

Professional development research on the level of facilitators

Within the last decades, the design of and the research on professional development (PD) programs for mathematics teachers have gained increasing attention for various reasons.

There is a wide consensus that the quality of these PD programs depends to a large extent on the quality of its facilitators. Therefore, the qualification and different roles of facilitators have recently moved into the focus of mathematics education researchers' attention. Studies recently began to investigate the dispositions and practice of facilitators. Thus, few is known (especially content-related) about an effective professionalization of facilitators, but also in particular about their norms, dispositions, practices and their learning processes in conducting PD courses.

Therefore, this minisymposium aimed at gathering content-specific and more generic approaches on facilitators' research including models for characterizing multipliers profiles and their behavior in practice. Furthermore, additional promising prospects with regard to their professionalization and their investigation were discussed.

Five talks were contributed to gather first insights towards the goals:

Joyce Peters-Dasdemir and Bärbel Barzel (Duisburg-Essen) presented a model for profiling multipliers in mathematics education. Following the research question "What are the relevant aspects to describe the conditions and jobs of people who initiate, conduct and accompany processes of PD?" they developed (based on facilitators' competences) a guideline for the qualification of and the research on facilitators. An interdisciplinary competence model for teachers and trainers in adult and continuing education was adapted to fit mathematic facilitators. It was enriched by relevant and content specific aspects of mathematical education on the classroom and PD level.

Birgit Griese (Paderborn) focused on the professional development of teachers induced by their participation in a professional learning community (PLC). Thereby the incidents of professional growth are investigated which are reported by members of a PLC originating from a PD course on inferential statistics. The presented case study of a teacher showed evidence of reflection, a focus on student learning and that the incidents of professional growth concentrate on how he advanced in terms of pedagogical content knowledge (PCK).

The talk of **Birte Pöhler** and Susanne Prediger (Dortmund) was guided by the research question: "How can typical practices of facilitators be characterized when coping with the job *adequately dealing with participants' contributions*?" For handling this research question the model of content-related teacher expertise is lifted to a model of content-related facilitator expertise. Only the use of certain pedagogical tools is probably not decisive for the success of PD courses.

This finding was exemplified via a case study of a facilitator of a PD course on language-responsive mathematics teaching. Instead, it has been shown that facilitation practices are more complex due to underlying orientations, categories and in particular goals. For reconstructing these underlying aspects, it is relevant to take facilitators' self-reflections (for example in post-PD reflection sessions) into account.

Facilitators' decision making and gaining insights on this topic were focused in **Ralf Nieszporek's** (Paderborn) talk. Therefore, their attitude towards PD courses on statistics and their choice of learning targets were in the focus. Furthermore, the way how the facilitators justify their choices of goals has been emphasized. A case study illustrated on the one hand that facilitators' orientations on PD courses, lessons and their understanding of the role of examples highly influences a facilitators choice of learning target. On the other hand, the case study showed that the kind of knowledge and the competences development a facilitator primarily fosters differs when addressing the participants on PD course or on the classroom level.

Due to **Abraham Arcavi's** (Weizmann Institute of Science, Israel) expertise in the field of PD research, the minisymposium was enriched by his description and reflection of his work with and experiences as a facilitator. He elaborated which aspects are relevant to be considered in PD programs for facilitators and how they can be implemented in a qualification program for multipliers.

The presented preliminary insights and models are helpful approaches for structuring the knowledge and the practice of facilitators. In addition to that, the reconstruction of facilitators' goals, orientations, beliefs and their influence on PD courses is a first step towards identifying aspects influencing the quality of PD courses and the qualification of facilitators. Chances and professional growth of teachers and facilitators triggered in PD courses can be fostered and be enhanced via PLC, but still need further analysis.

Overall the minisymposium emphasized the relevance of further research on the level of facilitators and to connect the different approaches presented at the GDM with each other to gain a functional model to characterize the facilitators' profiles and their behavior in practice.

Lectures of the Minisymposium

Peters-Dasdemir, J. & Barzel, B.: The Profile of Facilitators

Griese, B.: Incidents of professional growth in members of professional learning communities – a case study

Pöhler, B. & Prediger, S.: Facilitators' practices and situative goals in conducting PD courses on language-responsive mathematics teaching

Nieszporek, R.: Facilitators attitude towards learning targets of a professional development course for upper secondary statistics