Which mathematical contents make a good a primary teacher? Identification of specific contents and levels of school-related content knowledge relevant for the professional development of pre-service teachers

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The poster will be showing first ideas regarding the professional development of mathematics pre-service primary teachers. In order to adapt university courses in a way that they support a thorough development of school-related content knowledge relevant for future primary school teachers, specific mathematical contents and their levels need to be defined. On the basis of various interviews with experts related to teacher training (professors, school teachers and mentors) and corresponding curriculum analyses, beneficial structures and contents of a lecture "Introduction to Arithmetic" are being determined.

Keywords: pre-service primary teacher education, professional development, school-related content knowledge, Arithmetic, PSI.

OVERALL OUTLINE OF THE PROJECT

Research in teacher professional development has shown that content knowledge cannot always be linked to its didactics or general pedagogical knowledge, which could eventually result in inadequate teaching practices (Wahl, 2006). This lack of coherence is especially promoted by a strict division of university courses into exclusively content related lectures and rather detached didactical courses (Blömeke et al., 2004). For mathematics, the relevance of combining both kinds of knowledge required for teaching has been shown empirically (Blömeke et al., 2008), with COACTIV emphasizing the special role of content knowledge for the teaching of mathematics (Kunter et al., 2011).

Studies focusing on the dimensions of professional knowledge in school and university settings (e.g., COACTIV, KiL) have shown that teachers' professional knowledge can be divided into different types of content knowledge (knowledge of the curriculum in school, content knowledge at university level and school-related content knowledge). However, they fail to address what specific mathematical contents are required for teaching mathematics successfully.

The quality initiative project at the university of Potsdam (PSI) tries to close this gap in research, focusing on desired contents and levels of mathematical content knowledge in the course “Introduction to Arithmetic” for primary teachers from two perspectives: A curriculum analysis of school curricula as well as university curricula serves as a descriptive instrument. In a complementary normative approach, experts in teacher education are being interviewed. From that, the overall concept of which differentiation is necessary in teacher training courses at university is derived.

In the semester to come, the current lecture “Introduction to Arithmetic” will be adapted to implement the findings of the previous interviews and analyses. Afterwards, a thorough evaluation will show which further adaptions are necessary. The lecture will then again be redesigned.

The poster will show the underlying concepts of a suitable school-related content knowledge concept and will introduce first ideas of which mathematical contents and actions can lead to a better development of such. It is also meant to serve as a prompt for discussions and will ideally help to acquire even more experts in the field of primary teacher education in mathematics.

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