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Employing the Danielson Observation Protocol, a rubric to enhance teacher preparation programs

Fostering More Deliberate Practice in Teacher Preparation Programs: An Improvement Science Approach to Optimize Observation Feedback Conversations

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Abstract

The meaning-making that occurs in dialogues between novice and more experienced teachers is critical in fostering habits of mind and instructional planning processes that translate reflection on teaching into deliberate practice. To better understand and ultimately improve the efficacy of feedback conversations among teacher candidates, mentor teachers, and university supervisors, we conducted empathy interviews, developed process maps, and implemented surveys. These data were then used to inform iterative adjustments to feedback conversations throughout the course of an academic year. Specifically, the researchers continuously revised the Danielson Observation Protocol to ensure the reflective conversations that occurred between teacher candidates and their mentor teachers and/or university supervisors led to deliberate changes in teaching practice. The methodological approach embodies the concepts of improvement science and reflects the use of rapid, iterative cycles of testing, learning, and scaling improvement. The outcomes of this work lend toward the enhancement of teachers' training and also serve as a conduit to the development of pedagogical expertise in curriculum development.

Key Words:

Teacher Education, Improvement Science, Mentor Teachers, Teacher Feedback, Danielson Observation Framework

Introduction

Cycles of practice, feedback, and reflection are central to pre-service teacher preparation. However, delivering effective feedback to teacher candidates is a complex process, shaped by contextual and interpersonal factors. As Brandt (2008) argues, the feedback teacher candidates receive may produce feelings of tension between teacher candidates and observers due to the dual—and sometimes contradictory—purposes of evaluation of mastery and supporting development through time. That is, evaluation of mastery has a finality that may leave teacher candidates feeling definitively labeled as proficient or not proficient in a way that squelches further dialogue, whereas supporting development over time is less about mastery and more focused on a continuous conversation about growth. Copeland (2014) suggests these incompatibilities may also be the result of divergent expectations between a teacher candidate and the teacher educator regarding the "purpose and performance of feedback" (p.468). Considering the purpose of feedback conversations, as well as the tension between mastery and growth, Hattie and Timperley (2007) identified three main foci of feedback conversations: Where am I going? How am I going? Where to next? Through interviews and focus groups with teacher candidates, they found that feedback conversations were mostly focused on "How am I going?" and not the other two foci (Hattie and Timperley, 2007). In context of this study, the teacher education department knew the teacher candidates in the credentialing program were receiving feedback, but did not know the nature or efficacy

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of that feedback. The aim of this study was to ensure all teacher candidates were receiving feedback to help them meet and sustain proficiency standards, as defined by our program-wide Danielson Observation Protocol (The Danielson Group, 2013) and to receive this Danielson-informed feedback in ways that lead to the creation of deliberate next steps to change their practice.

The 2013 Instructionally Focused Edition of the Danielson Observation Framework is composed of four domains: Planning and Preparation; The Classroom Environment; Instruction; and Professional Responsibilities. Each domain consists of a rubric with four scales: Unsatisfactory; Basic; Proficient; and Distinguished. Within each scale is a list of observable teaching behaviors that characterize each rating. The domains and accompanying scales are derived from "aspects of teachers' responsibilities" that have been documented in both empirical and theoretical research (The Danielson Group, 2013). We adapted the Danielson Observation Framework in 2013 into a Google form, which we called the *Danielson Observation Protocol*. As part of each formal observation, California State University Bakersfield Teacher Education Department (CSUB-TED) asks mentor teachers and university supervisors to complete and submit the Protocol and then use it to inform their conversation with teacher candidates.

The Research Goal

With the Protocol positioned as the main medium of classroom observation and feedback within the teacher education program, the Improvement Science Research Team (ISRT) was interested in first learning how mentor teachers, university supervisors, and teacher candidates were using the Protocol. In particular, the researchers were interested in determining the extent to which the Protocol was used to help this group move from reflection on teaching into deliberate changes to practice. Within this context, the iterative adjustments made throughout this improvement science study were designed to build their capacity to use the Protocol to inform feedback and to create deliberate next steps to improve teacher candidate practice.

Improvement Science Research Team

California State University, Bakersfield's Teacher Education Department (CSUB-TED) prepares more than 80 percent of teachers in Kern and surrounding California counties. Our ISRT was formed as an extension of the existing Kern Urban Teacher Residency (KUTR) partnership between CSUB-TED and the Bakersfield City School District (BCSD). The team is comprised of two CSUB-TED faculty members, a BCSD instructional specialist, and a former outreach candidate. Each member thus enters this work with different insights about the common program under study. KUTR was also the subject of earlier improvement science work in which one of the CSUB TED faculty members worked to track and increase the number of formal observations teacher candidates received throughout the year-long program. The result of this initial improvement science study led to structures and processes that ensured teacher candidates were being formally observed and engaged in observation feedback conversations at least once per week. The ISRT built upon this prior study to more deeply explore the nature of the observation feedback teacher candidates were receiving with the aim to ensure this feedback was both Danielson-informed and would lead to deliberate next steps to change their teaching practice.

Local Problem Definition

At the beginning of this study, the researchers did not have a shared understanding of the existing process of formal observations feedback within CSUB-TED. To identify our starting assumptions regarding how the formal observation process currently progressed, the IRST began the improvement science work by collaboratively creating a process map to use as a baseline. The researchers also conducted empathy interviews (Hasso Plattner, n.d.) with teacher candidates, university supervisors, and mentor teachers, during which we asked these individuals to create their own process maps of formal teaching observations and post-observation feedback. An empathy interview is a valuable tool that explicates an individual's experience within the framework of a specific scenario. This approach permits researchers to evaluate students' experiences on more penetrative levels that permit for deeper understanding regarding their needs. We noted areas of convergence and divergence within and between individual maps, and then created a process map that offered a synthesis of the researcher and participant created maps (see Figure 1). Analysis revealed that researchers, university supervisors, and teacher candidates did not have a common understanding of the purposes and processes of formal teaching observations. Two gaps were particularly significant: First, each observation process map created by university supervisors, mentor teachers, and teacher candidates ended without the creation of deliberate next steps. Second, while all university supervisors claimed to provide Danielson-informed feedback, teacher candidates reported that they had never seen the Danielson Observation Protocol and were not certain how it intersected with their formal observation or with the feedback they received. This recognition represents a significant problem in terms of communication and the proposed quality improvement initiatives, and process maps offered a way to identify where expectations diverged from practice.

In particular, process maps use shapes to mark particular parts of a process: circles represent beginnings and endings, diamonds represent decision points, and squares are actions taken.

Process maps enable researchers to gain a better understanding of the mental models participants hold about a task or system and can offer further insight into what part of a task or system requires improvement. In Figure 1, the process of an observation began when the mentor teacher arrived at the school site or classroom for the observation. After the observation began, the mentor teacher reached a decision point of using or not using the Danielson Observation Protocol for their note taking during the observation. One significant finding concerns the fact that nonteacher candidates or mentor teachers had created Danielson-informed next steps based on the feedback conversation.

The researchers emerged from the problem investigation work with a theory about how to improve the gaps exposed by the process maps and empathy interviews. The lack of deliberate next steps following a formal observation and the fact that teacher candidates were not informed about the use of the Danielson Observation Protocol became focus of the improvement science study. To better ensure each teacher candidate received observation feedback designed to foster deliberate improvement to their practice in ways informed by the Danielson Observation Protocol, the researchers theorized that they could improve the feedback process by modifying the Danielson Observation Protocol. In particular, the researchers tested a final series of questions in which university supervisors/mentor teachers and their paired teacher candidates were required to work together to develop a specific, measurable, attainable, relevant, and timely (SMART) goal that was explicitly connected to a dimension of the Danielson Observation Protocol. Prior to this proposed change, the only artifact from the formal observation was the teacher candidate ratings in each domain of the Danielson Observation Framework.

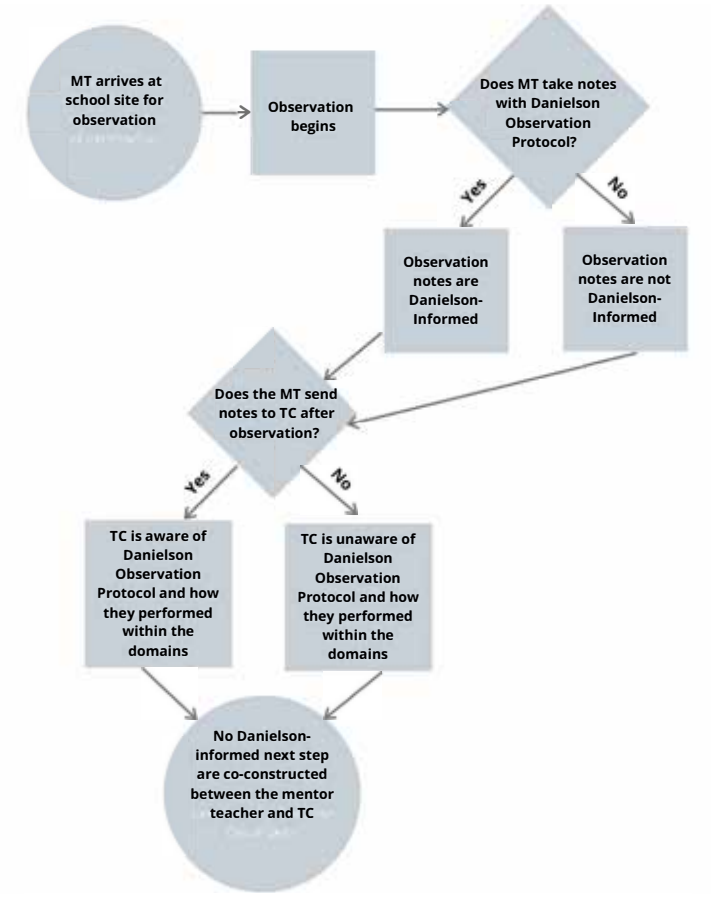

Figure 1: Process Map Baseline

The rationale for incorporating a SMART goal was twofold. Foremost, SMART goals were already being used for the school district's new teacher induction program, which all teacher candidates enter after earning their credential. Using this common language and way of tracking progress could thus better prepare them for the models of improvement they would experience during their first two years of full-time classroom teaching. Second, SMART goals helped to scaffold five possible layers of deliberate practice for mentors, university supervisors, and teacher candidates. Therefore, for the theory of change, the researchers hypothesized that if university supervisors/mentor teachers, and teacher candidates jointly worked to create SMART, Danielson-informed next steps, then teacher candidates would be more likely to know how to move toward and ultimately achieve proficiency in their teaching pedagogies through enacting deliberate changes to their practice.

Significance of Study

The meaning-making that occurs in dialogues between novice and more experienced teachers is critical in fostering habits of mind and instructional planning processes that translate reflection on teaching into deliberate practice. By deliberate practice, the researchers draw from Ericsson (2006) and others (Bronkhorst, Meijer, Koster, & Vermunt, 2001; Daniel, Auhl, & Hastings, 2013; Dunn & Shrinner, 1999) to propose that experience enacting the work of teaching—even successful enactment—does not, alone, lead to improvement. Improving our work as educators requires opportunities to both reflect upon our teaching and develop next steps that are intentionally aligned with insights from our experiences, as well as the feedback given to us by others. The researchers also propose that feedback must be scaffolded in developmental ways that consider at what level of expertise we are currently operating and what a reasonable vision of improvement can and should look like during the next attempt at implementing a particular curricular or pedagogical practice.

Honing these dimensions of teacher development harbors significance for improving the professional development experience of the teachers with whom we work, and better teacher preparation may lead to increased teacher retention as they perceive themselves to be more prepared for their first, and often most difficult, years in the classroom (Whalen, Majocha, & Nuland, 2019; Zhang & Zeller, 2016). Carver-Thomas and Darling-Hammond (2017) identify several national trends in teacher-turnover rates. While the average rate of teacher turnover in the United States is 16 percent, the turnover rate is 70 percent higher in schools with the highest concentrations of underrepresented students and 50 percent higher in Title I schools. The reasons most frequently cited for teacher attrition are "dissatisfaction with testing and accountability measures, lack of administrative support, dissatisfaction with the teacher career, and dissatisfaction with working conditions" (p. v). To address these dissatisfactions, Carver-Thomas & Darling-Hammond (2017) recommend two practices that are most germane to this study: the creation of teacher residency programs that are tailored to meet the needs of a particular school district and that require residents to teach in the community for three to five years; and the creation of high-quality mentoring and induction programs. The context of this study took place within one of our residency programs and the central focus was how to improve the mentoring residents receive during formal observation feedback conversations. The results of this study thus provide further insight into the dynamics of both improvement science in the context of a residency program, as well as upon ways to improve the mentoring new teachers receive.

Methods

This mixed-methods improvement science study is designed to iterate the theory of change regarding how to improve the Danielson Observation Protocol in a way that ensures teacher candidates in our teacher education program receive observation feedback that helps them to meet and sustain proficiency standards by implementing deliberate changes in their practice. Toward this goal, improvement science methodology was chosen due to its highly user-centered nature (Bryk et.al., 2016). Improvement science offered the ability to meet participant needs as they arose in the research and to quickly scale improvements with greater confidence to other similar stakeholders not immediately involved in the research project. In particular, three core questions animated this work:

1. How do university supervisors, mentor teachers, and teacher candidates understand the purposes and processes of a formal observation feedback cycle?
2. Do university supervisors and mentor teachers provide teacher candidates with specific, measurable, actionable, relevant, and timely feedback during formal observation feedback cycles?
3. Did the iterative improvement made to the Danielson Observation Protocol increase the capacity of university supervisors, mentor teachers, and teacher candidates to create deliberate, Danielson-informed changes to practice?

Theoretical Framework

Drawing from Vygotsky (1978) and others (Dewey, 1916; Richardson, 1997), the theoretical frame of this study is social constructivism. Vygotsky argued that all learning and all cognitive function is the direct result of social interaction. That is, learning is not simply the individual assimilation of knowledge by the learner, but also the induction of the learner into a knowledge community in which knowledge is constantly co-constructed with others. In social constructivist theory, the collaborative use and interpretation of language is a central mode of inquiry for understanding how meaning-making occurs and how this both influences and is influenced by the environment in which language is being exchanged. Dewey (1916) proposes that

> The use of language to convey and acquire ideas is an extension and refinement of the principle that things gain meaning by being used in a shared experienced or joint action…When words do not enter as factors into a shared situation, whether overtly or imaginatively, they operate as pure physical stimuli, not as having meaning or intellectual value (p. 36).

Further, as Vygotsky (1957) argues, there is a zone of proximal development that must be considered as the learner interacts with a potentially more knowledgeable other. This zone of proximal development is the level of development a learner is capable of achieving with assistance from teachers or peers.

Both the co-construction of knowledge between mentor teachers and teacher candidates and the zone of proximal development of teacher candidates offer fruitful ways to think about the efficacy of feedback conversations. If a common language is not being co-constructed between the teacher candidate and mentor teacher or if the mentor teacher is not providing feedback (in content or delivery) that is within the teacher candidate's zone of proximal development, the efficacy of the feedback is reduced. Alternatively, if the mentor teacher is providing feedback to the teacher candidate that is within their zone of proximal development and is co-constructing a shared language with the teacher candidate, the teacher candidate's knowledge development and

respective practices are more likely to reflect what they are capable of achieving with guidance from a more knowledgeable other. As researchers, we view the Danielson Observation Protocol as a medium through which to develop a shared language and the collaborative development of SMART goals as a way to ensure that the content and delivery of feedback is within a teacher candidate's zone of proximal development. The collaborative nature of developing the SMART goals is also aligned with need for language and knowledge to be a co-construction in order to have "meaning and intellectual value" (Dewey, 1916, p. 36).

Participants

The researchers interviewed and surveyed a total of three university supervisors, five mentor teachers, seven elementary teacher candidates, and two secondary teacher candidates. All university supervisor/mentor teacher participants were paired with at least one participating teacher candidate in a formal observer-observee relationship. As part of the teacher education program requirements, teacher candidates are required to be observed teaching at least six times each semester during the year-long span of the credentialing program. Notably, the research began exclusively with KUTR mentors and teacher candidates. However, in seeking opportunities to further scale the changes to the Danielson Observation Protocol, three university supervisors and three teacher candidates from the traditional CSUB-TED teacher preparation pathway were also included in the study.

For the purpose of this study, mentor teachers are defined as the full-time classroom teachers who engage in different models of co-teaching to teacher candidates throughout the academic year. University supervisors are full or part-time faculty, who are assigned to teacher candidates, in addition to the mentor teachers, and who also observe teacher candidates at least six times per semester. Within this context, CSUB-TED has both a residency pathway, as well as a traditional pathway. The residency pathway is designed as a partnership between CSUB-TED and a particular school district. Within a residency, all coursework and clinical practice are co-planed between CSUB-TED and the school district. Teacher candidates in the residency program move through the year-long experience as a cohort, are paid a living wage-stipend, and must commit to teaching in the partnering school district for at least four years following conferment of their credential. By contrast, teacher candidates in the traditional pathway teach in school districts throughout the county and gradually work toward completing coursework and field experiences as individual students. Teacher candidates in both the residency pathway and traditional pathway are assigned both a mentor teacher and university supervisor.

Data Collection Measures

To better understand how university supervisors, mentor teachers, and teacher candidates understood the purposes and processes of formal observation feedback cycles, the researchers conducted process mapping, semi-structured empathy interviews, and focus groups, as well as mixed-methods online surveys regarding participants' experience with three observation-feedback cycles throughout the course of an academic year. All modes of data collection were designed to gain insight into the participant experience with and feelings about the processes, purposes, and outcomes of formal observation feedback conversations. Empathy interviews (Hasso Plattner, n.d.), in particular, offered deep introspection into what individual participants thought about his or her mentor or university supervisor, estimated the efficacy of the feedback received, and considered viable suggestions for changes to the Protocol. After each observation feedback cycle, university supervisors, mentor teachers, and teacher candidates' responses to the Danielson Observation Protocol form were analyzed to inform subsequent changes to the Protocol.

University supervisors, mentor teachers, and teacher candidates were also asked to complete an online Google survey regarding their experience with each of the three iterations of the Danielson Observation Protocol. The Google survey was composed of questions regarding the ease of use of the Protocol and the efficacy of it for helping university supervisors, mentor teachers, and teacher candidates develop collaborative, Danielson-informed, and SMART next steps. Participants were also asked to both complete a Likert scale for ease and efficacy of the form, and were then given an open-ended space to explain their rating of the form, as well as to provide any other insight into their experience during the observation process.

Data Analysis

The data from each observation-feedback cycle were initially analyzed by a Plan-Do-Study-Act (PDSA) protocol (Langley, et al., 2009). PDSA protocols are characterized by the rapid development of questions; identification of data to best address those questions; data collection plans; and analysis of data to inform the design of questions, data collection, and interventions for subsequent PDSA cycles. As a pillar of improvement science, PDSA cycles help to facilitate smaller tests, more rapid learning, and ultimately, the ability to scale improvements with greater confidence as a way to meet the needs of individuals in real-time. A total of three PDSA cycles were implemented throughout the course of an academic year, with each cycle lasting approximately three months.

To dig deeply into the data collected with each PDSA cycle, the research team engaged in code development and thematic

analysis of the data in order to identify patterns that addressed the previously identified questions and to generate new and/or to refine existing questions (Boyatzis, 1998; Braun, Clarke, Hayfield & Terry, 2019). In particular, we posed questions and collected and analyzed data regarding the Danielson Observation Protocol to fine tune how teacher candidates, mentor teachers, and university supervisors understood the feedback process. Further examined was the feedback's connection to the Danielson Observation Protocol and the extent to which teacher candidates were able to collaboratively identify specific, measurable, attainable, relevant, and timely (SMART) next steps with their university supervisor and/or mentor teacher.

Findings

The researchers conducted three PDSA cycles to test the change idea for improving the Danielson Observation Protocol. This section outlines the results from each cycle, noting the questions, the types of data collected, findings from the data, and the manner in which learning outcomes shaped each subsequent PDSA cycle. This level of detail is essential to understand how and why the measures and interventions evolved over time. Indeed, in keeping with the conceptual framework of improvement science, not all of the changes made led to improvement and, therefore, it is necessary to note how the continuously modified theory of change shaped and was shaped by each PDSA cycle. Given the multivocal and multimodal nature of how each cycle of data collection informed subsequent cycles, Table 1 offers a summary of the questions, participants, and data collected during each PDSA cycle.

PDSA Cycle 1: October-November 2018

Based on the baseline map created to define the core problem of the study (see Figure 1), the researchers decided to add an explicit step to the Danielson Observation Protocol. This step required teacher candidates and mentor teachers to collaboratively identify a SMART goal at the end of the feedback conversation. Specifically,

Table 1: Overview of Plan-Do-Study Act (PDSA) Cycle

PDSA	Driving Question	Participants	Data	Key Outcomes
Cycle One	Will requiring mentor teachers and teacher candidates to collaboratively develop SMART goals lead to more deliberate next steps to improve practice?	Mentor teachers, university supervisors, and teacher candidates	SMART goals; Google survey	• The goals created by participants were not SMART. In particular, participants struggled with creating goals that were measurable and timely.
Cycle Two	Will scaffolding the creation of SMART goals for mentor teachers, university supervisors, and teacher candidates lead to more deliberate next steps to improve practice?	Mentor teachers, university supervisors, and teacher candidates	SMART goals; Google survey; focus groups	• The university supervisors had different mental models of effective feedback, which led to different engagement with SMART goals by university supervisors. • A lack of training and practice with SMART goal was correlated to these gaps. • Teacher candidates felt SMART goals led to clearer, more deliberate next steps to improve their practice.
Cycle Three	Will implementing training on how to create SMART goals increase the efficacy of mentor teachers, university supervisors, and teacher candidates collaborative creation of SMART goals?	Mentor teachers, university supervisors, and teacher candidates	SMART goals; Google survey; focus groups; process maps	• University supervisors still had different perspectives regarding the efficacy of SMART goals. • Teacher candidates valued SMART goals. For the university supervisor who did not create SMART goals, the teacher candidate felt overwhelmed with too much feedback. • All university supervisor and teacher candidate pairs created next steps, even though they were not all SMART next steps.

the researchers added the following free response question to the Protocol: "Collaboratively identify one goal that is specific, measurable, attainable, relevant, and timely (SMART)." To assess the efficacy of this additional Protocol requirement, we evaluated the specificity, measurability, attainability, relevance, and timeliness of each goal, as well as the goal's alignment with the domains of the Danielson Protocol. This data analysis revealed the goals created by the mentor teacher and university supervisors, in collaboration with their respective teacher candidate, were largely attainable and relevant, but not specific, measurable, or timely. For example, one teacher candidate and mentor teacher team chose the goal, "Make sure I use the same techniques in teaching to help children in their formative assessment in writing." No goal was fully SMART or explicitly Danielson-informed, which reduced the likelihood of teacher candidates knowing how to make a deliberate change to practice in ways that helped them meet and/or sustain proficiency standards.

Further, to address the feedback from our initial empathy interviews that teacher candidates had neither seen the Danielson Observation Protocol nor understood how it intersected with the formal teacher observation process, we required the teacher candidates, mentor teachers, and university supervisors to create the SMART goal "collaboratively." While mentor teachers and university supervisors were trained in the use of the Danielson Observation Protocol, the researchers learned during empathy interviews that they relied on their own informal note taking during the observation and following feedback conversation. Mentor teachers and university supervisors understood the Protocol as a measure of mastery CSUB-TED wanted, yet viewed their personal notes as better suited to inform growth-oriented conversations with their teacher candidates.

To evaluate the extent to which mentor teachers, university supervisors, teacher candidates perceived the goals to be collaboratively developed, the researchers created and sent a Google survey to each participant. The data from these surveys revealed that both members of each mentor teacher/university supervisor and teacher candidate team perceived the goals to be collaboratively developed. One their own ne of the teacher candidate/mentor teacher pairs decided to complete the entire Danielson Observation Protocol collaboratively. That is, they went through each domain and, based on the mentor teacher's observation notes and the teacher candidate's first-hand experience teaching the lesson, they collaboratively scored each section. Both the mentor teacher and teacher candidate indicated that this joint scoring helped to "more deeply stay rooted" in the Danielson framework while simultaneously reducing "feelings of anxiety" and the "top down" nature of the conversation.

PDSA Cycle 2: January-February 2019

Based on the results from PDSA cycle 1, the researchers decided to provide scaffolding on the Danielson Observation Protocol for the development of SMART goals. Specifically, sentence frames were added to bring explicit attention to each component of a SMART goal. To accompany the sentence frame, we also offered an example of a completed sentence frame.

> *Example:* Based on my Danielson proficiency level in Engaging Students in Learning, I will not call on the same students repeatedly because this provides more opportunities for all students to share their learning. I plan to meet this goal by October 4, 2019. I know this goal is met when I create an opportunity for each student to share or show their thinking with the class at least once during a school day, and I will track this by noting student participation on a roster throughout the day.
>
> Based on the feedback I received on the Danielson Framework Domain _____, I will improve instruction and/or assessment by _____. I plan to meet this goal by the following date _____. I know I have met this goal when students demonstrate _____ and I will track this by _____.

With this example and sentence frame, participants engaged in another round of the formal teaching observation process. Data analysis revealed that all mentor teachers and university supervisors except one, were able to use the example and sentence frame to inform the creation of SMART goals with their teacher candidates. The university supervisor who did not create a SMART goal instead created a list of what the teacher candidate should do differently. The Google survey results offered insight into how and why each SMART goal portion of the Danielson Observation Protocol was completed in these divergent ways.

The university supervisors and mentor teachers who were able to collaboratively create a SMART goal with their teacher candidates indicated that they found this new element of the form to be valuable and that it was "just what the form needed." However, the university supervisor who intentionally chose not to complete a SMART goal found this element of the form to be "too broad" and indicated that the addition of the SMART goal "wasn't necessary" because she already "writes and discusses" what needs to change with her candidates. In addition, this university supervisor considered the sentence frame "too formulaic" and that it "restricted authentic dialogue" with their teacher candidate.

Yet, the Google surveys completed by the participating teacher candidates challenged this mental model of the observation. The teacher candidates who created a SMART goal with their

university supervisor, concluded that the form now had "clearer improvement expectations," "the ability to check for improvement" from one observation to the next, and that the "feedback was condensed, but just as informative." The teacher candidates who did not create a SMART goal with their university supervisor, indicated that they were receiving "too much feedback" and were therefore "not sure what to do next." These conflicting views between university supervisors /mentor teachers and among university supervisors /mentor teachers and teacher candidates highlighted how mental models of observation feedback conversations were informing, more broadly, both effective and less effective uses of the Danielson Observation Protocol, as well as specifically attributing to the creation of deliberate, Danielson-informed SMART goals. Insight was also gained into what type of feedback may be most understood and ultimately engaged in by teacher candidates in their efforts to move toward proficiency. Feedback that was brief and clearly actionable was more likely to help teacher candidates understand how to transform reflection on teaching into action. To more intentionally help mentor teachers and university supervisors understand this feedback, we implemented a brief, one-hour training to share teacher candidates' feedback and to demonstrate how to work with teacher candidates to develop deliberate, Danielson-informed SMART goals.

PDSA Cycle 3: March-April 2019

In order to gain insight into how the training impacted mentor teacher and university supervisors' capacity to create Danielson-informed SMART goals with their teacher candidates, the researchers kept the revised Danielson Observation Protocol the same as in cycle two. Analysis of the SMART goal created during PDSA cycle three revealed a continued lack of consistent implementation. Most notably, the university supervisor who did not create a SMART goal in PDSA cycle two also did not create a SMART goal in cycle three. To explore this lack of consistency, we decided to conduct both Google surveys, as well as focus groups, with teacher candidates, mentor teachers, and university supervisors, respectively. All participants indicated the form was "effective" or "very effective" in terms of the way it scaffolded the creation of feedback that leads to deliberate action. One university supervisor offered the following insight: "That worked quite nicely, and we came up with some more specific things because of the guidance here." Another university supervisor noted, "I enjoyed the feedback process because it allows me to really understand where the candidate feels they are struggling and how we can amend that issue or at least start moving in the right direction." The teacher candidates, too, expressed how the form "made them feel like they knew exactly what to do next" and, the collaborative nature of the feedback "reduced anxieties" about the feedback conversation.

Teacher candidates whose university supervisor did not create SMART goals expressed persistent feelings of being "overwhelmed" by the feedback. Nonetheless, the teacher candidates' new ability to explicitly reference the Danielson Observation Protocol during observation feedback conversations "increased their understanding of what proficiency looks like." Therefore, although the SMART goals were not implemented with fidelity by the participants, all university supervisors, mentor teachers, and teacher candidates thought their post-observation feedback offered a clearer set of next steps for moving toward proficiency, as defined by the Danielson Observation Protocol. As a result, teacher candidates, mentor teachers, and university supervisors began to share expectations for the purposes and performances of feedback conversations.

We also used the final focus group to assess how teacher candidates, mentor teachers, and university supervisors conceptualized the changes the researchers had made to the formal observation feedback process over the course of the study. The researchers as well created process maps based on their mental maps of the iterative changes. These process maps were then analyzed, and patterns of consistency and inconsistency were coded. These codes were then used to inform the creation of a synthesized map that captured commonalities and moments of divergence (see Figure 2).

Figure 2 demonstrates that formal observation feedback became more of a collaborative effort between the teacher candidates and the mentor teachers. The observation feedback also now culminated with the creation of Danielson-informed SMART goals, as well as in the articulation of those goals in a precise manner that both opened up to an achievable action and did not overwhelm the candidate.

Discussion

Through this study, the researchers made progress toward understanding and increasing the efficacy of observation feedback conversations. In particular, the researchers engaged in three PDSA cycles, which were each characterized by revisions to the Danielson Observation Protocol. Early cycles of testing and analysis revealed inconsistent observation processes and a consistent lack of actionable, Danielson-informed feedback at the end of an observation feedback conversation. Each of these gaps and inconsistencies limited the potential of observation feedback conversations to lead to more deliberate practice by teacher candidates. Empathy interviews, surveys, and focus groups further revealed that there were discrepancies between the quality and appropriate quantity of feedback the university supervisors /mentor teachers perceived they were giving and the ways

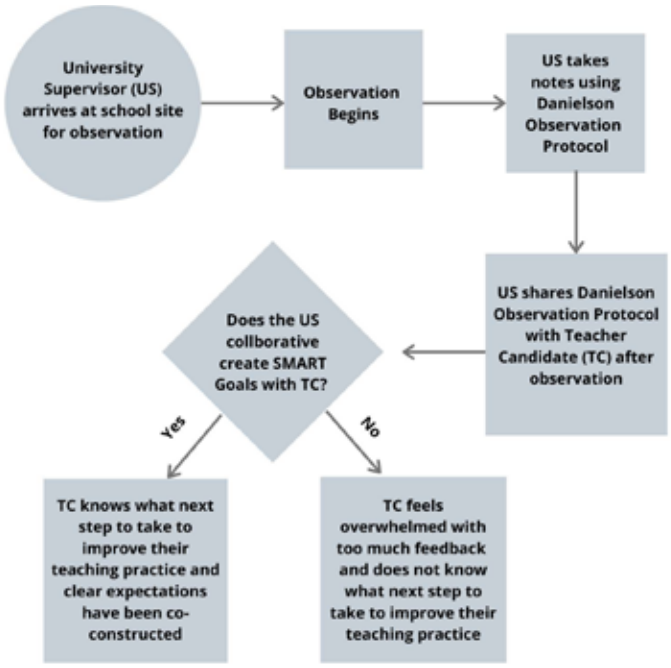

Figure 2: Process Map Results

in which teacher candidates were able to act on the feedback. Specifically, while mentor teachers/university supervisors felt they were giving ample, high quality feedback, several teacher candidates felt they were given too much feedback and were thus not able to identify clear, deliberate next steps. From this discrepancy, researchers learned the quantity of feedback and the way in which the feedback is delivered has consequences regarding the extent to which teacher candidates internalize and take subsequent action following observation feedback conversations.

Each revision to the Protocol was thus designed to further ensure teacher candidates were receiving deliberate, Danielson-informed feedback from mentor teachers and university supervisors in ways that helped them to achieve proficiency. We also gained insight into the social dynamics of improvement science. That is, we observed how some programmatic cultures and individual attitudes are more receptive to the unique demands of improvement science. Flexibility, adaptability, and the willingness to pilot an intervention quickly with fidelity and without complete information or assurance of success are essential groundings for this type of research. Nonetheless, our data largely supported our theory of change, which postulated that if university supervisors /mentor teachers and teacher candidates worked together to create SMART, Danielson-informed next steps, then teacher candidates would be more likely to know how to move toward and ultimately achieve proficiency. As a result, the Teacher Education Department is moving to further scale this work across the program in the coming year, leveraging the learning from this past year to shape the feedback conversations among more mentor teachers, university supervisors, and teacher candidates.

Implications and Recommendations for Future Research

Ultimately, the findings of this study offer further insight into how feedback conversations can be improved to ensure teacher candidates are receiving feedback that is within their zone of proximal development and that the co-construction of feedback enables them to enter into a knowledge community with their mentor teachers. Critical to this improved feedback process is the development of a shared language with their mentor or university supervisors regarding what it takes to improve their teaching practice. The Danielson Observation Protocol, once used as it was intended, served as a medium for developing a shared language and set of expectations regarding the purposes, processes, and outcomes of observation feedback conversations.

However, further research is needed to elaborate on the proposed theory of change. In particular, exploration of the mental models of university supervisors, mentor teachers, and teacher candidates, as well as other stakeholders who are a part of this work, namely, district administrators, teacher education department leadership, and K-12 students, are critical to addressing gaps between mentoring theory and practice. The layer of the K-12 student experience is particularly interesting as these teachers are also being observed but rarely asked about their experience with the observation. Research into training for university supervisors and mentors regarding the significance of SMART goals and how to create them is also essential to ensure more consistent implementation of this change idea. Further, and perhaps most significant, is an examination of the extent to which the creation of deliberate, Danielson-informed next steps result in actual changes to practice during the teacher candidate's next attempt at enactment.

Ultimately, the learnings and next steps from our work exemplify the improvement science approach of iterative cycles of testing, starting small to learn fast, and scaling with greater confidence in the practices being implemented.

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