation tasks;
- in general, inservice teachers performed better than the preservice teachers (probably due to their experience), who performed better than students before treatment (probably due to age);
- students after treatment performed significantly better than before and, in some of the tasks, even better than the teachers, suggesting that even a short treatment can be very effective.

The unit developed is now part of the junior high school curriculum, but research on estimation needs to be continued in order to understand better its unique learning characteristics and the attendant problems.