

Old Dominion University

ODU Digital Commons

---

Teaching & Learning Faculty Publications

Teaching & Learning

---

2020

## Characteristics of Critical Friendship that Transform Professional Identity

Signe E. Kastberg

Melva R. Grant

Follow this and additional works at: [https://digitalcommons.odu.edu/teachinglearning\\_fac\\_pubs](https://digitalcommons.odu.edu/teachinglearning_fac_pubs)



Part of the [Educational Methods Commons](#), [Elementary Education Commons](#), [Elementary Education and Teaching Commons](#), and the [Science and Mathematics Education Commons](#)

---

# Characteristics of Critical Friendship that Transform Professional Identity

Signe E. Kastberg & Melva Grant

We met at CASTLE 2018, two trained mathematics teacher educators (MTEs), interested in mathematics, and teaching elementary mathematics methods to preservice teachers (PTs). Melva's self-study research, focused on improving her online methods course, was approaching its second year and her second critical friend had lost interest in continuing. Melva invited Signe to be her critical friend (Schuck & Russell, 2005) and Signe agreed. Explicit expectations of our critical friendship included weekly meetings. Our critical friendship seemed to follow an expected trajectory for, "supporting/coaching the transformation of another's teaching" (Stolle, et al., 2019, p. 20). However, there were implicit ways our critical friendship evolved, drawing from connected, entangled threads of our individual expectations and our MTE identities.

## Context of Critical Friendship and Biography

Critical friendship is a complex relationship with a "commitment of both friends to long-term improvement" (Schuck & Russell, 2005, p. 119). Like Schuck and Russell (2005), we came to the friendship with different goals, expectations, and concerns, some more transparent than others. We begin with a biographical narrative (Pinnegar & Hamilton, 2009; Tenni, et al., 2003) describing the inception of our critical friendship to establish context.

Melva: When I met Signe at the CASTLE conference, she was friendly, appeared open to working with others, and known to me as a respected and accomplished MTE. As a trained secondary teacher and MTE, experienced in developing and supporting elementary teacher leaders, I was positioned to teach elementary math methods. When I met Signe, she introduced herself as an elementary MTE. I was excited when Signe accepted my request to be critical friends. I believed that I could learn a lot from working with her. When we initiated our critical friendship, I did not claim MTE identity for myself. My goal in working with Signe, was strictly for improving my teaching of elementary mathematics methods. (Retrospective Memo, Nov. 2019)

Signe: When I met Melva, I recognized a wanting that I had felt years ago. I had been an MTE for 15 years, but still I heard the voice of marginalization that resonated in my experience. I accepted Melva's invitation to be her critical friend, seeing a chance to know myself. I had longstanding critical friendships, but had not attended to how I developed a critical friendship. I saw a chance to observe critical friend development,

while “helping” someone. Early on, I cautiously tried to understand Melva’s views about her practice. Serving as “critical friend” was on my mind. I asked questions to provoke Melva’s thinking. Some questions positioned her as an MTE learner. I targeted specific facets of her practice, that I believed she was unaware of, which led to my identity shift. (Retrospective Memo, Nov. 2019)

Our critical friendship was grounded in our MTE practices, but our conversations meandered dependent upon one another’s current reality. We used “constructivist listening” (Weissglass, 1990) to support one another’s critical thinking about our practices. Given our unvoiced rationales for participating as critical friends, our conversations sought opportunities to realize the embodied qualities we each ascribed to the other. Signe initially sought to provide Melva guidance and support while examining their developing critical friendship. Characteristics of our conversations were present from our initial meeting. Our first conversation followed a mathematics education conference working group session. Peer review of self-study reports in mathematics education journals came up.

S: I have learned that reviewers try to put you in that positivistic box...How do we speak to those people?

M: ... I don't really try to speak to those people... I just don't think about research in that way. And I'm okay with that. ... I'm ok with publishing different aspects of what we learn in different venues using different methodologies because the analysis is still the analysis.

S: That is one of the things that draws me to you. I am very boxy as a person. And I know to be flexible. Consciously I know that. But I think my orientation toward the world is to like...

M: Structure this and let's do this and then maybe we can look at doing that.

S: So I like being with people who are not like that. It makes me feel like I am evolving as a person... (Critical friend conversation, November 17, 2018)

Signe described her desire to evolve, be less “boxy,” more flexible and eclectic, as she perceived Melva to be. Melva’s reaction to this meeting captured after listening to the recording of the conversation a year later, revealed her perception of Signe as a knowledgeable role model, sure of herself, and her expertise. Melva recalled aspiring to be seen as she felt Signe was. We gravitated toward perceived qualities embodied by the other, listening, and talking in ways that made us aware of what our MTE identities could be. As our relationship became more complex, our identities shifted, and we committed to mutual growth and “long-term improvement” (Schuck & Russell, 2005, p. 119) of our MTE practices. Our critical friendship began with different goals, expectations, and concerns, yet critical friend conversations opened possibilities for our MTE identities, both personas, and practices.

## **Critical Friendship**

Critical friendship is a mode of interactivity (Fletcher et al., 2016; Schuck & Russell, 2005; Stolle, et

al., 2019) in self-study research (Vanassche & Kelchtermans, 2015) used to gain perspectives on ideas and practices (LaBoskey, 2007). Our critical friend interactions focused on exploring PT development for teaching mathematics through problem-solving, but our conversations often included other professional and personal topics.

Unbeknownst, to the other, we each held unexplicated goals for professional transformation. Grant and Butler (2018) explored reasons for choosing self-study methodology spanning personal, professional, and programmatic contexts and described Melva's rationale as identity reclaiming. This study illustrates how critical friendship, as a component of self-study, can elicit identity transformation when certain characteristics are present.

The context for our inquiry into critical friendship was self-study research undertaken to improve MTE practice. We assert that our critical friendship was transformative for our MTE identities. Recognizing critical friendship as transformative exemplifies a key benefit of self-study research as highlighting "the learning effects of working with others" (Berry & Russell, 2014). This report contributes new characteristics of critical friendship that were transformative during critical friend development gleaned from recordings of regular critical friend conversations and retrospective accounts (i.e., memory recall) triggered by listening to past critical friend conversations.

## **MTE Identity and Transformation**

Reports of MTE development highlight the construct of identity and its formation through "identification (investment of the self in relations of association and differentiation) and negotiability (control over the meanings that matter within a social configuration)" (Potari et al., 2010, p. 475), two processes that bring "issues of power to the fore" (ibid). Tzur's (2001) reflective account of becoming an MTE identified MTE identity as consisting of a learner of mathematics, mathematics teacher, teacher educator, and mentor of teacher educators. Signe's role as Melva's critical friend resulted in shifts in her identification as an MTE and negotiation of meanings of being an MTE within the critical friend relationship. Newberry's (2014) exploration of nontraditional teacher education pathways resonated with us as we felt that neither of us had taken the traditional path to becoming an MTE. Although we had both been mathematics teachers, neither of us had taught elementary mathematics nor spent substantive time in K-12 education. Even so, our universities positioned us to teach elementary PTs, which caused MTE identity dissonance for us both. Such dissonance is included in self-study reports that describe MTE "tensions, challenges, contradictions, and disruptions" as well as "transformations" (Schuck & Brandenburg, 2019, p. 8). In this report, we describe examples of such catalyzing experiences that occurred during our self-study research. We assert that such experiences in the context of critical friendship were instrumental in provoking our consciousness of "issues of power" (Potari et al, 2010, p. 475) in our identifications and negotiations as MTEs in relation to each other and transformation.

### ***Aim***

Our overarching self-study research focused on improving Melva's MTE practice, but the central purpose of our critical friendship was learning; each of us establishing our learning trajectories that sometimes aligned. Our aim in this report is to share the characteristics of our transformative critical friendship in relation to MTE identity. We present shifts in Signe's MTE identity that unexpectedly influenced her stance within our critical friendship. We explored our evolving interactivity and share characteristics of our critical friendship that contributed to Signe's transformation. This research is

guided by the question: What characteristics of critical friendship are identity transforming?

## **Methods**

The primary data for the study were audio recordings of our regular critical friend meetings (November, 2018 through December, 2019). Recognition of the transformative nature of our critical friendship focused our attention on internal dialogues of “what I was thinking/doing/being at the time” (Ham & Kane, 2007, p. 114) as we listened to past critical friend conversations. We constructed memos to reflect those internal dialogues. Analysis of recordings and memos occurred through analytical dialogues (Guilfoyle et al., 2007) that involved “interchange of thought or talk” (Placier et al., 2005, p. 57) with the intent of building knowledge through inquiry and critique by exploring meanings of convergent views and identifying and unpacking divergent views.

Dialogues for this study first focused on identifying characteristics of our critical friendship and then on identifying evidence of shifts in our MTE identities. Shifts were identified by again listening to our conversations, constructing descriptive retrospective memos that revealed internal dialogs, and clarifying instances of catalyzing experiences that evidenced changes in relation to Signe’s practice. We discussed these experiences creating a researcher view of our MTE selves (Ham & Kane, 2007). These experiences evidenced the transformation of Signe’s MTE identity and her positioning of Melva. Trust between us allowed us to engage in sharing these highly personal memos (i.e., reflection and retrospective accounts).

Trustworthiness was established by triangulating across recorded critical friend conversations and memos.

## **Outcomes**

Our biographical narratives and transcribed critical friend conversations provided glimpses into our MTE identities. Similarities included feelings of exclusion in the MTE community when others positioned us as elementary MTEs. Our openness to hear from and our sincere desire to understand each other was another similarity. These similarities connected unspoken visions for transforming aspects of MTE identities we each believed the other could contribute to. We identify two critical friend characteristics that contributed to shifts in MTE identity: a) significant otherness; and b) conversation residue. Each characteristic is identified, described, and then exemplified in a narrative that describes the transformation of Signe’s MTE identity.

The first transformative characteristic, *significant otherness*, was interpreted from our analysis and informed by Newberry’s (2014) relationship influences in the context of teacher educator development. Significant otherness occurs by positioning a critical friend because her expectations or perspectives influence the positioner. In the context of this study about MTE identity transformation, that means that the positioner seeks to be influenced by the positioned in relation to her professional thinking, teaching, or taking other actions. Professional identity transformation occurs when the positioner makes an explicit professional change that is influenced by the positioned.

The second transformative characteristic, *conversation residue*, was interpreted from our analysis as taking up an idea from a critical friend conversation for the purpose of addressing a professional dilemma. For this study, the professional dilemma is an MTE pedagogical instructional dilemma that was not related to our self-study research. In our critical friend conversations, neither of us explicitly

segregated ideas as mine or hers, we both contributed fully and freely and used what met our needs. Our critical friend conversations were organic and flowed naturally, and we each independently took up conversation residue to address practical dilemmas, challenges within our institutional spaces, and other professional realities without constraint or judgment. We assert that significant otherness and conversation residue are characteristics of critical friendship that catalyzed MTE identity transformation. We look specifically at Signe's transformation to show these characteristics in situ to further elucidate their meaning.

## **Signe's MTE identity Shift**

Regular conversations allowed us to establish rapport (Schuck & Russell, 2005). A mutual love of mathematics, familiarity with challenges of teaching elementary mathematics methods, and finding similarities in our personal lives brought us closer. Critical friend conversations mostly focused on the self-study research but meandered and segued into related tangents such as, recently published articles, PTs and their beliefs about mathematics teaching and learning, and issues from our courses outside the self-study research. Signe initially positioned herself as a mentor to guide Melva's MTE development. However, in time Signe's perspectives about our critical friendship changed in ways that encouraged her to be more reflective of her MTE practice in light of our developing critical friend conversations. We present a narrative of Signe's transformation that describes how the two new characteristics of critical friendship manifested as catalyzing experiences in her MTE identity shifts. These critical friend characteristics may be present when critical friendships are initiated, but in Signe's case, the characteristics manifested over time.

Melva's invitation to Signe to join her self-study research as a critical friend positioned Signe as an expert mentor for elementary MTE. Melva did not share her contemporary mentorship perspective that mitigates the power imbalance. Signe positioning herself as Melva's expert mentor, positioning Melva as a novice. Signe expected to support Melva's MTE development through interactivity, rather than developing her own MTE practice. Initially, Signe did not position Melva with significant otherness (i.e., transformative characteristic) in relation to her own MTE practice; Signe did not look for or anticipate that the critical friendship would provide ideas for her MTE practical dilemmas. Neither Melva nor Signe recognized the implications that this positioning had on their critical friend development, especially in relation to Signe's MTE identity transformation.

During regular critical friend conversations, Signe worked diligently to meet her perceptions of Melva's expectations - Signe as MTE expert, mentor, and MTE developer. Signe's stance hindered her own MTE learning. Her internal voice was fraught with doubt about Melva's MTE pedagogy that drowned out Signe's belief in Melva as a legitimate MTE (Elbow, 1986). During critical friend conversations, Signe's doubt went unvoiced, instead, she asked Melva questions. Melva responded from her stance as a reflective and competent MTE. Signe's internal interpretations of Melva's self-study research approaches went unexpressed in critical friend conversations. Signe withheld her lack of understanding of Melva's instructional goals and activities. Signe did not voice her early view that her MTE beliefs and practices conflicted with Melva's. Signe's retrospective memo represents the first moment she decided to give voice to her doubts:

Signe: I was devoted to understanding Melva's experience as an MTE and *nurturing* her view of self as an MTE. To this end, I asked Melva questions about her practice. For example, early in our critical friend relationship, I asked Melva how PTs' could make

sense of the provided student solutions for the Harry the Dog problem. Melva's response made me realize that I really didn't understand the problem. Melva asserted that PTs should know about the solutions to a problem before posing it to learners. I pushed back, speaking up at last, because I disagreed with Melva. Knowing solutions to a problem is not something that I believe teachers must poses. This was something I felt strongly about. Melva has consistently asked for my insights, but this was the first time I spoke from my MTE identity. (Retrospective Memo, February 21, 2019)

This retrospective memo marked a turning point for our critical friend development. Signe gave voice to her internal dialogue about how our practices diverged. However, Signe continued to withhold her lack of understanding of the central self-study research task entitled, Harry the Dog. Signe decided to take up the Harry task within her practice to gain greater insight into the task and Melva's practice. The February critical friend conversation left conversation residue (i.e., transformative characteristic) that continued to evolve in Signe's internal dialogue about her practice - a small disruption or catalyzing experience (Schuck & Brandenburg, 2019). Signe initially used the Harry task to support PT task exploration and selection; an instructional goal not aligned with Melva's approach. Signe's desire to know Melva as an MTE grew but Signe maintained her initial positioning of Melva. The catalyzing experience marked the beginning of Signe's MTE identity shift.

By March, Signe decided to again use the Harry task, differently - she posed the Harry task as part of a "model lesson" to "introduce the idea of problem-solving, assumptions, and the use of a model to explain mathematical thinking" (Signe's class notes, March 4, 2019). Signe reasoned that she could learn about the task and Melva's pedagogy if she observed PTs doing and discussing the Harry task; this instructional goal was more aligned with Melva's approach, but their purposes still differed. Signe's shift continued along this trajectory of experimenting with the Harry task, wondering about uses for the task in her practice, and gaining insight into Melva as an MTE. Signe experienced tension in her positioning of Melva as an MTE novice, another catalyzing experience. In October, Signe explored the Harry task a third time, using a learning goal aligned with Melva's approach and purpose. Signe's MTE identity shift was more pronounced and was being influenced by the critical friend interactivity and conversation residue; Signe repositioned Melva with significant otherness, which influenced her use of the Harry task (see Table 1). Table 1 uses a continuum of critical friend characteristics modeled after Stolle and colleagues (2019) to represent our interpretation of our two new transformative critical friend characteristics, significant otherness, and conversation residue. The table represents our interpretation of the impact of these characteristics on MTE identity transformation.

### **Table 1**

*Timeline of Signe's MTE identity transformation*

	Critical friend characteristics and impact on MTE Identity shifts Inspired by Stolle, et al. (2019) critical friend definition continuum		
Time Line	Significant Other <sup>2</sup> Residue <sup>1</sup>		non-significant Other No-Residue
October, 2018- February, 2019	Significant Other Residue	x	non-significant Other x No-Residue
February, 2019	Significant Other Residue	x	non-significant Other No-Residue
March, 2019	Significant Other Residue	x	non-significant Other No-Residue
April, 2019	Significant Other Residue	x	non-significant Other No-Residue
April 25, 2019	Significant Other Residue	x	non-significant Other No-Residue
October, 2019	Significant Other Residue	x	non-significant Other No-Residue

<sup>1</sup>Conversation residue; <sup>2</sup>Significant otherness

The conversation residue and Signe’s positioning of Melva with respect to significant otherness (see Table 1) elicited Signe’s return to the Harry task in October, 2019 with a focus on using Melva’s approach to the task. Signe’s goal was “exploring the end of the lesson where the teacher uses the student work to have a discussion about the primary objective of the lesson.” (Class notes, April 1, 2019). This goal was aligned with Melva’s self-study research goal.

Signe’s taking up of the Harry task again shows further movement in her MTE identity shift. Signe acted on conversation residue and positioned Melva with MTE significant otherness. The act of adopting Melva’s task and learning goal suggests that Melva’s work became a legitimate source of inspiration for Signe’s MTE practice, the voices of doubt had been silenced. Signe has continued to tinker with the Harry task within her practice. Through the uses of the task in spring (March 1 & April 1) and fall (October 29) 2019, Signe’s actions supported her understanding of the task, her practice, and Melva’s self-study research. As critical friends, we have examined our transformative critical friend development, identified new characteristics of such friendship: significant otherness and conversation residue, and linked these characteristics to shifts in MTE identity.

## Conclusions

Melva and Signe entered into a critical friendship for different reasons and with different expectations. Melva’s initial positioning of Signe with MTE significant otherness from a practical perspective inspired Melva to reflexively consider practical changes from the beginning of their critical friendship. On the other hand, Signe’s initial positioning of Melva as an MTE without significant otherness from a practical perspective hindered Signe’s perspective of their interactivity as an opportunity for practical reflexivity. After about 6 months of developing a caring relationship with a sense of safety, Signe opened up. The impetus for Signe’s MTE identity shift was critical friend conversation residue, which gave way to repositioning Melva with significant otherness as an MTE. Signe’s initial move was to implement the Harry task in her practice using different approaches than Melva. As trust grew, Signe shared her internal dialogues, which strengthened the critical friendship.

Critical friend conversations contained conversation residue as Signe repositioned Melva with significant otherness. Signe's internal dialogue was transformed, focusing on Melva's pedagogical decisions as an inspiring practice.

Signe's practical experimentation with the Harry task was catalyzed by conversational residue in the early months and clarified her understanding of Melva's self-study research and MTE practice. The culmination of significant otherness and conversation residue supported Signe's deeper understanding of the self-study research, usage of the Harry task in her practice, and greater insight into Melva's MTE identity. Signe's repositioning of Melva with significant otherness and taking up of conversation residue, transformed our critical friend relationship. After Signe's MTE identity shift was initiated through a catalyzing moment, it progressed steadily. Signe's MTE identity transformation benefitted Signe's practical learning of pedagogy in relation to supporting PTs' development.

As a mode of interactivity (Fletcher et al., 2016; Schuck & Russell, 2005; Stolle, et al., 2019), critical friendship can be used to gain perspectives on ideas and practices, yet such perspectives can also be constrained by positionings of critical friends. Stolle et al. (2019) described the importance of discussing and revisiting the evolving roles of critical friends in self-study research. Shuck and Russell (2005) suggested that such discussions can be challenging. Continual opportunities to "test the relationship as it proceeds" (p. 120) are difficult, and as critical friends search for "clues about the level of critical commentary with which each feels comfortable" (p. 120); relationships are influenced by many factors including contextual, social, and power dynamics. Characteristics of critical friendship have included insider and outsider, expert and non-expert, and trustworthiness (e.g. Stolle et al., 2019). In this report, we contribute two new characteristics to this list (significant otherness and conversation residue) and describe how these characteristics emerge in the context of a developing critical friendship. We further illustrate how collaborative and productive critical friendships (Fletcher et al., 2016) with these characteristics contribute to professional identity transformation.

We join with other researchers in an ongoing discussion of critical friendship as a mechanism for understanding and improving pedagogy and developing identity. In identity development identification in the context of the critical friendship involves the negotiation of "issues of power" (Potari et al., 2010, p. 475) and the creation of a sense of belonging within the relationship. Critical friends looking for opportunities to build identification must test the relationship (Shuck & Russell, 2005) by attending to significant otherness and giving voice to perceived positionings and power imbalances that constrain pedagogical and conceptual growth. Attending to conversation residue in a developing critical friendship by returning to past conversations may reveal catalytic events that initiate critical friend transformations. Considering the ways that critical friends position one another within self-study research may be a significant step in recognizing power imbalances that impede learning. Signe's transformational shift required repositioning Melva as an MTE peer, a power balancing move that promoted Signe's learning. Our ongoing exploration of critical friend characteristics with the power to transform involves exploring whether and how significant otherness and conversation residue manifest in critical friendships outside our own experience.

## References

Berry, M., & Russell, T. (2014). Critical friends, collaborators and community in self-study, *Studying Teacher Education*, 10(3), 195-196. <https://doi.org/10.1080/17425964.2014.958283>

- Elbow, P. (1986). *Embracing contraries*. Oxford University Press.
- Fletcher, T., Ní Chróinín, D., & O'Sullivan, M. (2016). A layered approach to critical friendship as a means to support pedagogical innovation in pre-service teacher education. *Studying Teacher Education*, 12(3), 302-319. <https://edtechbooks.org/-vEs>
- Grant, M.R. & Butler, B.M. (2018). Why self-study? An exploration of personal, professional, and programmatic influences in the use of self-study research. *Studying Teacher Education*, 14(3), 320-330. <https://doi.org/10.1080/17425964.2018.1541289>.
- Guilfoyle, K., Hamilton, M., Pinnegar, S., & Placier, P. (2007). The epistemological dimensions and dynamics of professional dialogue in self-study. In J. Loughran et al. (Eds.). *International handbook of self-study of teaching and teacher education practices* (pp. 1109-1167). Springer.
- LaBoskey, V. K. (2007). The methodology of self-study and its theoretical underpinnings. In J. Loughran, M. L. Hamilton, V. K. LaBoskey, & T. Russell (Eds.), *International handbook of self-study of teaching and teacher education practices* (pp. 817-869). Springer.
- Newberry, M. (2014). Teacher educator identity development from the nontraditional teacher educator. *Studying Teacher Education*, 10(2), 163-178. <https://edtechbooks.org/-VNrm>
- Potari, D., Sakonidis, H., Chatzigoula, R., & Manaridis, A. (2010). Teachers' and researchers' collaboration in analyzing mathematics teacher: A context for professional reflection and development. *Journal of Mathematics Teacher Education*, 13(6), p. 473-485. <https://doi.org/0.1007/s10857-010-9161-9>
- Pinnegar, S., & Hamilton, M. L. (2009). *Self-study of practice as a genre of qualitative research: Theory, methodology, and practice*. Springer.
- Placier, P., Pinnegar, S., Hamilton, M. L., & Guilfoyle, K. (2005). Exploring the concept of dialogue in the self-study of teaching practices. In C. Kosnik, C. Beck, A. Freese, & A. Samaras (Eds.) *Making a difference in teacher education through self-study* (pp. 51-64). Springer.
- Schuck, S., & Russell, T. (2005). Self-Study, critical friendship, and the complexities of teacher education. *Studying Teacher Education*, 1(2), 107-121. <https://doi.org/10.1080/17425960500288291>
- Schuck, S., & Brandenburg, R. (2019). Self-study in mathematics teacher education. In J. Kitchen, A. Berry, S. Bullock, A. Crowe, A. Taylor, H. Guðjónsdóttir, & L. Thomas (Eds.). *2nd International handbook of self-study of teaching and teacher education*. Springer. [https://doi.org/10.1007/978-981-13-1710-1\\_29-1](https://doi.org/10.1007/978-981-13-1710-1_29-1)
- Smith, M., & Stein, M. (2011). 5 Practices for orchestrating productive mathematics discussions. National Council of Teachers of Mathematics.
- Steffe, L., & D'Ambrosio, B. (1995). Toward a working model of constructivist teaching: A reaction to Simon. *Journal for Research in Mathematics Education*, 26, 146-159. <https://doi.org/10.2307/749206>
- Stolle, P., Frambaugh-Kritzer, E., Freese, A., & Persson, A. (2019). Investigating critical friendship: Peeling back the layers. *Studying Teacher Education*, 15(1), 19-30. <https://edtechbooks.org/-ZoB>
- Tenni, C., Smith, A., & Boucher, C. (2003). The researcher as autobiographer: Analysing data written

about oneself. *The Qualitative Report*, 8(1), 1-12. Retrieved from <https://edtechbooks.org/-FAPB>

Tzur, R. (2001). Becoming a mathematics teacher-educator: Conceptualizing the terrain through self-reflective analysis. *Journal of Mathematics Teacher Education*, 4(4), 259-283. <https://doi.org/10.1023/A:1013314009952>

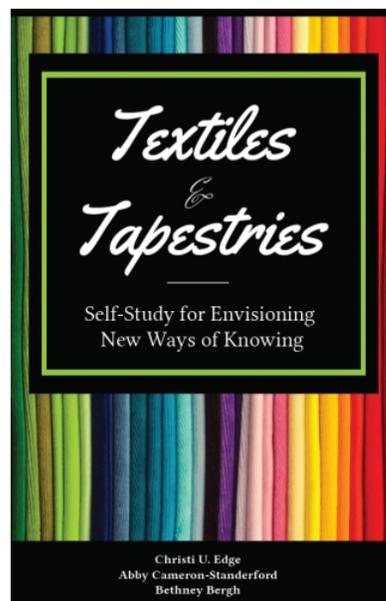
Vanassche, E., & Kelchtermans, G. (2015). The state of the art in self-study of teacher education practices: A systematic literature review. *Journal of Curriculum Studies*, 47(4), 508-528. <https://edtechbooks.org/-GzQv>

von Glasersfeld, E. (1995). *Radical constructivism: A way of knowing and learning*. Routledge Falmer.

Whitehead, J. (1989). Creating a living educational theory from questions of the kind, "How do I improve my practice?" *Cambridge Journal of Education*, 19(1), 41-52. <https://edtechbooks.org/-fAQT>

Williams, J., Ritter, J., & Bullock, S. (2012). Understanding the complexity of becoming a teacher educator: Experience, belonging, and practice within a professional learning community. *Studying Teacher Education* 8(3), 245-260. <https://edtechbooks.org/-qsax>

Weissglass, J. (1990). Constructivist listening for empowerment and change. *The Educational Forum*, 54(4), 351-370. <https://doi.org/10.1080/00131729009335561>



Kastberg, S. E. & Grant, M. (2020). Characteristics of Critical Friendship that Transform Professional Identity. In C. Edge, A. Cameron-Standerford, & B. Bergh (Eds.), *Textiles and Tapestries*. EdTech Books. Retrieved from [https://edtechbooks.org/textiles\\_tapestries\\_self\\_study/chapter\\_17](https://edtechbooks.org/textiles_tapestries_self_study/chapter_17)



**CC BY-NC-ND International 4.0:** This work is released under a CC BY-NC-ND International 4.0 license, which means that you

are free to do with it as you please as long as you (1) properly attribute it, (2) do not use it for commercial gain, and (3) do not create derivative works.