



## Supporting teacher professional development through online video case study discussions: An assemblage of preservice and inservice teachers and the case teacher

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### ABSTRACT

The purpose of this study was to explore the potential value of online video case discussions among preservice and inservice teachers, and the video case teacher as a tool for the professional development of teachers. Participants included a total of 26 preservice and inservice mathematics teachers and a veteran teacher who appeared on the video case. Using content analysis techniques, we provided a thematic analysis of the teacher discourse and demonstrated the exchanges between the participating teachers and video case teacher. We also assessed the overall effectiveness of our online forum set up for the professional development of teachers. Results indicated that participant teachers were able to make theory–practice connections by articulating specific frameworks that guided our study. The inclusion of the video case teacher was beneficial for the other teachers in several ways. We contend that online forum discussions of video cases in which collective engagement of preservice and inservice teachers, and the case teacher have a great potential to support teacher professional development.

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In this study, we created a community of preservice and inservice teachers within the context of three different mathematics teaching methods courses at a regional campus of a large research-intensive university in the United States. We brought preservice and inservice teachers together for the purpose of connecting theory with practice by fostering discussion, reflection, and the sharing of thoughts on teaching and learning through an online video case. The video case teacher was also a participant in the discussions. Discussions regarding the video case took place in an online forum hosted by the university's main campus. Our purpose was to explore to what degree the case discussions generated opportunities for the participants to build a connection between theory and practice.

### 1. The use of cases in teacher education

Cases have been used for different purposes in teacher education at least for over two decades. They have been used to develop critical thinking skills (Mayo, 2004), improve and increase

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reasoning (Lundeberg, 1999) and facilitate decision-making skills (Jay, 2004; Merseth, 1992). Cases have also been used in subject specific contexts to develop pedagogical and professional knowledge (Manouchehri, 2002; Mayo, 2002), extend metacognitive skills (Lundeberg, 1999), and bridge the gap between theory and practice (Bencze, Hewitt, & Pedretti, 2001; Masingila & Doerr, 2002; Schrader et al., 2003). Lundeberg, Levin, and Harrington (1999) contended that use of cases in teacher education provide opportunities for teachers to apply their theoretical and practical knowledge to classroom contexts. According to Bencze et al. (2001), this is important because the “apparent chasm between what often happens in university-based teacher education and teaching in schools – a theory–practice gap – has caused some jurisdictions to shift much of their teacher training efforts out of academia and into the field” (p. 192). As Bencze et al. noted, cases have the potential to reduce theory–practice gap.

Cases are useful tools as they reflect the characteristics of a real classroom and provide a context for preservice teachers to prepare for realities of teaching (Butler, Lee, & Tippins, 2006; Masingila & Doerr, 2002). By analyzing cases, teachers get an opportunity to understand what could happen in a classroom given a specific scenario (Lundeberg & Levin, 2003; Lundeberg et al., 1999). They also gain perspectives on teaching in settings different from their field experience sites or their own classrooms (Merseth, 1992).

## 2. The use of video cases in teacher education

There is an increasing interest for integrating information technologies into the use of cases in teacher education (Boling, 2007). Video cases are useful tools for teacher education for several reasons; unlike written cases, video cases allow teachers to see the complexity and richness of a real classroom setting by capturing voices, body language, interactions, and more realistic picture of the learning environment. Thus, video cases lend themselves to potentially richer discussions of teacher practices and help teachers connect theory and practice better (Brophy, 2004; Seago, 2004). Masingila and Doerr (2002) reported that multi-media cases support preservice teachers' understanding of the complexity of teaching, guide their instructional practices and help connect their own practice with that of the teacher in the video case. Similarly, Sherin and van Es (2005) documented that as a result of watching video cases, overtime, both preservice and inservice teachers showed gains in their ability to discern and interpret the features of classroom teaching. Previous research also indicated the overall benefit of interactive video case discussions for improving the quality of teacher discourse and reflection (McGraw, Lynch-Davis, Koc, Kapsuz-Budak, & Brown, 2007).

Despite the promising findings reported above, research on the effectiveness of video and multi-media cases in teacher education is still in its infancy (Boling, 2007; Lampert & Ball, 1998; Masingila & Doerr, 2002). One aim of this study is to examine the effectiveness of video case discussions in promoting the quality of teacher reflection and discourse in general. Although discourse analysis is a broad field and there are plenty of approaches to analyze speech and text (Titscher, Meyer, Wodak, & Vetter, 2000), specific techniques and strategies available to measure the quality of discourse is scarce. By quality, we refer to the depth and richness of the topics discussed. We are not aware of any research that particularly focuses on the quality of teacher discourse in online environments or specific techniques available to measure discourse quality. There is, however, some research that focuses on the effectiveness of online forum environments. Guzdial and Turns (2000) suggest two basic criteria for online forums to be effective: (1) sustainability and (2) discussions focusing on the learning goals of the course. Sustainability refers to the development of message threads through responses to an initial message; the number of messages written in response to a particular message contributes to the sustainability of the forum discussions. The other criterion is related to whether contributions to the forum are on-topic or off-topic. We employed these two criteria in our analysis of the effectiveness of the forum discussions.

## 3. Significance of the study

We believe this study contributes to the literature in three distinct ways. First, our research design is unique in that it includes the participation of the video case teacher in the discussions. The preservice and inservice teachers in this study had the opportunity to understand the case teacher's motivations and plans for her teaching practices depicted in the video. The inclusion of the video case teacher also enabled participants to check the validity of their interpretation of the video case. This occurred as the teacher in the video responded to criticisms, comments and questions raised by the participants. We believe this set up has the potential to increase the quality of the case discussions and reflections.

Because the effectiveness of online forum environments is still under question, this study sheds light on the potential value of online forum discussions in teacher education. Even though previously researchers brought preservice and inservice teachers

together in the same learning environments to discuss various aspects of teaching and learning through video cases (Arellano et al., 2001; McGraw et al., 2007), the number of studies of this type is limited and further research is needed in this area.

Another significance of our study is the utilization of an online forum for case discussions. This online tool offered participants opportunities to analyze the practices in a mathematics classroom with all its complexities in an asynchronous mode. Our literature review indicates that only a few studies with similar components have been conducted (McGraw et al., 2007; Nemirovsky & Galvis, 2004).

## 4. Research questions

Our research questions are: (1) To what degree are teachers able to make theory–practice connections in response to a video case of mathematics instruction? (2) What dimensions of teaching are discussed in response to a video case of mathematics instruction? (3) To what degree online forum discussions are effective tools when preservice and inservice teachers as well as the video case teacher participate in the discussion; and what is the potential value of such an arrangement in case-based pedagogy?

## 5. Methods

### 5.1. Setting

The data were collected in the context of three different mathematics methods courses in a 4-year college that is part of a large university system in the Midwestern United States. The first author was the instructor of all three courses. Two of the methods courses were designed for preservice teachers – one for elementary education majors and one for secondary mathematics education majors – and the third course was a graduate level mathematics teaching methods course designed for experienced teachers enrolled in a Master's program in elementary or secondary education. Both undergraduate courses were intended to provide preservice teachers with a broad understanding of how school mathematics is structured and learned. The graduate course was intended to help inservice teachers improve the teaching of mathematics in elementary and secondary classrooms. As a course assignment, all students were required to view and reflect on a video case of mathematics instruction available on an online forum.

### 5.2. Video case

The video case, *Revisiting Doubles*, represented third grade mathematics instruction and it was 57-min long. It was produced as part of a large online teacher development project with the goal of building online teacher learning communities, and only members of the forum had access to the video. The authors were not involved in the making of the case. The topic of the video lesson was doubling (multiplication by two). At the beginning of the lesson, Melissa, the video case teacher, taught the concept of doubling while revisiting the work students had done on doubles and halves from an algebraic perspective. She focused on the topic using a story, "Two of Everything" (Hong, 1993), to get students' attention. After reading and talking about the story in the book, she used a T-chart to teach the doubling concept in connection with the story. The students used the T-chart to look for patterns in the numbers, and they wrote algebraic equations. Following the T-chart activity, students worked on their math projects.

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