

TEACHER EDUCATION AND MATHEMATICAL MODELLING – PRE-SERVICE TEACHERS’ PROFESSIONAL COMPETENCE FOR THE TEACHING OF MATHEMATICAL MODELLING

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Teaching mathematical modelling is considered challenging (Blum, 2011). However, it also offers special opportunities for mathematics teaching due to the openness and self-differentiating properties of modelling tasks. We know that pre-service teachers prefer tasks with low modelling content and have little knowledge about mathematical modelling. Thus, an important goal of teacher education is to enable pre-service teachers to acquire this specific professional competence for the teaching of mathematical modelling.

Professional competence is agreed to include affective-value-oriented aspects in addition to cognitive-oriented knowledge dimensions (Blömeke et al., 2015; Kunter et al., 2013). In this context, pedagogical content knowledge represents a central factor in determining the cognitive activation potential of teaching. These characteristics of professional competence can be transferred to the arena of mathematical modelling. In particular, the area of pedagogical content knowledge appears to be especially significant.

When designing modelling seminars for pre-service teachers with the participation of students in practical phases for the acquisition of professional competence, the question arises in particular as to which special facets of pedagogical content knowledge specific to modelling should be emphasised. The results show that, overall, the pedagogical content knowledge of pre-service teachers for teaching mathematical modelling can be significantly improved and that it can be very helpful for the acquisition of competence in some facets if the pre-service teachers develop modelling tasks for the practical phases themselves (Greefrath et al., 2022). Furthermore, we also take a look at the development of affective-value-oriented aspects. Going further, the question arises to what extent the use of technology can be considered in the acquisition of professional competences for teaching mathematical modelling and what new possibilities arise from this. Initial results will be reported on this.

References

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