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av

Marlene Sjöberg

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Abstract

Title: Conversations about science teaching experiences – Collegial learning and development of professional knowledge for science teaching in teacher education and the teaching profession

Author: Marlene Sjöberg

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The overall aim in this thesis is to explore professional conversations about science teaching experiences, both in an educational setting with student teachers, and in a local professional development project with a science teacher team, regarding possibilities for developing professional knowledge in a collegial setting.

Two empirical studies were conducted. Study 1, focusing on student teachers' conversations in the educational setting of a one-year complementary teacher education program for student teachers with an academic degree in science, technology and/or mathematics. The empirical material was collected from non-compulsory additional meetings involving three to six student teachers, which were audio-recorded. In Study 2, the empirical setting was a collaboration with a science teacher team and researchers in a two-year project for local professional development, in which four science teachers at a lower secondary school met for teaching planning once a week. Study 2 includes four of these meetings, which were audio-recorded, at which the science teachers focused on both designing and following up on a summative test in the eighth grade involving the human body. Both studies were designed to establish reflective conversations about science teaching and student learning, including considerations for teaching a specific science topic, based on teaching experiences in science classrooms.

A phenomenographic approach was used to identify qualitative differences in the conversations. In addition, the content of the student teachers' reflective conversations about teaching experiences was further investigated in terms of pedagogical content knowledge (PCK).

The findings show how professional conversations about science teaching experiences for teaching build on two central and interdependent dimensions: the qualitative content of the discussion, and the establishment of a common object of discussion. Collegial development of professional knowledge for science teaching by way of conversations requires contemporaneity and interplay in both dimensions of the conversation. The varying character of discussions when it comes to the interplay between their central dimensions implies varying possibilities for learning and development, for both individuals and their colleagues. This thesis highlights challenges in establishing structured and reflective conversations based on science teaching experiences, which implies the importance of offering student teachers possibilities to participate in conversations, with the aim of preparing them for future professional development. In the context of teachers' professional development, the contemporaneity in complex content and interaction needs to be considered and not taken for granted, in order to contribute to the possibilities for developing professional knowledge in a collegial setting for teaching science.