Exploring teaching traditions in mathematics

9. General Didactics

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Abstract
The background to the actions that take place in classrooms are formed during a long time period. This kind of content formation is sometimes referred to as the emergence of teaching traditions, which can be defined as “regular patterns of choices of content which have been developed over time within a specific subject” (Almqvist et al., 2008). Content patterns form a certain education culture which constitutes what is considered as adequate teaching and relevant content. Exploring teaching traditions can provide knowledge with respect to what values a specific educational culture holds.

Within the Swedish field of science education, there has been much research on teaching traditions during the past decade. The results reveal three established teaching traditions in science education: an ‘academic tradition’, an ‘applied tradition’, and a ‘moral tradition’ (Marty et al., 2018). In mathematics education, the focus of this study, such typology of teaching traditions has not yet been formed. Considering mathematics as an academic discipline within the STEM field, it is reasonable to assume similar, but not identical, teaching traditions as in science. During the last decades, there has been a heavy emphasis on competencies within mathematics education, which has affected teachers’ everyday practice. In addition, the focus on mathematical literacy has the potential to impact teaching traditions in mathematics. The aim of this study is to identify teaching traditions in the Swedish mathematics curriculum and contrast these traditions with those developed within science. The study is embedded in Chevallard’s theory of transposition of knowledge, where the curriculum is regarded as the step between the transposition from scholarly knowledge to the taught knowledge in the classroom.

This study is a first step towards a more comprehensive conceptualization of teaching traditions in mathematics. The mathematics curricula with commentary materials for primary and upper secondary school will be analyzed, which allows comparisons between compulsory courses and courses that prepare for university studies. The analytical tool is based on Roberts (1982) curriculum emphases and on the teaching traditions developed within science (Marty et al., 2018). A broader view will however be adopted to ensure that traditions unique for mathematics are also included. One such example is the analysis of emphases on literacy.

Our preliminary analysis indicates a pronounced emphasis on abilities in mathematics whereas in science knowledge is emphasized. The final results will consist of a conceptualization of teaching traditions in the Swedish curricular materials in mathematics. These results provide a means to evaluate mathematical practices with a more comprehensive scope than mathematical competencies. This is relevant for all Nordic countries considering their structural similarities of policy documents.