

Facilitation of reform based teacher identity development in pre-service teachers using post-activity reflection debriefs

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Abstract: An exploratory case study approach was used to study twenty pre-service secondary science teachers to learn: What impact does post-activity reflection debriefs have on teacher identity development as a reform-minded science teacher? Analysis of debrief video and audio recordings revealed that debriefs provide opportunities for pre-service teachers to wrestle with issues related to practice and the struggle to enact the reform-based practices that they are learning about and believe they should implement.

Introduction

There is significant research on the benefits of reform-based practices specifically defined by the NRC as inquiry into authentic questions generated from student experiences (NRC, 1996, pp. 32-33). Our reform-based teacher preparation program provides several field opportunities that are designed to afford pre-service teachers opportunities to take risks in a safe and nurturing environment, and learn from them through semi-structured reflection events. One of the instantiated reflection events is the post-activity reflection debrief. We argue that post-activity reflection debriefs can be an effective and integral part of a multi-pronged unified approach to identity repair (Gee, 2003) to facilitate an identity trajectory toward more reform-minded orientations.

There remains little evidence that reform-based practices occur in science classrooms today (Anderson, 2002). When we engage them in a reform-based teacher preparation program, the ensuing cognitive dissonance can be difficult to overcome. Post activity reflection debriefs are a vehicle to support the necessary changes in pre-service teacher identity toward reform-mindedness.

Literature Review and Theoretical Framework

Recent literature (Darling-Hammond & Bransford, 2005) has identified the complexity involved in adequately preparing novice teachers to reconcile a reform-based image of instruction with personal, prior beliefs (Kagan, 1992), position themselves within a larger community of practice (Windschitl, 2002), develop confidence and manage the emotional dimensions of personal development (Alsup, 2006), and integrate theory and practice (Feiman-Nemser, 1990). Program elements identified as successful include coherence between theory and practice, developmentally appropriate curriculum, and teacher learning situated in supportive, authentic contexts (Darling-Hammond & Bransford, 2005). We have much to learn about the unique challenges faced by beginning science teachers who are not only preparing to be expert practitioners but also agents of change.

Identity theory is a powerful lens for considering pre-service teachers trajectory in their professional development. Professional identity theory, addresses some of the unique challenges of the learning involved in becoming a reform-minded science teacher (Luehmann, 2007) and offers a lens in which one's experiences are considered in light of how they impact one's professional practices, values, and commitments. (Flores & Day, 2006). Professional identity development is the means by which one becomes a full participant in a community of practice (Lave & Wenger, 1991). We have argued elsewhere (Luehmann, 2007) that this framework offers the field of science teacher preparation two primary insights: 1) Trying on a new identity within a community of practice (especially when it is counter to the norm) involves assuming risks; and 2) Learning as identity work occurs in the interpretation, narration, and thus recognition of that participation (by self and others). Studying post-activity reflection debriefs affords an opportunity for understanding how recognition events afford greater access to identity resources so we can map trajectories of identity development.

Research Design

An exploratory case study approach was used where the unit of analysis was twenty pre-service secondary science teachers in a teacher preparation program that foregrounds reform-based science teaching and social justice. These pre-service teachers constitute the most recent cohort in this fifteen-month teacher preparation program. The two research questions we posed were: What impact does post-activity reflection debriefs have on teacher identity development as a reform-minded science teacher? What are the nature of the debriefs that contribute to meaningful change in teacher identity? Two core field experiences for these pre-service teachers completed thus far: 1) leading a summer science camp for urban middle school students; and 2) leading an after-school science club for urban middle school girls (Science STARS), have afforded us the opportunity to engage in debriefs with the pre-service teachers directly after a teaching event where semi-structured debriefs were employed as a routine. There were five days of the summer camp and ten days of Science STARS. The debriefs all use a "plusses and arrows" format whereby participants record plusses - elements of the lesson that went well

- and arrows - elements that can be improved or suggestions for improvement. These are generated in small group (including faculty) then shared with the large group.

The primary data sources for this study were video of summer camp debriefs and video and audio recordings of STARS debriefs. Secondary sources facilitated triangulation and included personal professional blogs that pre-service teachers keep for the entire fifteen-month program and semi-structured interviews targeting inquiry-based science teaching and social justice. Transcripts of debriefs were coded independently by two researchers with respect to: 1) the focus of the plusses and arrows; 2) the type of recognition; 3) statements of understanding of, appreciation for, commitment to, or confidence in using inquiry; 4) specialist language usage related to inquiry or reform-based science teaching or social justice. Blogs that correlated to these debriefs were analyzed for any carryover of these into public spaces and what shifts in perspective and stories or reporting occur. Due to this approach, two illustrative cases emerged and were explored in more detail.

Results

Our analyses revealed that the debriefs provide opportunities for pre-service teachers to wrestle with issues related to practice and the struggle to enact the reform-based practices that they are learning about and believe they should implement. The major issues raised in debriefs are: making learning engaging to students, moving away from teacher-centered lessons to student-centered lessons, scaffolding inquiry as a process to get students to design and carry out their own investigations. The activity structure of debriefs creates a bidirectionality between partner and group such that participants are not an island, can support each other in their quests for improvement as they articulate their struggles, tensions and dilemmas. Acknowledgement of things done well, recognition by self and others fosters a greater sense of commitment to a common purpose. The power of the debriefs in fostering safe exploration of reform-based identity is evident in the perceived failures that are coaxed into being true arrows and mechanisms for change; Reflection to move forward and continue desirable practices and change out-of-line practices into in-line practices within the tenets of reform-based science teaching that we, as a group, care about.

Discussion & Implications

Plusses and arrows facilitate recognition and enticement to change the pre-service teachers outlook and practice of what they do to purposefully become more reform-minded. Debriefs serve to establish an equilibrium toward greater congruency of who the pre-service science teachers are and who they want to be. These debriefs serve as a strong pathway to change teacher identity toward a more reform-minded path. Giving pre-service teachers access to a variety of supports for interpretation and recognition is essential to supporting professional teacher learning with reform-based teaching.

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