

Chapter 13

Developing Teacher Candidates' Formative Assessment Practices: Linking Mathematics Teaching to Assessing Student Thinking

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ABSTRACT

This chapter describes an initiative to better prepare teacher candidates to use formative assessment practices in their elementary mathematics instruction. Specifically, the initiative involved a curriculum and pedagogical redesign of an elementary mathematics methods course sequence. During the redesign implementation, the instructors intentionally modeled formative assessment practices for teacher candidates and had teacher candidates complete scaffolded field-based assignments in their elementary field placement classrooms in order to practice formative assessment strategies. Throughout the chapter, there are illustrative examples of how the instructors implemented this initiative as well as how teacher candidates carried out the formative assessment practices in their settings. The chapter concludes with a discussion about teacher candidate growth and challenges when learning about and implementing formative assessment practices in mathematics.

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INTRODUCTION

Ongoing formative assessment practices have been shown to positively impact student learning and achievement (Andrade & Cizek, 2010; Black & Wiliam, 1998a, 1998b; Fuchs & Fuchs, 1986; Wiliam, 2009). Yet, teachers have been inconsistent in adopting and implementing formative assessment practices in their classrooms (Robinson, Myran, Strauss, & Reed, 2014). Potential reasons for this inconsistency include an incomplete understanding of formative assessment, as well as a lack of time and support to implement this knowledge and skills into regular teaching practice (Schneider & Randel, 2010). In this chapter, the authors contend that one prospective avenue for increasing teachers' use of formative assessment knowledge and skills is in their initial teacher preparation programs. As part of their preparation experience, teacher candidates can and should learn about and practice formative assessment strategies. Therefore, this chapter focuses on a mathematics teacher education initiative to better prepare elementary teacher candidates to use formative assessment practices in aid of systematically documenting and using formative assessment results to guide classroom decision-making.

In the teacher preparation program described herein, teacher candidates complete a two-course elementary mathematics methods sequence. The first course situates teaching, learning, and assessment strategies within the context of state and national standards. The second course engages teacher candidates in a complete formative assessment cycle through a two-week rehearsal in local elementary schools. The initiative under study involved intentionally modeling formative assessment practices for teacher candidates in their elementary mathematics methods courses and providing structured field-based assignments for teacher candidates to rehearse targeted formative assessment practices. This paired approach was designed by the authors to explicitly scaffold teacher candidates' developing understandings related to formative assessment while also bridging the theory-to-practice divide that can so often challenge teacher candidates and teacher educators (Mertler & Campbell, 2005).

Ultimately, the goal of this initiative was to broaden teacher candidates' understanding of how to use formative assessment while also equipping them with specific assessment strategies and skills to build their assessment repertoire. In this chapter, the authors discuss how formative assessment practices have been discussed in the extant scholarship and then detail the instructional approaches--explicit modeling and candidate rehearsing--central to the initiative with illustrative examples.

BACKGROUND

Researchers have found that shifting from assessment *of* learning to assessment *for* learning can have a significant impact on student outcomes (Black & Wiliam, 1998a, 1998b; Heritage, 2013, 2016; Wiliam, 2009). One classroom instantiation of the assessment *for* learning paradigm is Black and William's (1998a, 1998b) conceptualization of formative assessment. The formative assessment cycle involves teachers in (1) assessing students' current level of understanding, (2) identifying a clear goal for students, and (3) planning a path to reach the goal (Black & Wiliam 1998a, 1998b; Chappuis, 2007; Wiliam, 2009). The mathematics education community has also championed this focus on assessment *for* learning. For example, the National Council for Teachers of Mathematics (NCTM, 1995) argued that teachers, as assessors and users of student learning, must shift from "telling students what to do" toward "questioning and listening" in order to elicit useful information about student understanding. In the following, the authors detail the skills that mathematics education researchers have identified as vital for teachers in

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