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Promoting secondary teachers' diagnostic competence with respect to functions: development of a scalable unit in continuous professional development.

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Summary: Diagnosing student achievement in a formative way is a crucial skill for planning and carrying out effective mathematics lessons. This study takes a subject-specific view and aims at investigating diagnostic competence in the field of mathematical functions at secondary level and how to improve it. Following three evidence-based design principles, a Continuous Professional Development (CPD) unit has been designed for a statewide official in-service teacher program of the Ministry for Education in Baden-Württemberg, Germany. The workshops of this CPD unit are presented in this paper and were investigated in a first pilot study ($N = 26$). To this end, we qualitatively analyzed the participants' diagnostic competence before and after the training. We can report different diagnostic profiles of teachers that contain increased application of pedagogical content knowledge through the training in the field of functions. A number of teachers carried out increasingly profound diagnostic judgments after the training and shifted from a corrective to a descriptive or analytical view on student achievement. We furthermore report on steps to implement the unit on a statewide scale as part of a facilitators' training and adjustments of the training's content and methods based on our results of the pilot study.

Classification: D39 C39 B50

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