

Professional development in formative assessment: Effects on teacher classroom practice and student achievement

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Akademisk avhandling

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Abstract

The potential of formative assessment, evident in several research reviews, has raised the interest in many countries to invest in reform initiatives to develop its use. However, implementation of formative assessment is not straightforward and there is a lack of knowledge about how to design appropriate professional development. The intervention study presented in this thesis aimed to see if a random selection of teachers, participating in a professional development program with many contact hours and substantial support of an expert, implemented formative assessment in a way that increased their students' learning in mathematics. It also aimed to examine the reasons for the teachers' changes in their classroom practice.

The twenty-two year 4 teachers attended a professional development program in formative assessment in mathematics. A mixed methods approach used classroom observations, teacher interviews, questionnaire surveys and student mathematics tests to investigate the effects on teacher classroom practice and student achievement.

It was found that the teachers trained in formative assessment built on their previous formative classroom practice and added new formative assessment activities into their mathematics classroom practice to a level that had significant impact on student achievement in mathematics ($p = .036$, $d = .66$). The teachers developed their formative assessment practice in three dimensions: key processes in teaching and learning, agents in the classroom, and the length of the formative assessment cycle.

The reasons for teachers' implementation of new formative assessment activities were well explained by the expectancy-value theory of achievement motivation. Important aspects of the professional development program were: (1) A formative and process-oriented character; (2) Activities directly useable in classrooms; (3) Experience of using formative assessment activities; (4) Connection between theory and practice; (5) Time; and (6) Knowledgeable support.

The thesis shows that it was possible to provide sufficient support to a random selection of teachers for them to develop their formative assessment practice in a way that improved student achievement. However, this thesis also indicates that it can be expected that teachers would need substantial time and support to achieve such developments in their classroom practice.

Keywords

formative assessment, mathematics education, professional development, teacher education, student achievement

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