

Supporting the Development of Teacher Candidate Formative Assessment Practice

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Abstract: Formative assessment holds great promise as a strategy to support student learning (Black & Wiliam, 1998), however, it proves difficult for teachers to learn to do well (Box et al., 2015). This case study explores how a teacher candidate learned to enact formative assessment with the support of a community of practice.

Introduction

Formative assessment is used in the midst of instruction to draw out student ideas. Once ideas are surfaced teachers can interpret what students know and adapt instruction accordingly with the goal of improving teaching and learning (NRC, 2001). Since the publication of Black and Wiliam's 1998 review, many empirical studies have focused on supporting teachers as they learn to use formative assessment (e.g. Box et al., 2015; Furtak, 2012). However, few studies have focused on teacher candidates and how they might be supported as they learn about formative assessment. This case study aims to explore how one teacher candidate learned to enact formative assessment, using the tools and resources of her community, during her student teaching semester.

Theoretical and conceptual framework

I use a communities of practice (Wenger, 1998) framework to understand learning through participation. In communities of practice, individuals participate in, adapt and co-construct practices together, shaped by available tools and resources (Wenger, 1998).

Although research supports the use of formative assessment, studies have found that it can be difficult for teachers to learn to do well (Box et al., 2015). Some teachers are supported by learning communities (Furtak & Heredia, 2014) that provide a venue for teacher learning about new classroom practices such as formative assessment. Teacher candidates, just beginning to try the practices of their teacher preparation programs, rarely have opportunities to engage with this type of community. Given the established complexities, teacher candidates do not have the support they need to enact formative assessment in their own classrooms. Sustained support during the transition to student teaching and to the first year of teaching is essential to help teachers learn these practices.

To help illuminate how a teacher candidate might further develop knowledge and skills around formative assessment during student teaching, this case study investigates the outcome of one teacher candidate's participation with a community focused on the work of formative assessment in the context of a unit on natural selection. This study aims to respond to the following question:

How did a teacher candidate use collaboratively designed formative assessment tasks and classroom practices to draw out and respond to student ideas?

Methods

This case study is situated within a research project that took place at a large, culturally and socioeconomically diverse suburban high school in the western United States. The study focuses on a community of eight biology teachers and their development of formative assessments linked to a learning progression for natural selection. In the context of the research project, the biology teachers met monthly with university researchers over a two-year period to develop the learning progression and the associated formative assessments.

This case study focuses on Anna, a teacher candidate placed in the school during her student teaching semester. Anna had previously earned a bachelor's degree in biology and was enrolled in a post-baccalaureate teacher licensure program. During the spring semester of the second year of the research project, Anna taught two biology classes and participated as a member of the established teacher community.

The primary sources of data include the formative assessment tasks co-developed by the community of biology teachers, as well as video recordings of Anna's classroom enactments of these tasks. Anna enacted two different formative assessment tasks: *What gets passed on?* and *How did it come to be?* Video recordings of Anna enacting these tasks were made on three different days and total approximately two and a half hours of classroom instruction.

After viewing all of the classroom enactment video, episodes were identified where students were given an opportunity to share their thinking (Gotwals & Birmingham, 2016). This focus on students sharing their thinking revealed the connection between teacher questioning and student thinking, leading to a subsequent

analysis of the different types of questions asked by the teacher. The questions posed by the teacher candidate were coded by type, as either *what* or *how* questions. *What* questions took the form of simple, recall type questions such as “What was the selective force acting on the cheetah?” while *how* questions probed students to explain a mechanism such as “How did the cheetahs become so fast?”. Following the classification of the question each questioning episode was further analyzed to determine how the student(s) responded to the questioning and how the teacher then responded to the student(s).

Findings and implications

Anna enacted the formative assessment tasks by, first, having students work individually, second, students discussed and refined their responses in groups and finally, a representative from each group shared their ideas. Anna used both the prompts designed by the community from the formative assessment tasks as well as her own prompts in questioning sequences with students.

During the enactment of *What gets passed on?* seven separate episodes of questioning sequences were identified. Two of these episodes began with questions that asked students *what* happened and five asked both *what* and *how* something happened. In each of the episodes, the students provided *what* answers and Anna responded to students by re-voicing, evaluating, explaining, and on one occasion, asking a clarifying question.

During the enactment of *How did it come to be?*, three episodes of questioning sequences were identified. One of these episodes began with a *what* question and two began with *how* questions. Students responded to the *what* question with *what* responses and to the *how* questions with *how* responses. Anna responded to students by re-voicing, evaluating, asking clarifying questions and giving feedback for answer improvement and explaining.

The most striking pattern that emerged during the analysis of the questioning sequences was that all of the *what* questions were asked in-the-moment, and the *how* questions were questions that had been prepared ahead of time by the community. The *what* questions provided students with an opportunity to demonstrate their ability to recall knowledge. The *how* questions provided students with an opportunity to share their thinking about how a mechanism occurs and thus an opportunity for Anna to surface the students’ conceptual understanding of that mechanism.

Although Anna provided students with opportunities to share their thinking the students did not always take up that opportunity. In all of the five instances where Anna asked *how* questions while enacting *What gets passed on?*, students responded to those *how* questions with *what* answers. Further, when the students responded with *what* answers to *how* questions Anna did not press them to explain their thinking. In two of the episodes Anna explained the mechanism for the students rather than asking the students to do the explaining themselves. This suggests that, while perhaps a necessary first step, having the prepared *how* questions to draw out student thinking, in itself, is not always enough to get students to share their thinking. Continued professional development to support teacher candidates in learning how to respond to students through their practice could be beneficial in taking this next step.

References

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