INVESTIGATING THE RELATIONAL NATURE OF FEEDBACK PRACTICE

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At the crossroads of our prior research on prospective teachers' feedback to mathematics-learners and our mathematics teacher educator feedback practices, we study written feedback as part of relational practice. Using self-study methodology and an analysis of our narratives and conversations about written feedback, we identified factors that frame and motivate our written feedback. We argue that, assuming the central goal of teacher education is the development of relational practice, written feedback should support prospective mathematics teachers' skills and knowledge relevant to tasks involved in teaching mathematics and extend prospective teachers' views of mathematics teaching and learning by drawing on their experiences, insecurities, problems, and views of mathematics teaching and learning.

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Grossman et al., (2009) asserted that development of a relational practice is a central goal of teacher education and illustrated that mathematics teacher educators (MTEs) engage in activities in support of this goal. Buhagiar (2013) suggested that MTEs' practices serve as models for future mathematics teachers (teacher-learners). Thus, MTEs' activities should model relational practice, described by Fletcher (1998) as including "empathy, mutuality, reciprocity, and a sensitivity to emotional contexts" (p. 174). This paper focuses on MTEs' written feedback as one activity that models elements of relational practice. Feedback is a significant part of an assessment system and impacts learning and performance (Hattie & Timperley, 2007; Shute, 2008). Therefore, MTEs' written feedback and factors that frame and influence that feedback warrant study to improve understanding of written feedback as a model of relational practice.

Findings from a prior analysis of feedback that teacher-learners provided to mathematics-learners (i.e., K-12 mathematics students) through letter exchanges (e.g., Crespo, 2002) included a description of the ways mathematics teacher-learners used praise and attended to the learners' mathematics in their responses (Kastberg, Lischka & Hillman, 2016a). These findings raised questions about our MTE feedback practices. We wondered if our written feedback would stand up to the scrutiny leveled at teacher-learners. Did our feedback attend to ways teacher-learners saw learners' mathematics and build on their personal understandings of mathematics teaching and learning or did we direct teacher-learners to what we saw in mathematics-learners' work?

Considering this question brought us to a crossroads as we became conscious of a "living contradiction" (Whitehead, 1989) between our feedback practices and our expectations for teacher-learners' written feedback. In an effort to improve our feedback practice and identify ways in which such a practice modeled relational practice, we asked *What factors frame and motivate our written feedback as a model of relational practice?*

Literature Review and Theoretical Framework

Existing meta-analyses of quantitative studies of feedback (e.g., Hattie & Timperley, 2007; Shute, 2008) identified factors that mediate its effects, such as complexity of tasks and characteristics of praise on performance. Recent research (e.g., Evans, 2013) draws from a broader array of theoretical perspectives (e.g., socio-cultural, socio-critical, constructivist) not well represented in prior feedback discourse. From a synthesis of studies in higher education, Evans hypothesized a "feedback landscape" that "illustrates a two-way process in which feedback is moderated" (p. 97) by

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a collection of relational and information variables that include learners' "beliefs about learning and expectation of the learning environment" and teachers' "knowledge of the student" (p. 98). Evans' view of feedback applied to mathematics teacher education involves understanding written feedback as an element of relational practice.

There is much research on feedback in general with little attention to written feedback provided by MTEs to teacher-learners. Studies of feedback in teacher education have focused on feedback given during practicum (White, 2007), teacher-learners' perceptions of feedback (Dowden, Pittaway, Yost, & McCarthy, 2013), and self-studies focused on written feedback (Kitchen, 2008; Pittaway & Dowden, 2014). In *mathematics* teacher education, only Buhagiar (2013) explored written feedback. He reported that MTEs' feedback varied significantly and suggested beliefs about teaching and learning as the source of the differences.

Relationships with learners are important elements in effective feedback practices (e.g., Evans, 2013; Hattie & Timperley, 2007), allowing MTEs to leverage understandings of teacher-learners (Grossman et al., 2009) and contexts in which they work in support of teacher-learners' development of practices and understandings of mathematics teaching and learning. Kitchen's (2005a, 2005b) description of *relational teacher education* as teacher educators "knowing in relationship" (2005a, p. 18) is used to understand factors that frame and motivate MTEs' written feedback as a relational practice. Like Fletcher (1998), Kitchen drew from notions of empathy and vulnerability to describe relational practice and identified seven defining characteristics: understanding one's own personal practical knowledge, improving one's practice in teacher education, understanding the landscape of teacher education, respecting and empathizing with preservice teachers, conveying respect and empathy, helping preservice teachers face problems, and receptivity to growing in relationship. These categories are used as an analytical framework to explore factors that influence written feedback as a relational practice. Descriptions of each category are shared in the findings section.

Mode of Inquiry

To identify factors that frame and motivate our written feedback as a relational practice, we undertook a self-study. Identified by Borko, Liston, and Whitcomb (2007) as a form of practitioner research, self-study is aimed at improving one's practice (LaBoskey, 2007) and is characterized by openness, collaboration, and reframing (Samaras & Freese, 2009). Self-studies situate questions in existing research literature and suggest implications for "the larger audience of teacher-educators" (Borko, Liston, & Whitcomb, p. 9). Self-study involves the construction of narratives of experiences and conversations with critical friends sharing alternative perspectives on practice, described by LaBoskey as data in self-study methodology. This self-study was undertaken with the goal of improving our written feedback. We began by analyzing our written feedback using Hattie and Timperley's (2007) framework (see Kastberg, Lischka, & Hillman, 2016b for findings related to this analysis). This paper focuses on factors that framed and motivated our feedback, using transcripts of eight recorded online conversations about written feedback findings (May-December, 2015) and two self-constructed narratives (Clandinin & Connelly, 2000) as data. The first narrative described our feedback experiences as leaners and the second narrative described our experience creating opportunities for teacher-learners to provide written feedback to mathematics-learners (May and December, 2015). This data allowed for reframing experiences by taking the perspective of another on one's practice.

Narratives and discussions were coded using Kitchen's (2005a) characteristics of relational practice. Evidence of *knowing in relation to self and teacher education* was coded using Kitchen's (2005a) first three categories and evidence of *knowing in relation to teacher-learners* the remaining categories. Descriptions and exemplars are shared in the findings.

Blind review precludes specificity, so a sketch of the actors and context is included here.

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Pseudonyms are used for the authors in the remainder of this paper. The authors work at three different institutions with Sandy and Jean both mid-career MTEs working with elementary teacher-learners and Pamela an early-career MTE working with secondary teacher-learners. All teacher-learners engaged in letter-writing activities, with MTEs providing written feedback.

Findings

Knowing in Relation to Self and Teacher Education

In restorying our experiences, we gained "self understanding" (Kitchen, 2005a, p. 19) of reasons for assignment structures and types of written feedback we provided.

Understanding one's own personal practical knowledge. Kitchen (2005b), defined personal practical knowledge as "the ways in which past experiences inform present practice and intentions for the future" (p. 199). We unpacked our experiences as learners, mathematics teachers, and MTEs and considered how they informed our practices. Discussions focused on assignment structures and what teacher-learners' approaches to feedback could teach us.

An example related to assignment structures involved exploring whether feedback on letters supported the teacher-learners to develop their views of mathematics teaching and learning or just to complete the task as we had conceptualized it. We wrestled with the question of whether the teacher-learners could use our feedback. Sandy and Pamela provided feedback on teacher-learners' reflections on feedback provided in letters to mathematics-learners, while Jean had provided feedback on teacher-learners' draft letters and requested revisions. Looking back at our experiences giving written feedback, Sandy and Pamela wondered whether the teacher-learners could make sense of the feedback.

> Sandy: I think that one of the fundamental assumptions that we operate under, [is that] if we give feedback, [teacher-learners] are actually going to operationalize it and use it. But the reality of the situation is that we know that really doesn't happen. In part, that is our own fault because … we don't provide opportunities to revise your work in light of feedback. When we do, Jean's work shows us that they attend to the letter of the law. "Oh, you told me I needed to add this … so I did those things." (November 12, 2015)

We questioned whether we were supporting only those teacher-learners whose work aligned with our views. Retelling our experiences as MTEs, we developed empathy for teacher-learners trying to fulfill course demands while extending understandings of mathematics teaching and learning.

Our discussions of teacher-learners' approaches to feedback focused on a contrast to our own pedagogical principles and strategies used in written feedback. We wondered if interpersonal relationships with teacher-learners would encourage them to use our feedback. Teacher-learners' responses to mathematics-learners served as examples of relationship development. For example, some teacher-learners first attended to mathematics-learners as people and only highlighted elements of the learners' mathematics after addressing unique characteristics of the mathematics-learner. In contrast, our written feedback focused on supporting the teacher-learners to complete the task at hand. Looking forward, we discussed if we should, or could build more personal connections into our written feedback.

> Pamela: Ok, then maybe I need to think differently about mine [feedback], because I looked at the few tasks that I have had a chance to look at and I'm thinking that I don't really attend to the PT [teacher-learner] as a person. … But I think I do a lot of that in class, it's just not in my written comments. So I struggled with that one. (June 4, 2015)

Pamela's comment illustrates that interpersonal relationships with teacher-learners may be developed face-to-face. We then wondered if our written feedback would be more effective if attending to

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interpersonal relationships before sharing feedback on the task and process.

Improving one's practice in teacher education. Kitchen's (2005a) category "improving one's practice in teacher education" includes exploring experiences and using insights gained to improve practice, such as teacher educators trying to communicate "understandings and structure meaningful lessons" (p. 23). Efforts to improve our feedback practices focused on the purpose of assignments, such as desiring to have teacher-learners explore mathematics-learners' reasoning.

> Pamela: My intent was just to have them thinking about [mathematics-learners'] thinking.
> Sandy: Yeah me too.
> Pamela: I wanted them to interact with a [mathematics-learner] because they don't have a field experience in the course. So I wanted student interaction. (July 28, 2015)

By comparing and contrasting our course activities, institutional contexts, and feedback practices, we proposed changes to our assignments and feedback practice. Pamela and Sandy drew insight from Jean's approach where feedback had resulted in teacher-learners' improving final versions of letters. Proposed improvements included providing feedback on drafts of teacher-learners' responses, initiating class discussions of MTE feedback, and adjusting letter exchange time-lines to allow teacher-learners to revise.

We evaluated proposed changes to our feedback practice based on whether a change was productive for teacher-learners and efficient for us. For example, we wanted to reduce time between the submission of work and teacher-learners' receipt of written feedback, but struggled with how to construct feedback quickly that attended to individual needs of teacher-learners.

Understanding the landscape of teacher education. Kitchen (2005a) identified the need to "frame individual challenge within a larger institutional and societal challenge" (p. 27) as "understanding the landscape of teacher education." We discussed motivations behind decisions about structuring assignments and crafting written feedback that included program assessments for accreditation, field structures, class size, the practices of supervisors in practicum, and the Common Core movement. Our feedback was part of teacher-learners' experiences in teacher education programs facing increased scrutiny and demands that graduates be expert teachers. In particular, Jean's motivation in developing the letter exchange between teacher-learners and mathematics-learners was for teacher-learners to develop ideas about providing written feedback, in response to data analysis from a program assessment related to accreditation that showed a need for improvement in the area of teacher-learners' feedback to K-12 students.

For example, Jean and Sandy shared stories about efforts to meet demands of accreditation organizations including preparing teacher-learners to collect "data" from their practices.

> Sandy: … because my [colleagues] are asking me for examples of my teacher-learners' work that I think are particularly good and that show that they can collect and have analyzed data and can make decisions about what to do next. (August 10, 2015)

Our conversations revealed the challenges in creating meaningful learning opportunities for our teacher-learners (e.g., constructing written feedback on mathematics tasks) while preparing them to document their work as required for accreditation.

Knowing in Relation to Teacher-Learners

Kitchen (2005b) described the last four elements of relational practice as modeling "respect for teachers as curriculum makers" (p. 200) with focus on the MTE/teacher-learner relationship.

Respecting and empathizing. Central to respecting and empathizing with teacher-learners is "a genuine belief that each prospective teacher must construct her or his own meaning as a curriculum maker" (Kitchen, 2005b, p. 201) by recognizing and supporting the needs of teacher-learners while

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encouraging them to probe issues of mathematics teaching and learning.

Discussions focused on gaining insight into teacher-learners' experiences and concepts of teaching. Knowing about teacher-learners' stories of experiences in schools could help us understand their views of mathematics teaching and learning. Yet, we typically had not asked teacher-learners about their experiences. When we did, we did not use that knowledge to inform our written feedback. For example, Sandy asked teacher-learners to reflect on their experiences as learners, but described still wondering about the sources of teacher-learners' insights.

> Pamela: So then how do you build on [teacher-learners'] own knowledge and experiences, when you haven't found out what those are?
>
> Sandy: I never really tried to understand where [teacher-learners] were coming from. So when I read Jean's [feedback] and then I read mine I was going: "Ok, well this feedback [responses to mathematics-learners] that they are giving could be interpreted so many ways." I wish I knew how [teacher-learners] were thinking about it. I had them do the reflections, so you would think I would know. But they would make statements about … the students' thinking, that I was just like: "I wonder where this is coming from." (August 10, 2015)

Not knowing the teacher-learners' motivations and experiences that may have influenced their interpretations of learners' mathematics made developing meaningful feedback difficult.

Although supporting teacher-learners' efforts to build conceptions of teaching and learning was a goal, we considered how to address their need to survive in practicum. We realized teacher-learners' responses to mathematics-learners, were a function of their conceptions *and* efforts to complete course assignments. To construct productive feedback, we conjectured about teacher-learners' conceptions of teaching and learning from evidence of their experiences. For example, Jean started asking "how are you doing?" (November 12, 2015) in individual meetings with teacher-learners before launching into feedback about lesson plan drafts. This simple question encouraged teacher-learners to relay stories from field experience that revealed not only their concerns with practicum, but informed Jean's understanding of their concepts of teaching and learning. Looking forward we developed other ways to gather evidence of such experiences.

Conveying respect and empathy. Describing his efforts to convey respect and empathy, Kitchen (2005b) suggested teacher educators can demonstrate their feelings by "acknowledging insecurities" (p. 204) and helping teacher-learners face challenges in programs of study. Further, teacher educators can express commitment through listening and responding mindfully.

We were uncertain about challenges teacher-learners faced since we had not invited teacher-learners to share experiences with us. To gain insights, we discussed our own experiences as teacher-learners and recalled challenges trying to "fit" into mentor teachers' classrooms. Using this experience, we considered our programs and course activities and the potential in these contexts for teacher-learner challenges. For example, in looking back to our letter-exchanges, we discussed the challenge of engaging with mathematics-learners whom teacher-learners did not know. This activity structure seemed misaligned with possible teacher-learners' views of teaching and learning situated in nurturance and care.

We discussed how to respond mindfully when teacher-learners shared challenges and insecurities. We wondered whether praise would count as part of a mindful response because without praise, teacher-learners might read our written feedback as lacking care or concern. Jean looked back at shifts in her written feedback from using "smiley face kind of stuff" in her written feedback to giving "specific comments" and whether this had impacted her relationships with the teacher-learners (August 10, 2015).

> Jean: But then, I wonder if that shifted relationship building because there just seems to be a difference between [teacher-learners] that I have had recently versus [teacher-learners] that I

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remember from say years ago. (August 10, 2015)

Hypothesizing about challenges our teacher-learners faced was easy; knowing how to construct written feedback addressing the challenges was difficult.

Helping teacher-learners face problems. Kitchen (2005b) described helping teacher-learners face problems as identifying and supporting teacher-learners to confront tensions between their constructs of teaching and learning and the practical realities of classrooms.

Discussion focused on problems that could arise when a teacher-learner's goals did not align with her practices. Sandy described asking teacher-learners how to confront errors in mathematics-learners' work: "When I addressed dealing with incorrect responses with my [teacher-learners] … They were very sensitive to children being told that they are wrong. [Teacher-learners] really think there is no place for it" (July 28, 2015). Sandy strove to honor teacher-learners' perspectives, but felt the practice they described was inconsistent with their goals for mathematics teaching. The teacher-learners' position on error-handling was consistent with their determination to attend to mathematics-learners as people, yet seemed inconsistent with their goal of supporting the development of learners as mathematicians. Sandy recognized this tension with teacher-learners' perspectives on errors as a potential learning opportunity for them, but did not know how to use feedback to help the teacher-learners confront this tension.

Pamela's feedback was typically in the form of questions addressing what she identified as teacher-learners' problems of practice. For example, sharing a teacher-learner's response about being more clear and specific with mathematics-learners, Pamela illustrated how she used questions to help the teacher-learners face problems.

> My response was "I want you to consider whether it is the clarity and specificity that is important or the information on which you ask the students to build their thinking. How are you asking students to think about their own responses?" (Pamela, July 28, 2015)

Pamela hypothesized teacher-learners' conceptions of teaching and learning were surface-level and questions in her feedback would encourage teacher-learner reflection, even when directly disagreeing with teacher-learners' claims to help them unpack problems of practice. As Sandy wondered if her relationships with teacher-learners could withstand this approach, Pamela maintained that interactions with teacher-learners allowed giving critical feedback, asserting teacher-learners would attend to feedback due to collegial relationships with the teacher-learners.

Receptivity to growing in relationship. Kitchen (2005b) described receptivity as identifying one's own problems rather than "the 'expert'" (p. 206) defining the problem to be faced. MTEs discovery of new meaning and development of professional practice is then based on being receptive to needs of teacher-learners.

We discussed receptivity as components of our relationships with teacher-learners, yet having our own identities and values seemed to interfere with the development of our relationships at times. We discussed wanting intellectual relationships with teacher-learners.

> Sandy: I'm engaged with you because of the possibility of learning something new.
> Pamela: Because of the intellectual possibilities, not the interpersonal possibilities.
> Sandy: I want to know [teacher-learners] in an academic and an intellectual way, but I don't even think I do because I'm not taking up the ideas that they provide … except in the most superficial way.
> Jean: … Knowing them in an academic and intellectual way. So is there a way to think about empathy in terms of that … I mean what would that look like? (September 24, 2015)

We agreed our love of mathematics influenced our conversations and relationships with teacher-learners. Sandy felt teacher-learners might need more than our focus on mathematical thinking.

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> What makes your classroom work are those relationships and those moments you have with the students where … you are connecting as human beings and the student is going, "Oh yeah, she gets me and I can talk to her." (Sandy, September 24, 2015)

Our discussions took up the need for human connection with teacher-learners, but the tension involved the power we had over their grades and the way that influenced the relationship.

> Pamela: But that is the challenge, I want them to get to the point where they are pushing back a little bit. (August 24, 2015)

Pamela viewed teacher-learners' questions about her motives and practices as an indicator of a mature relationship. We viewed human connection as important to demonstrating and supporting receptivity to growing in relationship through discussion of feedback.

Summary

Evidence of knowing in relation to self and teacher education showed assignment purposes and structures were factors motivating our written feedback. Improvements to our practice were viewed through a lens of efficiency, while considering mindfulness in our feedback. Program accreditation influenced the design of activities on which we provided feedback, responding to external demands of society and our respective institutions for teacher-learners to demonstrate proficiencies. We were not consciously attending to these factors as we wrote feedback, but they impacted our attention to what and how feedback was provided. Considering improvements, we turned to the teacher-learners' feedback as an example of attending to learners as people first.

Evidence of knowing in relation to teacher-learners revealed that we knew little about the experiences, challenges, and problems teacher-learners faced. To convey respect and empathy we attended to elements of teacher-learners' work on assignments, but without attending to teacher-learners' views of mathematics teaching and learning. To build relationships, we relied on in-person interactions to encourage teacher-learners to attend to our written feedback. Our love of mathematics and desire to have intellectual relationships with teacher-learners motivated attention to mathematics in our feedback, without attention to insecurities and problems of practice with which teacher-learners wrestled.

Discussion and Conclusion

Findings revealed factors that framed and motivated our written feedback as a model of relational practice. Our written feedback was influenced by knowing in relation to self and teacher education, and knowing in relation to teacher-learners. Discussions of our written feedback as a relational practice revealed attention to skills and knowledge relevant to tasks involved in teaching mathematics. This focus is essential for effective feedback (e.g., Evans, 2013), yet falls short when feedback is considered as a model of relational practice. Evidence that our written feedback was motivated by "empathy, mutuality, reciprocity, and a sensitivity to emotional contexts" (Fletcher, 1998, p. 174) was thin, suggesting a way forward in improving our written feedback. Considerations of teacher-learners' experiences and views of mathematics teaching and learning are needed to build written feedback as a relational practice.

Attention to the written feedback of our teacher-learners was a source of inspiration as we considered potential insights from the experiences of teacher-learners. Yet we recognized that it is necessary to move beyond the responses teacher-learners provided for course assignments focused on developing skills and knowledge. Aligned with the finding of Pittaway and Dowden (2014) that personal experience with feedback influences teacher educators' written feedback, our feedback experiences motivated activity design and ways in which we structured feedback. Further, our views

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of mathematics teaching and learning motivated our feedback, as suggested by Buhagiar (2013), and in some cases interfered with our relationships with teacher-learners.

As MTEs seek to contribute to teacher-learners' relational practice by modeling, the conceptions of the learner should be a central factor. Yet as part of an assessment system, feedback can focus on task performance without attention to the particularities of the learner. With relational practice as a goal, moving beyond the development of skills and knowledge needed to complete tasks in the work of teaching, toward gathering insights about and ways to use views of mathematics teaching and learning in our practice provides a way forward. Written feedback seen through the lens of relational practice should include empathy and build from experiences of learners in an effort to meet course, program, and learner goals.

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