# CONCEPTUALIZING DOCTORAL STUDENT TEACHER DEVELOPMENT THROUGH THE PERSPECTIVE OF DOCTORAL STUDENTS

By

Christopher S. Davis

# A DISSERTATION

Submitted to Michigan State University in partial fulfillment of the requirements for the degree of

Higher, Adult, and Lifelong Education-Doctor of Philosophy

# ABSTRACT

# CONCEPTUALIZING DOCTORAL STUDENT TEACHER DEVELOPMENT THROUGH THE PERSPECTIVE OF DOCTORAL STUDENTS

By

## Christopher S. Davis

This qualitative study investigated doctoral student teacher development from the perspective of doctoral students. Participants were current doctoral students with teaching responsibilities. The findings cover three categories of participant responses: Affect, Technique, and Relationships. Discussion focuses on systematic development for doctoral students as teachers.

# TABLE OF CONTENTS

LIST OF TABLES	V			
LIST OF FIGURES	TABLES.   v     FIGURES.   vi     ABBREVIATIONS.   vii     One: Introduction, Research Questions, and Frameworks   1     ent of the Problem   4     ch Question   5     tical Framework   5     pution to the Literature   8     lological Framework.   9     and Definitions   11     oral Student Teachers   11     dent" and "Doctoral Student"   12     her-type Experience.   13     sion   15     Two: Literature Review   16     of the Dissertation   13     sion   15     Two: Literature Review   16     D for the purpose of staffing undergraduate classes   17     oving undergraduate student Teacher Development   16     D for the purpose of staffing undergraduate classes   17     oving undergraduate student learning   20     oher Development for Non-Faculty Careers   22     odern State of Doctoral Student Teacher Development   25     ety of Learning Opportunities   26     ti-Institution Inititatives   27  <			
KEY TO ABBREVIATIONSvii				
Chapter One: Introduction, Research Questions, and Frameworks	1			
Statement of the Problem				
Research Question	5			
Theoretical Framework	5			
Contribution to the Literature				
Methodological Framework	9			
Terms and Definitions				
Doctoral Student Teachers				
"Student" and "Doctoral Student"				
Teacher Development				
Teacher-type Experience				
Outline of the Dissertation				
Conclusion	15			
Chapter Two: Literature Review	16			
Four Influences on Doctoral Student Teacher Development	16			
DSTD for the purpose of staffing undergraduate classes	17			
Future faculty development and DSTD				
Improving undergraduate student learning				
Teacher Development for Non-Faculty Careers				
The Modern State of Doctoral Student Teacher Development				
Variety of Learning Opportunities				
Multi-Institution Initiatives				
Theoretical Works on DSTD: Teacher Competency and Development Paths				
Theories of Teacher Development Paths				
Theories of Teacher Competencies				
Conclusion	40			
Chapter Three: Methods	42			
Site				
Data Collection				
Recruitment				
Participants				
"After teaching" responses				
Data Analysis	55			
Data Condensation	56			
Data Display	60			

Conclusion	65
Chapter Four: Findings	66
Structure and Focus of the Findings Section	66
Affect	66
Anxiety	67
Authenticity	68
Caring	69
Confidence	70
Technique	72
Active Learning	72
Educational Vocabulary	75
Student-centeredness	76
"Teaching the way I was taught"	78
Relationships	79
With Students	79
With Peers	81
With Non-Faculty Mentors	83
With Faculty	84
Conclusion	86
Chapter Five: Discussion and Implications	87
Discussion	88
Affect	88
Technique	89
Relationships	89
Situation as Solution	90
Systematic Development	91
Implications for Practice	92
Shift to multiple-contact learning opportunities	92
Shift from broad topics to specific and immediately applicable topics	94
Increased focus on the affective domains of teacher development for doctoral students	96
Examine match between situation and learning objectives for DSTD	97
Limitations	97
Future Research	98
Conclusion	99
APPENDIX	101
REFERENCES	124

# LIST OF TABLES

Table 1: Developmental Theories of EC-12 Teaching, by Theorist	
Table 2: Participant Information	46
Table 3: Initial Coding Scheme	57

# LIST OF FIGURES

Figure 1: Lattuca and Stark's (2009) Academic Plan Model7
Figure 2: Methodological Framework: Factors influencing expression of DSTD10
Figure 3: Theories of Teacher Development, by Population Described
Figure 4: Sprague and Nyquist's (1991) TA Developmental Model
Figure 5: Golde's (unpublished) DSD framework, teacher development portion33
Figure 6: Simpson and Smith's (1993) Skill Areas and TA Competencies
Figure 7: Griffee's (2012) Model of High, Middle, and Low Theory for TAs
Figure 8: Griffee's (2012) TATT model of TA Theory Creation40
Figure 9: Examples of responses to drawing prompt51
Figure 10: Examples of "most/least useful for development" continuum exercise54
Figure 11: Example of "confidence in teacher-type tasks" continuum exercise55
Figure 12: Miles, Huberman, and Saldaña's (2019) Qualitative Data Analysis model56
Figure 13: Examples of coding scheme based on Giorgi's phenomenological approach59
Figure 14: Heatmap of continuum responses
Figure 15: Aiko's drawing
Figure 16: Pamela's drawing74
Figure 17: Oliver's drawing77
Figure 18: Nadia's drawing
Figure 19: Social Media Posts105
Figure 20: Posted Flyer106
Figure 21: Example Continuum Exercise117
Figure 22: Example Finished Continuums118

# **KEY TO ABBREVIATIONS**

**DSTD**: "Doctoral Student Teacher Development," a key construct of interest in this study. The most inclusive term for all the ways that doctoral students learn anything related to teaching.

**EC-12**: "Early Childhood through 12<sup>th</sup> grade education," a term inclusive of all formal school opportunities prior to enrollment in postsecondary education

**GA**: "Graduate Assistant," a term including a wide variety of post-graduate appointments, and a common term to describe graduate workers at US universities

**STEM**: "Science, Technology, Engineering, and Mathematics," a commonly used abbreviation to separate certain fields from others. Some participants in this study self-describe as "STEM" doctoral students.

**TA**: "Teaching Assistant," a more specific version of the above "GA" that specifically requires teaching duties as all or a portion of the work for a graduate student's tuition remission or stipend.

#### **Chapter One: Introduction, Research Questions, and Frameworks**

Imagine you had never learned mathematics. Imagine you made it all the way up to the doctoral level without any math knowledge or skills. You had seen others perform math and were at least familiar with the basic idea: it involved numbers, which often turned into other numbers. At some point, you might say to yourself, perhaps after witnessing a particularly compelling presentation of quantitative data or a policy recommendation based on figures, "That math stuff, that seems like something I should know."

In tandem with your own realization, imagine that you are due to begin doctoral studies in only a few weeks. Excited for your new program, you have an initial meeting with your new advisor. Your advisor also functions as the supervisor for your assistantship. "Good news!" she begins; "You are going to join a quantitative project this semester. We start next week. I know you don't know any math, but I'm sure you'll pick it up as we go. And plus, the university has lots of resources. There's a workshop on derivatives next weekend, then an online seminar on subtraction the week after that. I had a previous student who went down to another university for a week-long class on statistics. Oh, and check out YouTube, there are lots of videos there on math!" And with no further ado, she dismisses you from her office.

This admittedly hyperbolic situation is a metaphor for doctoral students learning to teach. They are presented with a skill they will need for the rest of their careers (the ability to teach) and quickly entered in situations where they are expected to have strong knowledge: as teaching assistants, primary instructors, and in some cases as the instructor of record. This is not the only reason doctoral students need to learn to teach. In addition to their direct roles in the classroom, almost all doctoral students will be expected to translate scholarship to various audiences, explain their own research, and consult in their areas of expertise.

The mismatch between the expectations of doctoral students to teach and their preparation as teachers is well-documented in literature, with the most famous source being Golde and Dore's 2001 report titled At cross purposes: What the experiences of today's doctoral students reveal about doctoral education (hereafter: Cross Purposes report). The primary conclusion of the Cross Purposes report is that "the training doctoral students receive is not what they want, nor does it prepare them for the jobs they take" (p. 3). One aspect of the report, and much subsequent literature, focuses specifically on the teaching dimension of doctoral studies and reaches the same conclusion: that the preparation of doctoral students as teachers is not what they desire, nor does it adequately prepare them for the jobs they take. The authors claimed that "overly specialized research training leaves future faculty ill-equipped to perform other faculty roles, especially teaching. Improving teaching is a pressing need in light of attention to improving the quality of undergraduate education" (p. 2). Although the opportunities for doctoral students to learn to teach may individually be of high quality, they often lack the systematic structure and links to application that are cornerstones of adult learning (see Knowles, 1980, 1984).

This is precisely the same issue that led Opfer and Peddar (2011) to call for a change in professional learning of EC- $12^1$  teachers. They argued:

Research [on teacher development] is based on the assumption that teacher professional development consists of a repertoire of activities and methods for learning and that teacher learning follows more or less directly from the frequency with which professional

<sup>&</sup>lt;sup>1</sup> The phrase "EC-12" is an expansion of the more common "K-12" that acknowledges early childhood teachers outside of the space of kindergarten, and thus replaces "K" with "EC."

development programs use these specific activities, structures, and so on (Opfer & Peddar, 2011, p. 378).

The authors continued by arguing that this distinction "underplay[s] the complexity of the problem" and ignores "meso (institutional) and macro (school system) contexts" that keep teacher development from having the necessary structure between learning opportunities (pp. 378-379). This study applies the same logic to doctoral students learning to teach. I argue that the mismatch in expectations and achievement described by Golde and Dore is at least partially due to the "exclusion of influences" in models that describe doctoral students as learners and shape curriculums for doctoral students (Opfer & Peddar, 2011, p. 378). The dissatisfaction expressed by doctoral students occurs when they attempt to navigate diverse and disconnected learning opportunities that are based on an idea of what a teacher and a future faculty member should be, rather than what they, as doctoral students, are experiencing.

This study explores re-conceptualizing teacher development for doctoral students away from the needs of institutions and towards the needs of doctoral students. Thus, the heart of this study is rooted in the principles of learner-centered design; that the needs of the learner dictate the content, pace, and assessments within a curriculum (see Barr & Tagg, 1995; Quintana, Krajcik, & Soloway, 2001). I argue that, to this point in time, doctoral student teacher development has largely eschewed the needs of doctoral students as learners in favor of designs that are centered around the needs of institutions.

In line with learner-centered design and in order to reconcile the tension Golde and Dore described between doctoral students and the learning they want versus the learning they receive, I conceived this study to focus on ways doctoral students themselves are defining and experiencing teacher development. In Opfer and Peddar's words, the challenge is that "in

different combinations, circumstances, and sequences, the same causes that may produce teacher learning and change may also lead to intellectual stagnation and inertia" (p. 381). This study sought to get to the heart of what causes those different results (what it is about the "combinations, circumstances, and sequences") between different doctoral students, even when they have similar opportunities for teacher development.

## **Statement of the Problem**

Literature (see Chapter Two) suggests that doctoral students are engaged in a complex relationship with teacher development. They are often asked to be students in the morning then teachers in the afternoon. They are supposed to be subject matter experts while teaching undergraduates, sometimes have a Master's-level credentials and years of experience, but yet are directly confronted by PhD faculty with how little they actually know about many aspects of their field. Finally, their values may not align with the messages they receive or the opportunities they choose to seek out, especially in regard to their work as teachers.

The tension that results in the mismatch between the needs of doctoral students and the training they receive is neither new nor surprising. What is important is that the current state of DSTD is the result a system of training that was not designed with doctoral students as learners in mind, but rather, the needs of institutions. This basic orientation has persisted this way through many shifts in the process of doctoral education (see Chapter Two). With such a situation, it is not surprising that doctoral students are dissatisfied with the teacher development they receive (Barnes & Randall, 2012; Golde & Dore, 2001). However, to even begin to ask how to create teacher development opportunities that satisfy the needs and desire of doctoral students, it is important to begin with how doctoral students describe teacher development.

#### **Research Question**

The research question is "What concepts do doctoral students emphasize when they discuss teacher development?" This question builds on the previous work by Golde, Dore, Austin, McDaniels, Wulff, Sprague, Gorsuch, Desimone, and many others (see Chapter Two) who have investigated the ways that doctoral students are socialized to the professoriate, encounter teaching experiences, and develop throughout doctoral programs. The intended audiences for this project include researchers interested in doctoral students, administrators concerned with classroom teaching in doctoral student led environments, designers involved with doctoral student teacher development, and doctoral students themselves who are interested in teacher development.

#### **Theoretical Framework**

Doctoral student teacher development (DSTD) is the construct of interest in this study. One way to conceptualize DSTD is as a variety of activities and opportunities, from personal experiences (such as viewing online resources or consulting a peer) to multi-institutional networks and formal research projects. In Chapter Four, I will discuss how participants both agreed with and departed from this definition, but for now, this way of defining DSTD is useful because it parallels previous literature. For example, Golde and Dore (2001) cited four common DSTD opportunities: a teaching development center, workshop/seminar in teaching development, progressively more responsible roles in teaching, and teaching assistant training courses (p. 22). Austin and McDaniels (2006) stated that the domain of the Scholarship of Teaching (see Boyer, 1990) can be conceptualized as largely five categories of opportunities: modeling, conversations (formal & informal), professional seminars, internships, and certificates, across five responsible stakeholders: faculty, graduate programs, universities, professional associations, and agencies & foundations (p. 59). The nature and availability of opportunities vary wildly across several levels, including between institutions, between disciplines, between departments (particularly the funding structures for doctoral students in departments and student/faculty ratios), and even by the knowledge of what is available. In reference to teaching development centers, Golde and Dore said that "in many cases students at the same campus do not agree on whether such a center can be found" (2001, p. 22). Recent years have seen the number and variety of doctoral student teacher development opportunities expanding, but little research has been done that captures the breadth of the currently available opportunities nor ties those opportunities to what is available for particular doctoral students. Thus, the nature of doctoral student teacher development is one of variance; there may be many opportunities, but they may not be available to many doctoral students, the doctoral students who attend may not be the ones in need of the opportunity, and the opportunities themselves often fail to come together in a curriculum that is "systematically organized to enable [doctoral students] to progressively learn and improve as teachers" (Austin & McDaniels, 2006, p. 54).

Prior research has catalogued many of the difficulties mentioned above, particularly the difference in available opportunities, but research has stopped short of examining the connection between diverse teacher-type experiences and teacher development in doctoral students. The research question in this study, "How do doctoral students conceptualize and perceive teacher development," allows doctoral students to express the connection between their experiences and their development. This is an important point that will help illuminate the tension that Golde and Dore (2001) documented.

Little is available in the literature surrounding DSTD containing clear evidence of the needs of doctoral students as learners. A review of the history of DSTD revealed a centering of

needs of institutions: to teach undergraduate sections, prepare future faculty members, or answer outside concerns about the quality of learning in undergraduate courses. Chapter Two outlines how these influences have created a curricular state where the center of the learning process is not the learner, but instead, the needs of institutions. For this project, it is important to conceptualize a theoretical background that centers the needs of learners, even if that is not the current state of DSTD. In Lattuca and Stark's (2009) academic plan model, the needs and characteristics of the learner are centered (see Figure 2). They note that "few instructors... systematically consider learners' needs, abilities, and goals... yet research on learning suggests this is a critical dimension of effective curriculum design" (p. 145).



# Figure 1: Lattuca and Stark's (2009) Academic Plan Model

If the educational outcome is teacher development and learners are centered, it is important to understand how the learners (doctoral students) make sense of the outcome (teacher development). The Lattuca and Stark academic plan model offers a way to structure an investigation into DSTD as if it were a learner-inclusive curriculum plan.

#### **Contribution to the Literature**

Compared to EC-12 teacher development, the field of doctoral student teacher development (DSTD) is a nascent one. There are only a handful of theories that specifically address teacher development for doctoral students, compared to many studies in EC-12 on how teachers develop and change over their careers (see Chapter Two). A similar state is found in the literature surrounding teacher competencies. Although a few authors have specified some competencies for doctoral students as teachers (Simpson & Smith, 1993; Tigelaar et al., 2004), the majority of articles on teacher development for doctoral students focus on describing a particular intervention or opportunity rather than connecting to the development of the doctoral students as teachers. Likewise, though conversation around Boyer's Scholarship of Teaching has led to statements like Braxley, Luckey, and Helland's (2002) that "the purpose of the scholarship of teaching is the development and improvement of pedagogical practices," literature on doctoral students as teachers rarely offers description of what an "improvement of pedagogical practices" actually looks like (p. 106). This leaves the literature on DSTD missing a few common pieces that readers might expect to find in broader teacher development literature, like a definition of "good" and "bad" teaching, explanations of how teachers move from "worse" to "better," or knowledge about how the theories that do exist have been used by the creators of development opportunities.

A way to begin to address this gap is by directly asking doctoral students themselves. As the literature strives to eschew value labels like "good" or "bad" teaching, do doctoral students do the same? Although work like Golde and Dore's (2001), alongside many studies since (see

Chapter Two), emphasized that doctoral students want to become better teachers and value teaching, they often omit what those doctoral students mean when they say "better teachers." Thus, it will be an important contribution to thoroughly explore how doctoral students themselves describe teacher development.

A second contribution is a more thorough understanding of the relationship between teacher-type experiences and teacher development. This relationship is an important missing theoretical piece in understanding teacher development, because, as Opfer and Peddar suggest, there exist numerous cases where exposure to the same learning opportunity leads to different teacher development outcomes. This contribution could offer both researchers and practitioners new ways to facilitate doctoral student teacher development.

#### **Methodological Framework**

This interview study collects data from participants about several aspects of teacher development: their own experiences as classroom teachers, their training to teach, the influence of their departments and programs, and the responses they receive from students and peers. I set these personal experiences within the context of historical influences on DSTD; in particular, the needs of the university to create future faculty, conduct graduate-level research, and staff undergraduate sections. The third piece of investigation is the exterior forces that influence the doctoral student's discussion of concepts: things like institutional inertia, disciplinary expectations, and prior experience as a teacher. Together, these factors make for a study that is centered around the concepts doctoral students emphasize, but allows the researcher to contextualize responses in ways that the participant may not be aware exist (for example, the disciplinary differences, departmental influences, or exterior drivers of reward systems at a major research institution).

# Institutional Needs Staff Undergraduate Sections Prepare Future Faculty Conduct Graduate-level Research

Personal Experience of DSTD As a classroom teacher Training to teach Influence of departments and programs Responses from students/peers

Exterior Forces Institutional Inertia Disciplinary Expectations Prior teacher experience

## Figure 2: Methodological Framework: Factors influencing expression of DSTD

For more practical purposes, I align with above framework with Ellingson's notion of crystallization (2014). Ellingson's (2009, 2014) crystallization was a response to the earlier concept of triangulation (see Denzin, 1978; Jick, 1979). In the early definitions of triangulation (space, person, and time), triangulation was an idea that nodded to quantitative notions of validity. In modern research, there is less of a need to appeal to quantitative notion of validity, but more of a need to explain to readers how one discovered the depth of the construct. Ellingson's notion of crystallization proposed that qualitative triangulation, instead of being a tool for validity in a quantitative sense, can be better thought of as a way to illuminate data from different angles. In this way, she brought forward the metaphor of a crystal: as light shines differently through different facets, so might a construct of interest to a qualitative researcher be better understood by being viewed from different angles. In this manner, I augment the purely interview-based descriptive phenomenology with artifact collections and "After Teaching" responses (see Chapter Three for full description of methodology). These "facets" of the lived experience of doctoral students engaging in teaching acts should offer insight into how doctoral students are making sense of teacher development.

#### **Terms and Definitions**

The goal of this section is to clarify the terms and their definitions that are important to this dissertation. I include in this section any term that I use that I do not believe is inherently clear, any term that is used in a way that is not the denotive meaning, or any term that is a phrase that is confusing enough to require clarification. I do not include terms specific to an individual citation or term that are particular to the methodology; those terms are addressed in Chapters 2 and 3, respectively.

#### **Doctoral Student Teachers**

A doctoral student teacher is a person who is both a doctoral student and a teacher. In this study, I focus only on doctoral students with a semester-length teaching assignment. Some, but not all, of these cases include a funding component; the doctoral student teacher is labeled a "teaching assistant" and their stipend requires teaching duties. Although there are a few places where doctoral students do lead graduate-level coursework, I limit the doctoral students participating in this study to those who are teaching undergraduate students.

## "Student" and "Doctoral Student"

I use "doctoral student" when I am referring to participants in this study or literature about doctoral students learning to teach. By contrast, I will use "student" to refer to those whom the doctoral students are teaching. For accuracy, I will use "undergraduate student" for the students in this study; however, since some of the literature involves doctoral students who are teaching other audiences (for example, consulting in workplaces or running workshops for Master's students), the phrase "undergraduate students" is not universally appropriate.

## **Teacher Development**

Teacher development is the term I use to refer to the concept of teacher change that will ultimately (though potentially not immediately) result in increased student learning. I would argue that development is intended to specifically be positive change, but it is likely non-linear and may include periods of struggle or confusion. The important distinction is that teacher development is a concept, rather than a set of activities. This is important because, as I will show in the next paragraphs and chapters, DSTD is often conceived of as a set of activities.

Precise conceptual clarity of teacher development is an ongoing issue. Evans (2002) provided a review of the subject and arrived at two dimensions of teacher development: attitudinal development, the "process whereby teachers' attitudes to their work are modified" and functional development, the "process whereby teachers' professional performance may be improved" (p. 131). Evans then divided each of those two dimensions further: attitudinal development into "intellectual" and "motivational" and functional development into "intellectual" and "motivational" and functional development into the "process" (p. 131). Alongside these dimensions, Evans was clear that teacher development is a "process" and operates along different "foci of change" (pp. 131-132).

# **Doctoral Student Teacher Development**

With Evan's framing in mind, I consider "teacher development" a concept or construct. How doctoral students themselves conceive of that construct (specifically, how they define it), is the first research question of this study. "Teacher development," as the phenomenon of this study, could examine any of the dimensions that Evans illustrated or new and different dimensions that the participants in the study bring to light. "Doctoral student teacher development" will be how the doctoral students in this study defined the concept.

## **Teacher-type Experience**

This is a phrase intended to be inclusive of the variety of activities other than the specific classroom act of speaking to students. The term is inclusive of things like grading, planning syllabi or instructional activities, selecting textbooks, or writing learning objectives. McDaniels (2010) cited Wulff, Austin, Nyquist, and Sprague (2004) stating that "too often, *teaching* is narrowly defined" (emphasis in original, p. 31). McDaniels continues to list "other types of pedagogical activity" including "advising; curriculum and program development... classroom research and assessment" as well as the aforementioned grading, syllabus development, and lesson development (p. 31). Some doctoral programs claim that experiences like being an assigned grader for a course contribute to teacher development. This study concludes that the nature of an experience alone is not enough to trigger teacher development, therefore, it is important to distinguish between experiences that have some face validity for being 'about teaching' and experiences that, for a particular doctoral student, contributed to their development as a teacher.

#### Learner-centered Design

I use this term in a philosophical, rather than technical, sense. Thus, instead of addressing (as many authors have), the physical *how* of designing a system that adapts to learners needs, I use "learner-centered design" to refer to any educational system that attempts to make such adaptations. This definition carries with it an inherent inverse: that some educational systems are not designed with learner needs in mind.

## **Outline of the Dissertation**

In Chapter Two, I describe past literature on doctoral students learning to teach to make the case that doctoral student teacher development (DSTD) has, up to this point, been influenced

with the needs of institutions in mind: to teach undergraduate sections, to develop future faculty for their tenure-track ranks, to improve undergraduate learning in light of increasing scrutiny on the value of an undergraduate education, and most recently to add value to graduates who do not pursue tenure-track careers. After establishing that history, I offer a brief overview of calls in educational literature for a shift towards learner-centered models and link these calls as a potential way to resolve the tension Golde and Dore (2001) stated in their report. At the end of Chapter Two, I shift towards theories behind teacher development, and outline two sets of theories relevant to the project: theories on teacher development paths and theories of teacher competencies. These theories offer structure to my inquiry into how doctoral students make sense of teacher development.

In Chapter Three, I explain the methodology of this study. The primary design is an interview study, augmented with data collection through video-recorded ordering activities and e-mailed questions that deliberately focused on the act of teaching. I also describe how the data was analyzed using the Miles, Huberman, and Saldaña (2019) framework of Condensation, Display, and Conclusion-Drawing/Verification (pp. 12-14). I work through condensation by vignette-ing data, using Giorgi's phenomenological method of coding to translate meaning-units, and annotating physical movements in the videos alongside transcribed words. I display data as both reduced meaning-units and as a series of diagrams (available in Chapter Four and the Appendix). I draw conclusions and verify them through an iterative process of modeling.

In Chapter Four, I explain my findings, with particular attention to three themes: affect, technique, and relationships. These themes form the basis of my discussion in Chapter Five, where I review the findings and connect them to the state of DSTD. At the conclusion of Chapter Five, I offer a set of implications for practice and future research.

## Conclusion

In this chapter, I have argued that the field of doctoral student teacher development has been historically driven by the needs of institutions, as has research about doctoral students developing as teachers. I present a study in a different mold by focusing on teacher development through the lens of learner-centered design. I argue that by focusing on the concepts that doctoral students view as essential to DSTD, this study adds an important piece to prior literature. In order to make that contribution, I have formulated the research question as "What concepts do doctoral students emphasize when they discuss teacher development?" I have given a brief overview of the methodological framework I used to investigate this question, laid out the most important terms for this project, and given a brief preview of the findings and conclusions.

#### **Chapter Two: Literature Review**

Chapter Two reviews literature that helps the reader understand the study. The chapter is divided into three sections. In the first section, I discuss four influences on DSTD: the need for institutions to staff course sections, the development of future faculty, the preparation of doctoral students for careers outside of academe that include teaching responsibilities, and the need to improve undergraduate learning. In the second section, I establish the modern state of DSTD: full of opportunities, but lacking structured, systematic development for the doctoral student learning to teach. In the third section, I discuss theories of teacher development paths and theories of teacher competencies.

The purpose of the first section is to establish the literature on doctoral students learning to teach. This section helps the reader understand the theoretical framework of the study by explaining the forces that have led to the modern state of DSTD. The purpose of the second section is to establish the characteristics of modern DSTD. This section helps the reader focus on the problem in the study: the disconnect between the needs of doctoral students and the teacher development opportunities they have available. The purpose of the third section is to illuminate several theories of teacher development paths and teacher competencies. This section helps the reader understand the inquiry choices in the study by offering some ways that other populations have understood the concept of teacher development.

#### Four Influences on Doctoral Student Teacher Development

The section of the chapter is separated into four parts, based on four key influences on DSTD. These influences alongside student factors and departmental/institutional factors form the core of my theoretical framework for understanding how doctoral students make sense of the idea of teacher development. The four influences are: needs of institutions, preparation of future

faculty, improved learning for undergraduate students and preparation for non-tenure track careers. These influences chart the context within which doctoral students have lived experiences of teacher development. The purpose of this study is to understand the concepts that doctoral students describe when they discuss that teacher development.

This section approaches the history of teacher development opportunities for doctoral students from the perspective of influences. I chart four influences that have shaped and are shaping the way doctoral students learn to teach at universities. I organize the section chronologically by emergence of the trend in literature: the first influence is the need of universities to staff undergraduate classrooms, reaching at least as far back as the 1950s. The 1990s and Boyer's *Scholarship Reconsidered* (first issuance, 1990) brought a renewed focus on faculty careers, and some of that influence bled into a focus on doctoral students learning to teach as preparation for faculty careers. In the 2000s, an increase in calls for universities to be accountable for student learning led to a few articles (Carroll & Ryan, 2007; Huba & Freed, 2000) that suggested DSTD for the sake of improving undergraduate outcomes, though these works never made it from theoretical to empirical. At nearly the same time, scholars paid increased attention to non-faculty careers as more and more doctoral students leave the university or take jobs that are not on the tenure track or jobs are focused on teaching over research.

#### DSTD for the purpose of staffing undergraduate classes

At least as recently as 2002, the claim has been made that "the use of TAs usually responds to departmental needs to cover courses or sections, not the development of [doctoral students]" (Austin, p. 105). Austin argued specifically that doctoral students should be prepared to take on faculty roles, but the argument she cited is an old truth about the use of doctoral

students as teachers in research universities. Gardner and Jones (2011) claimed that "undergraduate teaching at research universities often rests solidly on the backs of graduate teaching assistants (GTAs) who teach large proportions of the undergraduate curriculum" (p. 31). Broad data can be difficult to find because of issues like "instructor-of-record" designations, but some data may be pieced together from studies in the disciplines. For example, Sundberg, Armstrong, and Wischusen (2005) reported that graduate assistants teach 71% of undergraduate laboratory sections at comprehensive universities and 91% at research universities; 71.5% of universities use graduate teaching assistants (GTAs) to teach introductory communications courses (Morreale, Hugenberg, & Worley, 2006). The same circumstance happens outside of the US system of higher education; Nikolic et al. (2015) noted that "between 40 and 50 percent, and in some cases up to 80%, of teaching in Australian higher education is done by [contingent faculty and graduate students]" (p. 1).

The data in the prior paragraph shows a situation obvious to many familiar with higher education, especially at large public universities: that doctoral students are a large part of the labor force when it comes to teaching undergraduates. Park (2004) offered a particularly interesting view of the use of TAs in the US because he advocated that the UK adopt such a system, and thus provides a little bit of an "outside looking in" perspective. Park cited four primary reasons for having doctoral student teachers: to provide teachers for large classes, to reduce faculty teaching loads and thus allow more time for faculty to conduct research, to fund graduate student education, and to provide an apprenticeship model for future professors (p. 350). The first three reasons are solidly centered around institutional needs, and one could easily argue the fourth does, as well, as I will explore in the next section.

## Future faculty development and DSTD

The second historical influence on DSTD is the development of future faculty. There are many ways that institutions have addressed the development of future faculty, but the most well-known are formal Preparing Future Faculty (PFF) programs, which started with grant work in 1993 and expanded to as many as 45 doctoral-granting institutions (see: www.preparing-faculty.org). The initial grants from the Council of Graduate Schools (CGS) and the Association of American Colleges and Universities (AAC&U) required participants in PFF programs to receive mentorship in all three aspects of the faculty career (teaching, research, and service) and to do so at a variety of institutional types, not just their own institution. Reviews of current websites show that although many PFF or PFF-type programs survive to this day, most have dissolved the connections they had with other institutions and instead focus on internally preparing doctoral students. Often, modern PFF programs are combined with teaching and learning centers or programs for graduate students, which offer learning opportunities for teaching and leave research preparation to individual departments or faculty members.

The PFF programs are best understood in the context of Boyer's (1990) seminal work *Scholarship Reconsidered: The Priorities of the Professoriate*. Boyer's book charted how institutions often have competing goals and that the rewards systems for professors rarely align with the tripartite roles of faculty work. Alongside other points, Boyer advocated for a renewed focus on the act of teaching as a cornerstone of faculty work and specifically pointed to faculty training: "In the end, the issue is not the *number* of new faculty, but the *quality* of their training. Will tomorrow's professors have an understanding of scholarship as described in this report?" (p. 67, emphasis in the original). He continued by saying that it is in "graduate education... that changes are most urgent if the new scholarship is to become a reality" (p. 68). Among several suggestions, Boyer proposed that "graduate schools should give priority to teaching" and quoted G. J. Laing from 1930, then Dean of the Graduate School at the University of Chicago, asking "What sort of college teachers do our Doctors of Philosophy make?" Boyer's point was that the relationship between the awarding of a PhD and the ability to teach is not clear and has not been for a very long time.

Though almost 90 years later there is no answer to Laing's question, the renewed focus from Boyer on helping doctoral students prepare to teach shifted the landscape in ways like the creation of PFF programs. Boyer's (1990) criticism is that "helping new professors prepare for this special work [teaching undergraduates] is an obligation graduate schools have, all too often, overlooked" (p. 70). Boyer's work informed understanding of DSTD as explicitly about the goal of preparing future faculty, a common situation at many research universities. There is little doubt, and significant evidence (see reports at <u>www.preparing-faculty.org</u>) that these programs and similar ones have generally improved the ability of doctoral students to participate in teacher development-type activities. However, the underlying thread of "preparing future faculty" remains a view that the doctoral student is a vehicle that serves the *needs of institutions*, and thus, even the expanded opportunities do not reconcile the tension between what doctoral students want and the training they receive. This is because it is still not actually the training doctoral students want, it is the training *institutions* want doctoral students to undertake.

## Improving undergraduate student learning

Golde and Dore (2001) stated that "more than half (53.6%) of doctoral programs require students to serve as teaching assistants," and that these numbers are much higher in certain programs, particularly sciences like chemistry (83.8%) and molecular biology (70.8%) (p. 21). They then stated that a "TA training course… lasting at least one term… is least available in

chemistry (28.4%) and molecular biology (30.1%)" (p. 23). The mismatch here is obvious: undergraduate students who are most likely to have doctoral students teaching their courses are also the undergraduate students least likely to have a doctoral student who has been prepared to teach by taking a course about teaching. Additionally, the authors reported that only 28% of doctoral students felt prepared by their program to create an inclusive classroom climate, and only 14.1% to incorporate information technology in the classroom (Golde & Dore, 2001, p. 24). I will return to ideas like these later in this chapter when I discuss lists of competencies for doctoral student teachers.

The seminal source on the difference between institution's focused on teaching and institutions focused on learning is Barr and Tagg's (1995) article "From Teaching to Learning." Their article argued that a paradigm shift from considering teaching to considering student learning must play out across six portions of undergraduate education: mission and purposes, criteria for success, teaching and learning structures, underlying learning theory, concepts of productivity and methods of funding, and faculty and staff roles in instruction and governance. Tagg (2003) followed this work with his solo-authored book *The Learning Paradigm College* that characterizes these shifts in more detail.

The timeline here is important. As Barr, Tagg, and others (for example, Huba and Freed's 1999 text *Learner-centered assessment on college campuses: Shifting the focus from teaching to learning*) call for a shift from teacher-centered practices to learner-centered practices, Golde, Dore, Wulff, Sprague, Austin, and others are asking serious questions about the way doctoral students are prepared to teach. These two ideas are on a collision course, and though it may seem obvious to practitioners that doctoral student teacher development should lead to increased gains in undergraduate student learning, this idea has yet to gain much traction in

published literature. The closest currently available research is Dechenne et al.'s (2012) work on developing a measure of the effectiveness of teacher development activities for doctoral students, but this contribution, while valuable for itself, is not to be confused as a direct link to student learning or even teaching practices within the classroom. However, given current shifts in federal policy towards outcomes-based approaches such as performance-based funding, it is not difficult to imagine that more evidence of direct links between teaching and learning will soon be asked of American colleges and universities. Though it is not within the scope of this document to explore all of the policy forces or implications of such a shift on DSTD, it seems likely that such a shift would increase interest in the ways that DSTD impacts undergraduate learning outcomes.

#### **Teacher Development for Non-Faculty Careers**

Some departments are feeling increasing pressure to consider how their doctoral students will succeed in non-faculty careers (see Brightman, 2009, for an example from Business Schools). The expanding field of provocatively named "quit-lit" pieces chronicle the frustration of new doctoral students in an unfriendly academic hiring environment, and Cassuto (2018) feels that "we should teach and prepare our students with [the unfriendly] reality in mind" that includes preparation for non-faculty careers. This is an oft-lamented case in humanities, where a 2017 report showed the tenure-track postings in English and foreign languages through the Modern Language Association hit a record low for the fifth straight year, showing only 851 postings (compared to a high of 2075 in 1989) (Flaherty, 2017). Other fields showcase similar issues; for biological science PhDs in 2006, only 15% held tenure-track positions 6 years after graduation, quite a fall from 55% in 1973. These numbers are against a background of expanding higher education access and participation: the 2011 high mark showed approximately

21 million students enrolled in American higher education, compared to 13.8 million in 1990, 12.1 million in 1980, and 8.58 million in 1970 (NCES, 2018). These rates far outpace the population growth rate, and yet, tenure-track positions have declined both by percentages and real numbers.

To address one possible counter-argument, some claim that in their disciplines, if a doctoral student will not be taking a faculty career, they are unlikely to need to teach and thus have no need for teacher preparation. This argument is difficult to substantiate with a broad definition of teaching and modern post-doctoral career paths. The Center for Innovation and Research in Graduate Education (CIRGE) at the University of Washington houses data for three major longitudinal studies of careers paths: "PhDs 10 years later" (biochemistry, computer science, electrical engineering, English, mathematics, and political science); "Art history PhDs 10 years later," and "Social science PhDs 5 years later" (CIRGE, 2018). These all show decreasing trends in PhDs who stay in academia, by percentage, and decreasing trends in PhDs who achieve tenure track positions. The issue is exacerbated when the most recent cohort covered in any of these studies is the social science PhDs from 1999; many scholars would agree that the trends have favored leaving the university even more heavily since then. Golde and Dore (2001) stated that "there is considerable evidence that there are far more job seekers than there are tenure-track jobs available, and that this structural imbalance, rather than being temporary, is the new status quo" (p. 18).

Data from the NSF (2015) indicated that of the 920,050 doctorates in science, engineering, and health in the United States, 85.6% are employed (the others are unemployed, retired, or not seeking work) and of that 85.6%, 87.7% are employed full-time. Within that percentage, 29.7% (n=234,000) reported teaching as the primary or secondary activity of their

position, compared to 31.7% who report research as the primary or secondary activity of their position (n=249,650). Additionally, only 41% (n=323,200) are employed at 4-year institutions of higher education, and of those, 20.2% (n=65,350) report teaching as their primary occupation.

Are those 59% of PhD recipients who are not employed by four-year universities taking jobs that require teaching? Golde suggested not only that they are, but that "all PhD recipients must be able to explain the material of their discipline to a variety of audiences; this is 'teaching' in a broad sense" (2018, personal communication). The PhD Career Guide, a website dedicated to different paths for doctoral students, breaks their career suggestions into twelve branches (2018). Excluding the academia branch, at least five of these (government, law advising, consulting, technology transfer, and writing) seem like places where teaching skills could be immediately useful, and in several other areas (sales, entrepreneurship, and public policy) teaching skills could be useful. Using the definition of teaching as "helping others learn" rather than "leading a classroom," it is easy to imagine the zoology PhD organizing learning activities for visitors to an aquarium, the political science PhD helping lobbyists learn about some unknown parts of a critical issue, or the biotechnology PhD helping a legal team learn about a product they might wish to patent or an investment firm make a more informed decision. McDaniels (2010) citing Gibson (1992) extended "pedagogical activity" to "advising; curriculum and program development; and classroom research and assessment at the individual, course, and programmatic levels" (p. 30). These broader definitions of teaching are inclusive of other venues than the traditional classroom, and thus emphasize the need for teacher development in the wide range of careers taken by PhDs after graduation.

#### The Modern State of Doctoral Student Teacher Development

Thus far, I have established four historical influences on DSTD: needs of institutions, preparation for faculty careers, learning needs of undergraduates, and preparation for non-tenure careers that include and/or require teaching. In this section, I shift my focus from influences to practices. I wish to highlight several of the most recent trends that illustrate the institution-centric versus student-centric tension I have described in the previous section. It is beyond the scope of this section to fully describe the diverse, often innovative, commonly encouraging, and occasionally frightening ways that doctoral students currently learn to teach. Instead, I focus on a few ideas that lead towards my primary point about the state of modern DSTD: it offers many opportunities, but not equally, not equitably, not easily, and rarely in a way that fosters systematic development of teaching ability for doctoral students.

This section begins with a brief overview of some of the most recent innovations in doctoral student teacher development, showcasing a set of opportunities that are, individually, quite interesting. I move from there towards one of the most important trends in modern DSTD: the creation of multi-institution initiatives, specifically networks like the Center for the Integration of Research, Teaching, and Learning (CIRTL) and large-scale conferences that devote significant time to doctoral students learning to teach. The two points highlight the "bookends" of the current world; on one level, small-scale opportunities that are niche and only available to a few students, and on the other, large-scale multi-institution networks with much broader audiences. In both these cases, I describe a state that is much improved from the sink-or-swim days of TA assignments as the sole nod to teacher development for doctoral students. However, these opportunities, improved though they are, are both not available to all students

and missing clear links between opportunities. I call this a lack of systematic development and conclude the section by describing that gap in current literature and practice in DSTD.

## Variety of Learning Opportunities

Korpan (2011) described several new initiatives in teacher assistant (TA) development in Canada: TA networks, courses on teaching in higher education, certificate programs, publications, TA training, specialized training for TAs in service-learning courses, and improved TA evaluations. In a study of time-to-degree for doctoral students, de Valero (2001) found teaching assistantships negatively affect time-to-degree and are more common in the humanities. Hoessler and West (2014) described using formative feedback to develop teaching as a professional skill. Boman (2014) focused on reflective writing in teacher assistant training. Cassidy et al. (2014) advocated for training TAs in teams, while Tallman and Smith (2014) offered a focus on the conversation between TAs. Scholarship of Teaching and Learning (SoTL) practices are increasingly common, as are other "inquiry-based" training options (Hughes & Ellen, 2013). Dotger (2011) described lesson study as an intervention for practitioners looking to work with doctoral programs with small numbers of students. Given the challenge to the apprenticeship assumption by Golde and Dore (2001), a lessening of apprenticeship models seems to be taking place, and many of the most prominent scholars at least called for reforms from traditional apprenticeship towards a mentorship-type approach where students pursue their own interests under the guidance of faculty members, rather than seek out a faculty member and learn that individual's interests and methods (see Boyle & Boice, 1998; Calkins & Kelley, 2005; Korpan, 2014).

Any of the ideas in the previous paragraph could be an interesting area of research. However, in the context of Golde and Dore's (2001) work, what I see is an explosion of

opportunity and a distinct lack of *systematic development*. In other words, the variety of learning opportunities is just that: variety. It is not a *system*, nor is it linked to doctoral student teacher *development*. There is little to no evidence that shows that, even in the presence of these myriad ideas, that overall doctoral students are becoming better teachers. However, all these studies do cite some doctoral students making progress as teachers. This tension is a crucial lens to the findings presented in Chapter Four and the conclusions presented in Chapter Five.

## **Multi-Institution Initiatives**

One of the most important trends in DSTD is a move beyond individual institutions. The modern era has seen the emergence of several multiple-institution networks for doctoral student teacher development, and the one that currently works with the most students is the Center for the Integration of Teaching, Research, and Learning (CIRTL) network (see: www.cirtl.net). At the time of this writing, CIRTL contains 41 member institutions and focuses exclusively on STEM teaching practices (CIRTL, 2019). The CIRTL network is built in the faculty development model, as its mission statement indicates: "The CIRTL mission is to enhance excellence in undergraduate education through the development of a national faculty committed to implementing and advancing effective teaching practices for diverse learners as part of successful and varied professional careers" (CIRTL, 2019, para. 4). CIRTL accomplishes this goal by leveraging opportunities for doctoral students at member institutions to attend development opportunities, access mentors, and obtain credentialing based on their teacher development experiences.

Conferences devoted to the scholarship of teaching and learning (SoTL) also offer opportunities for doctoral students to take their teacher development beyond the walls of their institution. Of these, perhaps the largest is the International Society for the Scholarship of

Teaching and Learning (ISSOTL), which also publishes a journal (*Teaching and Learning Inquiry*) in addition to its annual conference (ISSOTL, 2018). The academic year 2018-19 saw SoTL conferences in Indiana, North Carolina, Arizona, Georgia, Ohio, Texas, California, Oklahoma, Utah, and Alberta (sotl.illinoisstate.edu, 2018). SoTL conferences are a primary outlet for doctoral students to both demonstrate their own research as teachers and learn about teaching.

#### **Theoretical Works on DSTD: Teacher Competency and Development Paths**

This section is separated into two parts: theories of teacher development paths and theories of teacher competencies. In the section on theories of teacher development paths, I separate the theories into two distinct groups: theories that are specific to EC-12 education and theories that are specific to doctoral students learning to teach. This review omits faculty development theories, since no current theory is specific to how faculty develop as teachers over their careers, except for work on the stages of a faculty career that also includes development as a researcher (see Baldwin, 1979; Mathis, 1979). In the section on teacher competencies, I separate the theories into three groups: EC-12 exclusive, doctoral student exclusive, and two lists of competencies intended for all teachers. These five smaller sections should aid the reader in understanding why the chosen methodology was appropriate to examining the question of how doctoral students understand teacher development by offering the ways that theory has treated two very important parts of development; paths and competencies.

This section builds on the previous section by addressing two sets of theories that are needed for systematic development: sets of teacher competencies and an idea of teacher development paths. For the specific case of doctoral students learning to teach, no theoretical understanding has risen to prominence for either competencies or development paths, and it is

difficult to say that the existing theories have been embedded in actual practice for doctoral students. The theories from EC-12 are more well-known and utilized, so I provide examples from those theories in this section as they may aid in understanding the core phenomenon of teacher development.

	Development Paths	Competencies
EC - 12 Frameworks	<i>Fuller (1969), Burden (1982), McDonnell et al. (1989)</i> Concerns-based Models <i>van der Lans, van de Grift,</i> <i>van Veen (2009)</i> 6 Stages of increasingly effective teaching	<b>Berliner (1988, 2001)</b> 13 Features of Expert Teachers <b>Koehler, Mishra, Yahya (2009)</b> TPACK Framework <b>NBTS Standards (2016)</b> Five Core Propositions
General Education Frameworks		Mishra, Koehler, Henrickson (2011) 7 Transdisciplinary Habits of Mind Tigelaar, Dolmans, Wolfhagen, and van der Vleuten (2004) 61 Competencies for teachers in higher education
Doctoral Student Specific Frameworks	Golde (unpublished) 3 Stages, each stage has tasks and activities Sprague & Nyquist (1991) 4 Areas: Concerns, Discourse, Approach to Authority, Approach to Students	<i>Simpson and Smith (1993)</i> 6 skill areas, 26 competencies <i>CIRTL Program Outcomes (2018)</i> -
		Key: Author (Year) Contribution

Figure 3: Theories of Teacher Development, by Population Described: Teacher development

paths and competencies, sorted into three categories: EC-12, general (all teachers), and

doctoral student-specific.
## **Theories of Teacher Development Paths**

Theories of teacher development that show stages of progress are a mainstay of EC-12 education. The most famous of these is Fuller's "Concerns" model, which shows that EC-12 teachers develop through a consistent pattern of concerns as they mature as teachers. Several other theorists have built on Fuller's work, as shown in the table below.

Fuller (1969)	Burden (1982)	Unruh & Turner (1970)	Watts (1980)	Gregoric (1973)	Katz (1972)	Dubble (1998)	Burke et al. (1984) McDonnel l et al. (1989)
Pre- teaching						Formal Training	Preservice
Survival	Survival (Yr 1)	Initial Teaching	Survival	Becoming	Survival (yrs 1-2)	Neonate (survival) (yr 1)	Induction Competen cy
Task	Adjustment (Yrs 2-4)	Building Security	Middle	Growing	Consolidati on (yr 3)	Consolidation (integration) (yr 2-4)	Building Enthusiast ic &
				Maturing	Renewal (yr 4)	Renewal (critical stage) (yr 5-7)	Growing Career Frustratio
Impact	Mature (Yrs 5+)	Maturing	Mastery	Functioning	Maturity (yr 5)	Seasoned (yr 8+)	n (mid- career) Stable but Stagnant Career Wind- down Career exit

Table 1: Developmental Theories of EC-12 Teaching, by Theorist. From Franey (2016). Most of these models show a transition from a "survival" pattern, where the teacher is concerned with fulfilling the roles of their job and not becoming overwhelmed and leaving the profession, towards an orientation that focuses on student learning or functioning within the classroom.

Sprague and Nyquist (1991) attempt to transition Fuller's model from EC-12 literature to the specific case of doctoral students. They add several dimensions to the concerns-based framework: discourse level, approach to authority, and approach to students. The full model looks like this:

	First	Second	Third
Concerns	Self/Survival	Skills	Outcomes
<b>Discourse Level</b>	Presocialized	Socialized	Post-socialized
Approach to	Dependent	Independent or	Interdependent/
Authority		Counter-dependent	collegial
Approach to	Engaged 1:	Detached: Student as	Engaged 2:
Students	Vulnerable to	experimental subject	Professional
	students as friend,		student as client
	victim, or enemy		

*Figure 4: Sprague and Nyquist's (1991) TA developmental model.* 

This model shows a clear progression through stages of teacher development. First, the doctoral student is focused on their self and their survival, interacting with students according to scripts, and dependent upon the authority of a professor or supervisor. Then, the doctoral student is focused on developing their skills as a teacher, disassociates from the authority of professors or supervisors, and views students as an aid for their own learning to teach. Finally, the fully developed doctoral student teacher is concerned with student learning outcomes, knows many scripts to interact with students but does not rely on them, has an interdependent or collegial relationship with other educational professionals including supervisors, and engages with the student in the way that best supports the student's own learning.

Ferzli et al. (2012) directly tested the idea of a concerns-based model with doctoral students. Their work uses a Concerns-based Adoption Model (CBAM) to compare concerns between doctoral students who were enrolled in a teacher development program and students who were not enrolled in that program. The doctoral students' responses were scored on a rubric with seven stages, six of which correspond with Fuller's stages and one additional "unconcerned" stage. For all three of the stages that correspond with Fuller's "impact" stage, the students who participated in the development program rated those concerns more highly than students who did not (Ferzli et al., 2012, p. 240). Results for the other four concerns were mixed

or very close for both groups, though the authors suggest this is more a matter of results within different groups than comparative results (pp. 240-242).

Cho, Kim, Svinicki, and Decker (2011) charted five concerns of doctoral students as they teach: class control, external evaluation, task, impact, and role/time/communication. The important piece of their framework is that they find doctoral students focus more on the impact-related issues (such as student uptake of content) only if they find the issues of the classroom to be manageable. Failing that, the doctoral students tend to focus on task or role/time/communication concerns.

Golde offered a similar developmental framework in an unpublished white paper (personal communication, 2018), but focused on skill development rather than concerns. In Golde's framework, the three phases are based on predictable periods in a doctoral student's experience: the coursework-centric first years, advancement to candidacy, and completing a dissertation and focusing beyond the doctoral program. In each stage, Golde focused on tasks that relate to development, rather than behaviors that display a particular level of development.

	Development as Educator					
	Novice	petent early practitioner				
	No skills	tfolio of teaching skills				
	Entry and Integration	Emerging Competence	Completion and Exit			
Common Developmental Tasks	<ul> <li>Begin to teach</li> <li>Understand teaching as skills, knowledge and values that can be developed and improved</li> </ul>	<ul> <li>Gain experience as a teacher &amp; educator</li> <li>Think critically about own pedagogical choices</li> <li>Expand definition of "educator" to include mentoring and many forms of communication.</li> </ul>	<ul> <li>Develop identity of self as an educator</li> <li>Understand teaching style and philosophy</li> </ul>			
Examples of Concrete Activities	<ul> <li>Serve as a GA or TA</li> <li>Complete TA training</li> </ul>	<ul> <li>Describe research problem/project to others in a variety of genres (fellowship/grant applications, presentations)</li> <li>Serve as more advanced TA</li> </ul>	<ul> <li>Develop teaching statement and teaching portfolio</li> <li>Present at a conference</li> <li>Gain independent teaching experience</li> <li>Mentor/guide a younger student in the lab</li> </ul>			

Figure 5: Golde's (unpublished) DSD framework, teacher development portion: Extracted from a larger framework on doctoral student development in three phases of scholarship (as researcher and scholar, as educator, and professional identity).

At the top of Golde's model are the three stages that she aligns roughly with years within the doctoral program (which may vary by institution, Golde's work here is focused on Stanford's doctoral students). The first stage, "Entry and Integration," occurs in years 1-2 when the student accepts admission and begins to see themselves as a doctoral student. The second stage, "Developing Competence," occurs in years 3-5 and relates to the student completing foundational work and advancing to candidacy. The final stage occurs in year 6 and occurs when students "begin to consider their post-doctoral career in earnest" (Golde, unpublished, p. 2). The Office of the Vice Provost for Teaching and Learning at Stanford offers a set of resources for the user wishing to implement programs aligned with these stages (see: <a href="https://vptl.stanford.edu/faculty-staff-student-instructors/student-instructors-postdocs/ta-handbook/mint-resources">https://vptl.stanford.edu/faculty-staff-student-instructors/student-instructors-postdocs/ta-handbook/mint-resources</a>).

Other authors rejected the idea that a developmental framework is useful for describing doctoral student teacher development. That there can be no discernible development pattern is one of the findings of a four-year longitudinal study (Wulff, Austin, Nyquist, & Sprague, 2004). Among the 66 participants whose data was used in the findings, 51 were from research universities. From responses to the question "Are there discernible patterns or stages in the development of aspiring professors' understanding of the teaching process and their teaching roles?" (p. 60), the researchers concluded that there was no discernible stage model or predictable progress in teacher development. However, they also concluded that teacher development certainly happens, stating that "changes did, indeed, occur over time" (p. 60) and the doctoral students "perceived themselves as increasingly confident in their teaching abilities" (p. 54).

Even though the authors of the longitudinal study refused to state a developmental theory, they consistently returned to the theme of integration and stressed the "holistic process" of teacher development and how development as teachers was "best understood in the context of other interrelated factors" (Wulff et al., 2004, p. 61). They cited nine distinct factors: background and experience, roles and assignments, informal connections, messages, personal events, disciplines, career paths, institutions, and opportunities for reflection (pp. 54-59). At the same time, as the authors called for a holistic understanding of doctoral student development,

they echoed the need for "systematic, developmental preparation" (p. 61). They additionally claimed that examples from students show that "the departments represented in our study did not systematically or frequently pay attention to providing preparation, orientation, and feedback to graduate students in their work and development as teachers" (p. 62).

As with the theories of doctoral student teacher competencies, it is unknown how and to what extent the theories of development paths are used by practitioners or internalized by doctoral students as they seek out ways to become better teachers. The scholarship consistently concludes that institutions can attempt to chart a development path for doctoral students, but opportunities to participate in that path are not equally available to all doctoral students, with variation of availability occurring between institutions, departments, and programs.

### **Theories of Teacher Competencies**

There is no universal agreement on the competencies (traits, abilities, skills, and knowledge) that doctoral students should gain as they learn to teach. Many lists of potential traits do exist, especially if one exits doctoral student teacher development and looks at EC-12 competencies for teachers. Among the most famous of these are Berliner's (2001) 13 "features" of expert teachers; Koehler, Mishra, and Yahya's (2005) Technical-Pedagogical-Content Knowledge (TPK) model; and the competencies that form the basis for examinations like ETS' PRAXIS, the most common EC-12 teacher certification examination series in the US.

Simpson and Smith's (1993) Delphi study resulted in 26 competencies for TAs. They sorted these 26 competencies into six broad skill groups and note some overlap between the "skill areas" (p. 141, see figures below).



Figure 6: Simpson and Smith's (1993) Skill Areas and TA Competencies: Six skill areas for twenty-six TA competencies, illustrating the relationship between the skill areas.

Simpson and Smith's study presents the most complete picture of what experts believe doctoral students should learn to do as teachers. The competencies are listed as broad statements: for example, the first of the scholastic competencies is "Demonstrate mastery of their subject matter" and the management skills section includes "Manage the learning environment so that optimum learning can occur." As a framework, I quite like this one, because it sets a clear set of criteria that can both drive DSTD and serve as an evaluative framework. However, there has been little interest in the presentation. 26 years since publication, the study only has 58 citations on Google Scholar (a little over two a year). This lack of theory adoption could be part of why the field of DSTD appears so disjointed; any one of these competencies makes for an interesting teacher development opportunity for doctoral students, but just developing opportunities leads to

a lack of systems in place that allow doctoral students to diagnose the competencies they need to learn, find opportunities to learn them, and then reflect upon that learning.

In 2004, Tigelaar, Dolmans, Wolfhagen, and van der Vleuten used a Delphi method to examine teacher competency in higher education and end with a list of 61 items. They exclusively focused on the idea of the teacher as a person, which I will return to at the end of this section when I examine the possibility of a learner-centered vision for DSTD. Their list was sorted into five categories: The person as teacher, expert on content knowledge, facilitator of learning processes, organiser [sic, British spelling], and scholar/lifelong learner (p. 253). This piece has shown some adoption in European countries, but little use in the United States.

Though not centered on higher education, The National Board for Professional Teaching Standards (NBPTS) promotes "five core propositions" as a way to "create and maintain a body of knowledge that guides practice" (2016, p. 9). The five core propositions are:

- 1. Teachers are committed to students and their learning
- 2. Teachers know the subjects they teach and how to teach those subjects to students
- 3. Teachers are responsible for managing and monitoring student learning
- 4. Teachers think systematically about their practices and learn from experience
- 5. Teachers are members of learning communities

Lest this be thought too simple, each of the core propositions is accompanied by subpropositions. For example, five sub-propositions offer further detail on proposition three: teachers call on multiple methods to meet their instructional goals, teachers support student learning in a varied settings and groups, teachers value student engagement, teachers regularly assess student progress, and teachers engage students in their learning process (2016, pp. 25-29).

NBPTS also claimed direct impact of their teachers on student learning in EC-12 (Cowan & Goldhaber, 2015).

These examples provide evidence of theoretical works on teacher development in general, and in some cases, like with Tigelaar et al. (2004) and Smith and Simpson (1993), theory directly related to doctoral student teacher development. What is much less clear is how doctoral students themselves understand such theories and how, if at all, they influence the doctoral student's sense-making of teacher development. Do practitioners of DSTD use such theoretical frames, and if they do, are they transparent to the doctoral students? To address this question in a way that allows me to shape inquiry, I turn to Griffee's (2012) framework.

Gorsuch's (2012) volume *Working Theories for Teaching Assistant Development* did an excellent job of connecting diverse theories with practical teacher development needs. The entire second section of the book was devoted exclusively to international teaching assistants (ITAs), the focus of much of Gorsuch's other research as well as her 2015 volume on communication. Among the chapters in Gorsuch (2012) was Griffee's intriguing construction of a High, Middle, Low (HML) model of theories (reproduced below).

	Public Theory	Private Theory	
High Theory	Theories of ontology	Individual diaries	
	Theories of epistemology	Personal correspondence	
	Theories of Causality	Private Conversation	
<b>Middle Theory</b>	Academic journals	Informal associations	
	Literature reviews	Personal reflection	
	Dissertations	Works in progress	
Low Theory	Poster sessions	Classroom experiences	
	Newsletter articles	Pedagogical practices	
	Conference presentations	Teacher's personal values	

Figure 7: Griffee's (2012) Model of High, Middle, and Low Theory for TAs

Griffee's point here was that not all theories encountered by a doctoral student are equally valued; indeed, some studies in the literature (which he characterizes as "middle theory/public")

may not mesh with the much less-valued low theory/private of personal classroom experiences. He noted that this may "account for the estrangement teachers frequently express with middle theory" (p. 56). The conclusion tells much of the story of modern DSTD—it may be theoretically mismatched with the practical experiences of doctoral students learning to teach, or doctoral students may encounter only one type of theory. The established "middle theory" that I have shown in the previous section may not be apparent to doctoral students, or if it is apparent, may not corroborate the accounts they hear from peers or supervisors about teacher development. Thus, Griffee's framework offered unique insight into the previously mentioned problem of systematic development; where doctoral students have learning opportunities available to them, and may attend those opportunities, but may be unable to connect them to teacher development.

Griffee (2012) expands upon this work with a model that directly develops how teaching assistants (TAs) create individualized understandings of teacher theory. It is important to distinguish Griffee's population: he is working with first-year students in an MA program. Although the population in my study is quite different, I believe Griffee's description of how students arrive at personal theories bears consideration for doctoral students. The final conceptualization of that model is reproduced below. Griffee builds this model with heavy reliance on the Glaser & Strauss (1967) model of grounded theory design. He refers to it as the "TATT" model, for "Teaching Assistant Teacher Theory" (p. 12).



Figure 8: Griffee's (2012) TATT model of TA Theory Creation

In this model, "background" refers to the prior teaching experiences of the TA. "Input" refers to the current classes of a student as well as "conferences attended, reading, classroom research, informal discussion with colleagues, or more organized teacher training" (p. 26). "Problems" are things that are encountered by students that, when "resolved," become part of that student's understanding of teacher theory (p. 26).

### Conclusion

Many authors, especially Austin, have made strong cases that doctoral student teacher development is not systematic. In this chapter, I have presented evidence from a multitude of sources of the diversity of experiences, but also conclude that the literature does not present strong examples of systematic teacher development for doctoral students. In trying to understand how such a system of development might look, I have shown several examples of theories of teacher development, from psychological models (such as Fuller's (1969) concerns model and its derivatives) to more practice-oriented theories (such as Golde's unpublished framework linking teacher development to stages of the doctoral student experience). Then, I have turned to descriptions of teacher competencies, with specific emphasis on models that might be applicable to adult students, and concluded with a brief meditation on the role of theory itself, citing Griffee's (2012) work with both the role of theory and a framework for understanding how TAs create personal theory. In the next chapter, I will present the methods used to investigate the research question.

#### **Chapter Three: Methods**

The research question in this study is "What concepts do doctoral students emphasize when they discuss teacher development?" This was an interview study augmented with two video-recorded activities and three e-mailed responses. The data was analyzed using the "interactive model" from Miles, Huberman, and Saldaña (p. 10). In this chapter, I will describe the study from data collection through analysis.

## Site

The study took place at Michigan State University, a land-grant public doctoral-granting institution in the American Midwest. Michigan State has at least 91 different doctoral programs, though not all accept new students each year. The vast majority of the undergraduate classes at Michigan State are taught "On-Campus" (in Fall 2019, 573,636.5 of 646,609.5 undergraduate semester credit hours; or 88.71%; data from MSU registrar) and Michigan State does not publish official data on how many of these courses are taught by doctoral students. In Fall 2019, Michigan State had 3490 doctoral students, of which approximately 2900 are PhDs (exact numbers not available) with the remainder being professional doctorates. The university conferred 340 doctoral degrees in academic year 2018-2019 (data from MSU registrar).

Michigan State University has several university-wide initiatives for doctoral students learning to teach. Inside Teaching MSU is a community of doctoral students interested in teaching facilitated by the graduate school, which runs workshops, maintains a social media presence, and facilitates new TA orientation at the beginning of each academic year. The Graduate School also sponsors the Certification in College Teaching, which requires doctoral students to fulfill a set of criteria put forward by their college around five pre-established competencies. The Graduate School also hosts numerous workshops and weekend events aimed

at doctoral students learning to teach, and markets several of these as helping assist doctoral students in fulfilling the requirements of the Certification in College Teaching.

In addition to the university-wide opportunities, there are also at least five fellowship programs for doctoral students learning to teach. Future Academic Scholars in Teaching (FAST) is MSU's extension of the CIRTL network described in Chapter Two. Inside Teaching Fellows, one aspect of the Inside Teaching program mentioned in the previous paragraph, receive one year of fellowship support and are required to complete certain developmental activities like running a workshop and authoring a blogpost on a topic related to teaching. The Residential College in Arts and Humanities (RCAH) offers two fellowships: one for doctoral students interested in traditional teaching topics and one that specifically facilitates developing language in non-traditional learning modalities. Bailey Scholars is a program where graduate students work with a group of select undergraduates to co-create a syllabus and curriculum for a learnercentered semester-length class. Scholarship of Undergraduate Teaching and Learning (SUTL) Fellows pair doctoral students with faculty mentors in the University's Lyman Briggs college that focuses on classroom research in a STEM field. All of these are competitive programs that are open to limited students, and some students participate in more than one of these programs.

#### **Data Collection**

I collected data in several phases. In the recruitment phase, I solicited participants by indirect e-mails, direct e-mails, posted notices, and snowball sampling from other participants. Then, participants participated in a first interview that covered their background as teachers, their teaching situation, and their teacher development experiences. At the end of the first interview, participants completed the first of the video-recorded activities, where they created a diagram or drawing in response to the phrase "Becoming a Better Teacher." Then, participants had a break

of about two months. In that time, they received three e-mailed prompts asking about specific events that may have happened while they were teaching. After all three of those responses were recorded, I invited participants to attend a second interview that focused on their perceptions of teacher development and experiences with different types of development opportunities. Finally, participants completed the second video-recorded activity, where they created continuums ranking how useful different activities were for their development and their confidence with various teaching tasks and constructs.

### Recruitment

I conducted the initial recruitment of participants conducted via an e-mailed recruitment form (see Appendix) to 56 university personnel in charge of coordinating graduate teaching assignments. Many of these personnel were faculty members, but the list also included some graduate coordinators with staff positions. I asked these personnel to either directly forward the list to doctoral students whom they knew had a teaching assignment or might be interested in the study, or to e-mail a recruitment notice to the doctoral students with current teaching assignments. Eight of the 56 responded saying that they had forwarded the e-mail, two more asked for additional clarification and then responded that they had offered the opportunity to the doctoral students that worked with them. This strategy recruited one participant.

The second strategy was targeted recruitment efforts to certain individuals who were known to be directly interested in doctoral student teacher development, including the directors of two fellowship programs for doctoral students learning to teach, a member of the graduate school, two doctoral students who were directly working on teacher development projects, and two faculty members who had a stated interest in the research. I asked these people to directly contact students that might be interested in the project and met the inclusion criteria. Two of the

people at this stage offered to make social media posts recruiting for the study (see Appendix). This strategy recruited three additional participants.

The third strategy involved posted flyers in classrooms where doctoral students commonly taught (see Appendix). The flyers were a small (approximately 3" x 5") advertisement placed on the lectern near the projector, but out of the way of any functional controls. I placed fliers in 70 classrooms in the two most commonly used buildings for undergraduate courses. This strategy did not recruit any participants.

Finally, I asked participants at the end of their first interview to snowball sample other doctoral students who might be interested in participating. Several participants also offered other suggestions for recruitment, including sending an e-mail to the council of graduate students (e-mail sent, but never received a reply) and talking to coordinators of fellowship programs (already completed in first stage of recruitment). Three of the four initial participants agreed to directly recruit other people they knew, and this strategy resulted in the final six participants, bringing the total to ten participants.

# **Participants**

The participants shared three common characteristics: they were all doctoral students, they all attended the same university, and they all had a classroom experience where they were the primary instructor. From there, participants were spread across a variety of programs, colleges, age ranges, prior teaching experiences, and length of tenure as a doctoral student. The chart below outlines basic relevant demographic characteristics of the participants, listed by pseudonym.

PSEUDONYM	COLLEGE	YEAR	FELLOWSHIP PROGRAM?	STAGE OF DOCTORAL PROGRAM	TEACHING EXPERIENCE
Aiko	Social Science	4	No	Dissertation	Instructor: Two Courses TA: Multiple Courses
Byron	Natural Science	5	No	Dissertation	TA: Multiple Courses Recitation Leader: Multiple Courses
Clara	Social Science	10	No	Dissertation	JET [Japanese Exchange Teaching] ESL Instructor in Community Center Writing Center Instructor [7 years] Instructor: One course TA: Multiple Semesters
Jolie	Ag/Nat Resource	7	Yes	Dissertation	Undergraduate Learning Assistant Instructor: Private College, Multiple Courses Overseas Instructor Current Instructor
Leo	Social Science	2	No	Coursework	TA / Recitation Leader: Multiple Courses Taught solo Summer '19 [after interview]
Nadia	Ag/Nat Resource	6	No	Dissertation	Extension – Outreach, Public Education MSU Science Festival Presentations "Critter Barn" Non-profit Child Education TA: Multiple Courses Guest Lecturer: Multiple Times
Oliver	Social Science	4	No	Dissertation	Undergraduate Tutor Training sessions in Industry, Client Tutoring Instructor: Two Courses TA: Multiple Courses
Pamela	Nursing	5	No	Dissertation	Current Faculty at Neighboring University Lead for all Simulation Coursework [Social Work, Nurses, Med. Doctors] Taught/Teaches Many Courses
Sean	Natural Science	3	Yes	Dissertation	TA: Multiple Courses Instructor: One Course
Stacy	Ag/Nat Resource	2	Yes	Coursework	TA: Multiple courses at multiple universities Instructor: One Course Developed Course

Table 2: Participant information: Alphabetically by pseudonym

*Column headings in Table 2.* The first heading states the pseudonym, assigned by the researcher. The second heading is the college. Several students are from the same college but are not always in the same program; to preserve anonymity, programs are not revealed here. The third column states the number of years within the doctoral program. The fourth column "Fellowship program" indicates if a participant identified as a participant in at least one of the fellowship programs listed in the section titled "Site" at the beginning of this chapter. The fifth column states whether the doctoral student is still taking coursework or is solely working on their dissertation (two participants, Byron and Nadia, have finished all mandatory coursework and are working on dissertations, but are still taking optional coursework). The last column gives a short summary of participant's self-reported formal teaching experiences.

*Aiko.* Aiko is a Social Science student and a self-described bundle of nervous energy. In our interview, she was clearly passionate about the act of teaching. Her eyes were bright when she related stories of what she has done in her classroom and things she's heard about but has yet to try. Our discussion of teaching was filled with direct anecdotes and centered around the behavior of students. She took strong ownership of the classes she teaches as a whole, articulating commitments to the continued success of student after they leave her class.

*Clara.* Clara has been a doctoral student in Social Science for ten years, following stints as an overseas teacher, non-education industry employee, and several other jobs. She was interested in interdisciplinary themes, particularly with how these themes can relate to new teaching practices. Clara was frank about the limitations of her department and questioned her choice to pursue doctoral studies but had numerous positive stories about working as a teacher across many parts of the university.

*Byron.* Byron comes from a Caribbean country and immigrated to the United States at the start of his undergraduate tenure. His pursuit of Chemistry led him to successful degree completion and enrollment at MSU, where he is finishing up a Masters-PhD combined program. His interest in teaching came from his job as a TA, and he surprised himself with how much he enjoyed teaching. One of the first things Byron shared with me is that he had anticipated taking a job in industry after graduation but is now primarily considering lecturer positions.

*Jolie*. Jolie's focus is on interdisciplinary education and her practice mirrors that. She is enrolled in a STEM program but has a background in the humanities, spent previous time as an adjunct in both STEM fields and French language teaching, and has completed scholarship on both sides of the Atlantic. Aside from her stories about teaching, Jolie also shared considerable information on the role of doctoral students in helping other doctoral students learn to teach, including providing access to learning opportunities and serving as peer advisors and mentors.

*Leo.* Leo is a refreshingly plain-spoken and straightforward Social Science doctoral student. He spoke about how his experiences as a teacher included direct negative feedback from students as well as indirect feedback from his peers who heard grumblings about his teaching from their students. Like Byron, he is surprised at how much he enjoys teaching, but he also places emphasis on how well it has "forced [him] to *really* learn [the content of his program]." Leo was just ending his second year when he participated in the study, and he was conflicted about what the role of teaching will be in his life going forward towards the end of his program and his post-doctoral career.

*Nadia.* Nadia's teaching experience as a doctoral student stems from just a few TA assignments and guest lectures, but she was incredibly passionate about the subject. An Agricultural / Natural Resources PhD student, she regaled me with a set of stories of farms and

undergraduates and sheep without much pausing to breathe. Nadia's centered her discussion of practice as a teacher around connections to her students, and she told me about how she still meets with some of her old students for continued advice and help with their studies. In addition to her emphasis on personal connection with students, Nadia also had much to say about mentoring and supervisors, as she had experiences with both helpful and unhelpful figures.

*Oliver.* Oliver is a very precise Social Science doctoral student. He smiled as he mocked his own tendency to encourage such precision in his own students and admitted to an overzealous reaction to student use of the word "percentage" instead of "percentage points." As one of the more senior students in his program, Oliver has a longitudinal view of teacher development and he carefully chose his words as he outlined his experiences with the challenges of wanting to learn to teach as a doctoral student amidst pressure to focus on other things.

*Pamela.* Pamela is the eldest of the participants and a tenured clinical professor in Nursing at a nearby university as well as a PhD candidate in Nursing. She also directs the center for simulation learning at the institution where she works, and that center focuses on using standardized patient-actors to mimic symptoms of an illness so that students can practice diagnosing and treating the condition. She works across disciplines, interfacing from her home in Nursing education with social workers, medical students, and psychologists.

*Sean.* Sean is in the college of Natural Science and a self-described activist who wants to save the bees and save doctoral students at the same time. He was often humorous and gestured grandly with hands, head, and eyebrows as he made his points. Sean's story revolved around the situation of the university, and he was the participant most aware of how external forces like faculty bylaws and disciplinary traditions may influence the ability of a single doctoral student to pursue becoming a better teacher. At the same time, he was deeply reflective of his own

experience and narrated how his training in teaching and work with the fellowship has led to him re-examining the university world as he moved through it.

*Stacy.* Stacy was the youngest of the participants and one of the participants who went straight from undergraduate to PhD studies. She is in the Agriculture and Natural Resources College. Her interest in teaching led her to participate in a fellowship program specifically aimed at improving teaching ability in doctoral students in Science, Technology, Engineering, and Mathematics (STEM) fields. She teaches in a large classroom of "over two hundred" students and presented several guest lectures on behalf of her advisor.

## **Initial Interview**

The initial interview lasted about an hour and consisted of two parts. In the first part, participants answered a series of questions about their teaching background and teacher development experiences in a semi-structured interview format. In the second part, participants completed the first of the two video-recorded activities, where they created a drawing or diagram in response to the phrase "Becoming a Better Teacher" and then explained their work on camera.

*Interview questions.* The interview began with participants signing a consent form (see Appendix) and receiving direction on their rights as participants. Participants were informed that they need not answer all questions, that they may decline to answer a question at any time, and that they never need to provide an explanation for why they declined to answer a question. Participants were offered a chance to pick a pseudonym or have one assigned to them.

The interview followed a semi-structured format. The protocol included ten questions in two categories: an introduction and teacher background, and experiences with teacher development. At the beginning of the interview, participants were informed that the protocol was semi-structured and to add in any material they thought was relevant. I stressed that I was

not familiar with each of their disciplines and was particularly interested in areas that might be the same or different from other doctoral students.

*First recorded activity.* Participants were asked to respond visually to the prompt "Becoming a Better Teacher." They were instructed to use as few words as possible and present a visual diagram, such as an illustration, flowchart, or graphic. Many participants asked for clarification, and I intentionally did not provide more guidance, due to the importance of trying to understand how participants were defining teacher development. Two examples of this are in the figure below.



Figure 9: Examples of responses to drawing prompt: "Becoming a better teacher."

I gave the participants seven minutes to draw their image and left the room for that duration. Then, I returned and turned on the camera and asked participants to explain their visual. Thus, information on this part of this process included the produced artifact (as in the diagrams above), as well as participant's verbal description and their physical emphases, such as pointing to different parts of their image or adding more notes as they spoke.

### "After teaching" responses

I designed the "after teaching" responses to examine the relationship between the act of teaching and teacher development. Originally, I conceived these as reflections on a single class period, and I intended to distribute them immediately after a participant finished teaching. However, due to the sporadic nature of teaching schedules, this proved impossible and the items were revised to be reflections on current or past teaching experiences. The questions and responses were distributed and collected via e-mail between the first and second interviews. No participant saw the responses of any other participant, nor was any participant provided examples of a response, though several participants did ask for such examples.

### **Second Interview**

I conducted the second interview with an unstructured protocol that was individualized to each participant. There were only a few initial scripted questions, then I built the rest of the discussion around responses to the participant's specific "after teaching" prompts. In each interview, I mentioned at least one specific detail from the participant's "after teaching" responses and asked them to give more information on that detail, and as needed, to provide specific examples. These interviews varied in length from 20 minutes to over 40 minutes. As expected, some of the more experienced teachers had more concrete examples, but all participants were able to provide at least one specific story that they related to their development.

**Second Video-recorded Activity.** The second video-recorded activity consisted of two parts: a continuum of "useful for development" and a continuum of "confidence in teacher tasks and abilities." This video-recorded activity was much lengthier than the first, with the sum of both parts of the second activity averaging just over fifty minutes. Participants were encouraged to recount stories and examples from their personal experiences as they completed the exercises.

*Part One: Useful for development*. I gave participants 12-17<sup>2</sup> potential sources of information about teaching, such as textbooks, other doctoral students, friends and family, formal mentors, and others (see table below). Each source of information was listed on a notecard. In front of the participant, I placed two sheets of paper a few feet apart. The first sheet was labeled "more useful for my development as a teacher" and the second sheet was labeled "less useful for my development as a teacher." A third sheet, labeled "Unknown or Not Applicable," was placed to the side. Participants were instructed to place cards in a ranked-order from "more useful" to "less useful" and then discard any cards they had no experience with to the sheet labeled "Unknown or Not Applicable." Several participants asked if each item needed to be ordered individually, and I returned no guidance, saying that they could group and order items however they pleased. Some participants chose to place items in loose groups and others ordered each item individually.

<sup>&</sup>lt;sup>2</sup> The initial participant had 12 cards, and was offered blank cards to add any other sources they found useful. As this process continued, subsequent participants had access to those cards as well, meaning more overall cards.



Your Previous

Instructors

Peers

Supervisors



Textbooks

Professional

Orgs Online

The participants ordering the cards were encouraged to narrate their placements as they sorted and ordered the cards. This led to three pieces of data: the final layout (as in Figure 13), the narratives of participants as they placed the cards, and the physical actions recorded on video, of re-arranging, hesitations, and confident card placements. In Chapter Four I will discuss how these disparate types of data led to findings.

Part Two: Confidence in teacher skill/knowledge. This activity was very similar to the previous one but contained different cards and different ends of the continuum. Participants were given a set of notecards, similar instructions for creating a continuum, and the area for unknown/not applicable. The difference was that the labels on both sides were "most confident" and "least confident," and the cards contained actions and tasks related to teaching.



Figure 11: Example of "confidence in teacher-type tasks" continuum exercise Confidence was the purported construct of interest, but many participants directly related their ratings to their experiences as doctoral students. In particular, the fellowship students drew clear connections to different parts of their fellowship experiences and specific teacher competencies that had not emerged in the previous data generation processes. The most common cards to appear near the "most confident" end of the spectrum were "content knowledge" and "teaching with technology." The "teaching philosophy" and "learning philosophy" cards more commonly appeared near the "least confident" end of continuums. The final results of this activity generated less useful data than the previous continuum activity, but much of the useful data came from participant's descriptions, hesitations, and visual cues as they placed the cards.

### **Data Analysis**

Data analysis follows largely in the guidance of Miles, Huberman, and Saldaña from the book *Qualitative Data Analysis: A Methods Sourcebook* (2019). The authors of that text argued for data analysis that moves iteratively through four phases: Data Collection, Data Display, Data Condensation, and Conclusions: Drawing/Verifying (see Figure below). This "continuous, iterative enterprise" is an important feature of the analysis of this project (p. 10). Partially due to recruitment issues, data analysis had to begin before collection could complete. Using the Miles, Huberman, and Saldaña (2019) model, this is expected and can be a strength of the qualitative process, but it was not expected at the initial proposal stage.



Figure 12: Miles, Huberman, and Saldaña's (2019) Qualitative Data Analysis model: Recreation

describing the components of qualitative data analysis: interactive model.

With this model, it is important to note the places where the arrows are not double-sided. All of them are connected to data collection, which can drive data display and data condensation, but must not directly drive conclusions: drawing/verifying. However, conclusions:

drawing/verifying can drive the need for more data collection. Thus, the two steps of data display and data condensation form the important "intermediate" stages between data collection and conclusions: drawing/verifying. In the previous section, I have addressed data collection. In this section, I will address data display, data condensation, and conclusions: drawing/verifying as a process, saving the actual findings for the next chapter.

## **Data Condensation**

Data condensation involved several pieces. An initial round of coding attempted to draw themes from the initial interview for use in analyzing the second interview. Also, I condensed each participant's data into a vignette (see Appendix for examples) that unified the data sources together: first interview, second interview, "after teaching" responses, and the video-recorded activities. Additionally, coded data was broken into meaning-units following the process outlined in Giorgi's (2009) phenomenological method. Finally, video-recorded data was annotated for visual movements, hesitations, and emphasis by the participant.

*Initial Coding.* The earliest coding attempt used *a priori* themes from literature applied to the interview transcripts from the first interview. Themes were coded in the DeDoose platform after transcribing the audio recordings of the interview. These codes were intended to capture broad themes based on previous literature and are recorded below.

Торіс	Source	Codes
Mismatch,	Cross-Purposes Report	Satisfaction, Mismatch, Desired Training,
Dissatisfaction		Actual Training
Role of other	Socialization Literature	Socialization, Role, Mentors, Department,
figures		Discipline
Teaching	Boyer	Teaching as Scholarship, SOTL
Scholarship		
Types of DTSD	Personal Literature Review	Multi-Institution, Same-Institution,
		Department (training), Program (training),
		Online (training), TA-appointment,
		Workshop

*Table 3: Initial coding scheme: a priori codes* 

This method immediately showed significant weaknesses. First, some of the expected codes (discipline, department (training), satisfaction, mismatch) were rarer than expected from the literature review after the first round of interviews. Second, some very important sections of the transcribed interviews were absent of codes. These sections tended to include where participants talked about students or their own personal learning and led to the realization that this coding framework had failed to account for the learner-centered orientation of the research question. Since there is very little written about the intersection of learner-centered education and doctoral students, generating codes from literature in this vein is very difficult. This led me to examine other analysis methods that had a more "ground-up" orientation.

*Vignette-ing.* Vignettes are located by Miles, Huberman, and Saldaña (2019) as a type of data display, but I list them here as data condensation because their primary use was taking the

data from three separate sources (interviews, video-recorded activities, and "after-teaching" emailed responses) and putting it in a single location. The vignettes "ha[ve] a narrative, story-like structure" and solve the problem of coding displays that "somehow lack meaning and contextual richness" (Miles, Huberman, & Saldaña, 2019, p. 180).

I was drawn to the vignette-ing process when I felt the initial coding did a poor job of capturing the emotional aspects of participant's stories. For example, as participants explained why they drew their diagrams responding to the prompt "becoming a better teacher," they related stories of their experience. As participants answered interview questions, they commonly slipped into narratives. The vignette-ing process drew common themes from those narrative across participants and revealed things such as the importance Nadia placed on personal connections with students or how Clara's frustration with her department has influenced her teacher development path. Two example vignettes are placed in the Appendix.

*Meaning-unit translation*. This coding method abandoned the idea of *a priori* codes in favor of Giorgi's (2009) approach to translate information into meaningful units. In practice, this means taking a transcript, summarizing it, adding to it a broad level code, then aligning that code with other sources of data (I use the term "replicable code" to show that the code is intended to be used in other places, or comes from other data). Where Giorgi's method differs from the prior attempt at coding was that it begins with larger "chunks" of data, because data is only sorted, at the initial level, by the start and stop of a topic. Two examples are below.

Data	Summary	Broad	Replicable
		Code(s)	Code(s)
The common theme is that we're all	1) Pamela's point is	Future-	Job,
nurse practitioners and we're supposed	that the DTSD offered	Faculty,	Current
to teach in the nurse practitioner	to her was not	Career	Teaching
program, but none of us have formal	beneficial to her current	Development,	
education training. None of us have	employment status.	Mismatch	
the teaching certificate. Which was an		with needs,	
option for me, but I'm already five	2) Point that DTSD	Training vs.	
years into teaching. So I looked into it	seems to be written for	Actual	
and think most of the PhD students	future-faculty.		
who are getting the teaching certificate			
are trying to get a faculty job, and I'm	3) Orientation of DTSD		
thinking I'm already doing the job.	as job-competitiveness?		
My understanding was that the			
teaching certificate was that you'd			
student teach with faculty. And I'm			
already teaching, so I'm like what			
[1s the benefit].	1) ( )	A	<b>A</b>
And I think the main thing that was	1) Sean's point is that	Active	Active
difficult with the BioSci class well,	students are not	Learning,	Learning,
the people in charge would say that the	learning because of the	Learning	Learning
concepts are hard. And I disagree with	delivery, not the	Theory,	Theory
that. I do think the concepts are hard	difficulty of content.	Teaching	
for some people, sure. But the	$\mathbf{D}:\mathbf{f}:\mathbf{f}$	Theory,	
instruction was also not built towards	2) Difference between	Mismatch	
their learning, it was just like "throw it	professor's opinion (the	With Drofogoor	
all at them. You stand up here and	concepts are nard) and	Professor	
you throw it at them, and then they do	what the doctoral	Content	
thing And it wasn't built around	instructor (structure of	Content	
actively helping them learn the	instructor (structure of		
concepts they were doing And that's	towards learning)		
one of the reasons it sucked	towards rearning)		
one of the reasons it sucked.			

Figure 13: Examples of coding scheme based on Giorgi's phenomenological approach: Data is

broken into meaning-units through an iterative translation process.

Working with the "chunked" data instead of trying to apply *a priori* codes to the whole transcript at once yielded more fruitful results, and the more "ground-up" approach of the Giorgi method solved many of the gap issues identified in the initial coding.

The transformations also created more useful sets of codes than the *a priori* approach. In the first example in Figure 17, Pamela's excerpt would have been well-covered by the *a priori* codes, but Sean's excerpt would have been nearly blank. In this version, Sean's excerpt leads to final codes about Learning Theory, which matches with some of the data from the second video-recorded activity, when several participants picked up the Learning Theory card and specifically asked about it or discussed what they thought it meant. I specifically tried to use the language of "Participant's point is \_\_\_\_" to begin the summary part of the framework. Since so many of the meaning-units contained equivocation or uncertainty, focusing on intended meaning was helpful to understanding and translating the rest of the excerpts.

## **Data Display**

I displayed the data in several ways. Codes were displayed in a matrix produced through the DeDoose software showing points of intersection. Video-recorded activities were placed in continuum maps and then an overall heatmap of results was created, by topic. Then, I annotated the video-recorded data with timestamps to capture physical movements and word inflections that were not present in the audio transcripts.

*Code Matrix.* The code matrix revealed areas where codes overlapped. This matrix is produced by the DeDoose software on all transcripts linked to a project. In this case, the code matrix was produced using the transcripts from only the first and second interviews, as the transcripts from the video data made little sense without the visual of the cards (for example, a transcript would say something like "so I'm looking at this, and I think—it can't be above this, right,"). Attempting to translate that data into the same set of codes as the interviews proved mostly fruitless, and a separate coding scheme was developed for the video data (see subsequent

paragraphs). The matrix was particularly useful in seeing code density and code overlap for the purposes of generating the participant-driven definition of teacher learning.

*Video-recorded data: Heatmaps.* The notecards from the video-recorded data were separated into categories. Each category was represented by a color. Then, each mapping was placed on a heatmap with a dot representing the color of the category. Since participant continuums had a different number of nominal categories due to use of grouping, the placement began with the lowest and highest cards. This forces the heatmaps into an "H" shape, where the two ends are always going to be larger (longer) than the sets of series in the middle (see Figure below, also replicated in Chapter Four).



# Figure 14: Heatmap of continuum responses

The most important result of this data display is to show trends by category. In the example in Figure 18, yellow dots (representing university individuals such as Faculty, Coordinators, and P.I.s) are generally placed closer to "Most Useful" side of the continuum than green dots

(representing academic resources such as Articles, Textbooks, and Conferences). Interpretation and analysis of heatmap data is available in Chapter Four.

*Video-recorded data: Annotations.* The video-recorded data was annotated to add specific notes to certain timestamps. These timestamps focused on the physical actions of the participants as they built and modified their continuums. The two most common annotations were "certainty" and "hesitation," indicating respectively whether a person definitively placed a card or equivocated on a particular placement decision.

### **Conclusions: Drawing/Verifying**

Conclusions drew back to the research question: "What concepts do doctoral students emphasize when they discuss teacher development?" In this section, I break the conclusions into four strategies from Miles, Huberman, and Saldaña (2019): patterns and themes, particulars into the general, clustering, and drawing of models. Then, I reflect back on the concept of crystallization and what it means for the drawing of conclusions in this study.

*Noting patterns, themes.* I believe that findings patterns is the root of much of science, and it is the first "tactic" that Miles, Huberman, and Saldaña suggest in their chapter on drawing and verifying conclusions (p. 274). The most important theme was the concept of "change." The theme itself related to differences that the doctoral students noticed with a time component, either within themselves, their students, or the larger university/department (rare). The pattern that emerged from the theme of "change" was the link between change and acts of either reflection or a second, related activity (see Chapter Five for more discussion). Miles, Huberman, and Saldaña suggest that "patterns need to be subjected to *skepticism* [emphasis in original]" and in that spirit, I re-examined several identified patterns. One important result was discarding an initial coded pattern about the departments of doctoral students (p. 274). Re-examining data

after identifying this pattern, I concluded that the doctoral students themselves almost always referred to individual faculty members, and I was incorrectly attributing those comments as directly discussing departments. This is partially because one of the initial interviewees (Clara) spoke quite passionately and quite specifically about her department, and partially because the literature places extreme emphasis on the department. In the conclusions drawing/verifying component, I concluded that had over-valued that particular transcript and literature to the detriment of the other participant's voices.

Subsuming particulars into the general. The bulk of participant data consisted of personal anecdotes. Each of these anecdotes (often in multiple pieces) was transformed through the Giorgi process described above, with the first stage of transformation being a sentence that began with "<<Participant's Name>>'s point was \_\_\_\_\_." The blank was an important piece for subsuming particulars into general. The finding that emerges from this particular technique directly becomes the sub-headings listed in Chapter Four: for example, the sub-headings "Anxiety," "Authenticity," "Caring," and "Confidence" under the heading "Affect." It was readily apparent that affect, or emotional orientation towards teaching, was an important construct. It was a product of analysis that resulted in those four sub-headings as being the most prevalent and most important of all the ways that participants discussed affect.

*Clustering*. Clustering is a process that Miles, Huberman, and Saldaña (2019) claim that we do naturally, and that the important part of the process is appending of labels to a cluster. The analytic strategy becomes tricky when "clusters are not... mutually exclusive and may overlap" (p. 276). This was readily apparent in several initial attempts to understand the distinction between what makes teacher development happen for one doctoral student versus another. For example, "characteristics of the learning opportunity" was an initial cluster that was

well-backed in research (see Desimone, 2009) as the thing that drives teacher development. However, this cluster strongly overlapped with "perceptions of the experience," to the point where it was difficult in some cases to sort out what actually happened. One participant reported that their orientation experience was "mostly irrelevant, just... presentations, slides" and another reported that the same orientation experience "had really good information, like active learningtype stuff." These contrasts make clustering on characteristics of learning opportunity, an expected important construct, very difficult to understand for the specific case of doctoral students with the data collection tools used in this study.

Where the clustering approach was most useful was in combination with the "confidence" exercise from the video-recorded data. Analyzing this data by grouping together the times when participants shared their personal learning anecdotes (most often while holding a card and trying to determine where to place it) led to the three categories that form the basis of the model in Chapter Five: Learning, Reconciling, and Creating.

*Drawing of Models*. This is a strategy that stretches across most of the other tactics mentioned in Miles, Huberman, and Saldaña (2019), but bears individual attention as it is key to understanding the subsequent chapters. That is because the result of this was explicitly a model, and thus the process of creating various models was the most important part of the drawing conclusions process. It is important that I stress again the iterative relationship between this strategy and data collection and analysis. The model presented in Chapter Five drives around the term "processes" that was not apparent in the early stages of analysis. The time-dimension of teacher development was readily apparent, but early models attempted to capture this as independent of the other variables. In the final model (see Chapter Five), the time dimension

stretches around the edge of the circle, and all three processes have separate timelines. This is a very important conclusion and key to understanding the model.

*Conclusions: "Triangulation" (Crystallization).* The initial study was conceived with Ellingson's (2009) idea of "crystallization" as a method of verifying conclusions. However, that method is dependent upon design, and I have difficulty calling it an analysis method. Likewise, when Miles, Huberman, and Saldaña reference "triangulating," they note the inherent problem of conceiving of the concept as "three independent measures" that agree, because what "if two measures agree and one does not?" (pp. 293-294). I believe Ellingson's view of "facets" of crystallization, either as "integrated," where multiple genres of data come together to a single new form, or "dendritic," where multiple forms of meaning are analyzed parallel to one another, but not combined in the same form, provides an answer to the complaint with triangulation. Although much of Ellingson's work is about making sense of performance genres, I find her orientations towards data from multiple sources useful here, especially in the pseudo-performance of participants in the video-recorded activities.

### Conclusion

The methods presented in this chapter lead directly to the findings in Chapter Four, which lead to the discussion and implications presented in Chapter Five. The key takeaway from this chapter should be the integrated and iterative nature of both the data collection methods and the analysis methods. The overlap between those is a strength of the project, leading to more pointed questions in the interview, the addition of better notecards to the video-recorded exercises, and a set of findings that are reduced to appropriately parsimonious levels for creating models and figures while still maintaining the importance of participant voices.
## **Chapter Four: Findings**

In this chapter, I will address findings related to the research question "What concepts do doctoral students emphasize when they discuss teacher development?" The chapter is organized into three themes: affect, technique, and relationships. Each theme has a number of sub-themes that comes from the analytic activities described in Chapter Three. The chapter concludes by outlining how the data presented in this chapter will relate to Chapter Five: Discussion and Implications.

#### **Structure and Focus of the Findings Section**

The three major themes from the project are affect, technique, and relationships. In this chapter, I focus on each of those themes, the categories within the theme, and the trends within each category. I rely heavily on participant quotes and artifacts in this section, because of the stated research goal of understanding the conception of teacher development *by* doctoral students. This leads to a set of ideas that support or contend with established theory, as is expected by voices of participants who are not experts in teaching, teacher development, or educational psychology. The focus of this chapter is on the participant's ideas themselves, rather than their relationship to the broader literature and previous research, which will be addressed in Chapter Five.

### Affect

The affect categories contain the emotional orientation of the doctoral student towards teaching. The findings about affect break down into four major categories. Anxiety was the most discussed category and participants discussion related both to teaching and the state of being a doctoral student. Authenticity is the word I use to refer to feelings the doctoral students shared about being out-of-place or in-place as a teacher. Caring is the sense of personal

investment and responsibility a doctoral student places in their task as a teacher. Confidence was a focus of the rank-ordering exercise and refers to participant's beliefs about their own capability as a teacher or to complete teaching tasks.

## Anxiety

As one of the students who entered the PhD with very little teaching experience, Nadia related a stark difference between her first and second teaching opportunities. In her first experience, she was "stressed about everything" and confused about why the students were not enjoying a course that she herself had enjoyed just a few years prior. When I asked her what drove the change to the second experience, she told me about "data—from the [instructor evaluation] forms... my instructor for the course actually tailored some of the questions directly to me, so it was awesome to get feedback [directly from students]." She says this feedback was "really rewarding" and helped her find "patience and adaptability" for the second section. That view that "I just had to be patient" is a realization that Nadia finds freeing and lets her approach her second teaching opportunity with a much lower level of anxiety.

Stacy relates a similar experience when she places the card about content knowledge. She is the only participant who places that card on the "less confident" end of the continuum, and when I ask about it, she relates that she feels like she is an expert in only one particular area of [her subject] and that she is teaching a survey-level course. She feels like she needs to be an expert in all areas of the survey course.

The entirety of Aiko's drawing about "becoming a better teacher" was about her personal development journey towards a lower-anxiety approach to teaching (see Figure below). As she explained the picture to me, she touched on themes like being more "present, here" or in-the-moment alongside planning and feeling more prepared the second time she taught a course.



Figure 15: Aiko's drawing. Participants were given 7 minutes and the instructions to use as few words as possible in a visual depiction of the phrase "becoming a better teacher."

Alongside several mentions of "more prepared" or "having a better plan" in the second time she taught, the underlying theme in Aiko's reflection was that she was less anxious about each class as she taught more. That allowed her to be "sunny" as an instructor and present with the students, and that aligned with her definition of becoming a better teacher.

# Authenticity

Authenticity refers to the feeling of being "in-place" or "out-of-place" while teaching or completing teaching tasks. Sean relates a story of feeling like he is an actor while teaching:

In the beginning, it was like I had more of a script I was following... Whereas now, I'm in front of them teaching, with instead of a script, it's more of like "What do I want them to come away with from what I'm saying." ... It feels like less of a play and more of an improv-type thing, but obviously there is still a premise that I'm following. When I follow up on this example and ask him what has made him more comfortable, moved him from the "script" to the "improv-type" teaching, he mentions two things: getting better at public speaking, which he finds "nerve-wracking" at the best of times, and gaining the perspective of students, because "they don't know if I'm teaching them well." In this example, Sean's authenticity is also tied up in anxiety, but that is not the case of all participants.

Aiko relates a similar story without the anxiety piece. She says, carefully, that "My department does not do a great job giving us a ton of resources going into that first [teaching] experience, we're told to find [a faculty member or graduate student] who has taught previously and get their materials." She follows this up by reassuring me that "I think [the department] does the best they can," before relating her challenges being comfortable in a teaching role. She mentions worrying about things like how the students should address her, and that she "is young and looks young." Knowing that Aiko has taught several different courses over several years, I ask what helped her feel the most comfortable in her teaching role, and she tells me of a course where she was allowed to TA a section of the same course in the semester before she taught it as the primary instructor.

# Caring

Although only two participants spoke about caring, they both did so passionately. Nadia relates how she had "an amazing experience with a specific student... [whom] worked really hard and didn't just want it for the 'A,' she wanted to learn the material." The rest of the anecdote consists of personal backstory about the student, but the student did earn a 3.5 at the end of the semester, and Nadia relates that she was "so proud I cried" and that they really "bonded in office hours" and Nadia still "checks up on her" as the student applies to medical

schools. Nadia terms this a "transformative experience" and says it one of the things that drove from her strict science to considering a career in teaching.

Leo, on the other hand, wrestles with how much he should care about his student's progress. As a teacher of graduate students, he does enjoy "helping students grow into researchers." His program contains a very intense first year that culminates with a high failure-rate comprehensive examination, and his role was to prepare students for that exam. With this task, Leo felt the difficulty of "walking the fine line between holding their hand and pushing them off the cliff." There is a tension between developing students to pass an examination, and helping prepare future researchers. He questions how much time he should spend with students he knows are very likely to fail and thus leave the program, as well as how much of a use this particular course is for strong students who he knows will pass and should be focusing on refining the research skills for the latter stages of the program.

# Confidence

The confidence exercise yielded the most fruit in the discussions about confidence. Nearly every participant echoed Byron's joking comment as he pointed to the four cards he had grouped on the "Least Confident" end of the continuum: "All these are related," he chuckles, "because I have to do them this summer." The cards are "Assessment," "Writing a Syllabus," "Making Lesson Plans," and "Writing Learning Objectives." Byron's idea that the "Least Confident" cards are the ones that he must perform soon is a telling notion, because most participants share similar stories. "I've done this—lots," Jolie says as she places the "Assessment" card near the "Least Confident" end of her continuum, "but I'm still worried about it." Of all the cards, "Assessment" and "Motivating Students" tend to find themselves towards the "Least Confident" end of the continuums, and "Teaching with Technology" and "Content

Knowledge" are most often the closest cards to the "Most Confident" end of the continuums. Most of the other cards move around quite a bit, but each participant shares several specific stories that often echo what they had previously shared in interviews about their struggles with teaching.

In parallel to the earlier observation about teacher vocabulary, the students who are in the fellowship programs all place "Teaching Philosophy" near the "Most Confident" end of their continuum. Those who are not in fellowship programs have it as the second-most commonly discarded card into the "N/A or Don't Know" pile (following only "Learning Philosophy"). This is another indication of the use of the fellowship programs in offering doctoral students a vocabulary and an experience that is not available to students without access to fellowship programs.

The other important theme from this exercise was that confidence was something that developed over time. This is parallel to the earlier discussion of the importance of affect in teaching. Leo engages me in a brief discussion about whether a "teacher emotion" is something that is learned and practiced, or something that is developed and set long prior to doctoral studies. I ask him to give me an example, and he frankly says that teaching has "helped me become better at being told I suck." He tells me that this "thick skin" is an important trait for doctoral students who will be critiqued and have their work rejected in things like peer-reviewed journals and conference proposals. In that way, being a teacher has helped him develop an ethos that is important to the other parts of his doctoral student experience.

This theme of developing confidence over time extended through most participants, but the more veteran teachers seemed to continuously find areas for improvement. For example, Pamela spends most of the second interview discussing her assessment technique and charting

the multi-year process she used to get to the place she is now, which she believes is the strongest technique in her department. However, she is still dissatisfied with creating new questions and feels they all need several iterations before they are ready, and she sees this process as a gap in her skill in writing questions. Pamela's struggles with nuancing her assessment technique mirror Byron's constant questioning of whether being "trained to do your job" is enough to satisfy his personal obligations to students as their instructor. Byron feels like he is growing more confident in his ability to help students learn, and he is proud that he is a requested TA from instructors and that his peers come to him for help. But these proud feelings are tempered by his questioning of the expectations from his department as well as questioning whether his current success indicates that he will make a strong candidate for a lecturer position after graduation.

## Technique

Participants mentioned a wide variety of teaching techniques, with just as much variety on how they felt about them. The primary development was an interest in "active learning," though participants had a variety of understandings of that term. Slightly behind "active learning" in mentions by the participants were educational vocabularies and frameworks. Here, we see some of the clearest distinction between the participants in the high-contact training programs and those were not involved in such a program. A little bit distinct from "active learning" was the "presence of the teacher," an issue that many participants mentioned as being a change in their practice. Finally, several participants discussed previous instructors, and both positive practices they wished to preserve and negative practices they intentionally avoided.

### **Active Learning**

Sean's work with active learning is rooted in the belief that "for anyone to learn [a concept] well, they have to connect it to prior knowledge, and how the world works." His

favorite anecdotes revolve around that connection to the world. "So, they know all about crime investigations from TV," he begins, then describes a lab where the students "[have to know] something about insect development to determine what time something died." The lab is cast in a lens of forensic entomology, but Sean is clear that even the knowledge of insect development is not really the important piece, but rather, "how thinking scientifically can help them in the real world." This particular area is something he has reflected on in his own experience as a doctoral student. "Bad teaching—I'm definitely more aware of it now," he says, and relates an example where peers were trying to change an assignment from a paper to a flyer. According to Sean, the flawed logic was that by making the task more interesting ("design a flyer" rather than "write a paper,") that students would learn more and/or be able to demonstrate more learning. He disagrees, and maintains that it is not about flyer-vs-paper, and his peers were putting together essentially a strawman argument. The correct concern is about whether the assignment connects their knowledge to the world, and the flyer is an "inauthentic" way to assess learning for that particular experience, so Sean feels the "activity" side of the proposed mode is irrelevant and potentially even distracting to students.

Pamela's work with simulation offers a similar pattern of engaging the student in realworld tasks to gain the benefits of "a more active learning approach." Her understanding of the concept of active learning is quite nuanced: she draws a three-part progression for her version of "becoming a better teacher" (see Figure below) and is in the process of writing a grant to improve training of simulated patients.



Figure 16: Pamela's drawing. Progression from lecture-based learning to more standard instructor-led active learning techniques, then to a model where the teacher designs experiences for student learning.

I ask her where the teacher is in the last picture, and she laughs and says "behind the two-way glass, I guess," before reflecting that in the right circumstances, and in particular in her simulation activities, the work of the teacher is mostly done before and after the learning experience. She then connects this technique to the importance of answering a wide variety of questions, a skill she wants to model for her students and one she demands they demonstrate on assessments.

Other participants allude to active learning, though they may not mention the term specifically. Byron talks about "getting away from just telling students the answer" in order to "get a kind of dialogue, back-and-forth, about why they think something is the way they think it is." Oliver says he is looking for new ways to "teach via in-class experiment/activity, visual aids, and data," while Clara notes that things going wrong in classrooms come when students are "disengaged or 'checked-out'... and activit[ies] turn out to be boring." The level of awareness of

"active learning" as a category of techniques was high, though there was some variance in what participants considered to be active learning.

### **Educational Vocabulary**

Students who participated in fellowship or long-term teacher development programs (Sean, Jolie, and Stacy) had a more developed educational vocabulary than most of the other participants, with the exception of Pamela (who has a teaching-specific faculty role and attends numerous conferences and workshops on teaching). Stacy told me about using a "type of flipped classroom" for days when she could not be in front of her 240-student class, where students were expected to meet and work in groups to finish an assignment based on a posted lecture. Sean refers to "buzzwords" like "constructivism... active learning, backwards design," and points to a class he took on Teaching College Science as the way he learned them. Jolie had a strong mentoring experience with one of her fellowship programs that "has really expanded [her understanding of non-traditional teaching methods] and given me language to talk about 'oh, this is [what you call] what has worked for me and what I like'."

By contrast, the doctoral students who had not participated in a fellowship or long-term teacher development program tended to use vocabulary that was descriptive but not specific. Byron takes several moments when explaining his discomfort with the curricular switch in his department. "They're trying to get to the 'why' of it," he finally settles on, "the 'why' of concepts, and how [undergraduate students] can apply those things in the future." Similarly, Nadia searches for a way to describe how she has had to "adapt [her] message to a different environment and a different audience." She worries about being "stiff" as a teacher, and when I ask her what that means, gestures with her hands a bit but has a difficult time telling me any details other than that she does not want students to be "afraid" of her.

This distinction is important because it represents one of the few places in the study where a clear difference showed between the participants who were part of a fellowship or longterm teacher development experience and the participants who were not part of such experiences. Jolie was also the only participant who directly expressed that an educational vocabulary was part of her development.

## **Student-centeredness**

A strong theme of the visual reflections and participant anecdotes about the differences in their classroom behaviors over time was the switch from a content-centric to a more student-centric approach. At the very least, 9 of 10 participants were able to vocalize, in some respect, that the consideration of the students was important to their development as a teacher. Consider Oliver's bifurcated depiction below, where the teacher is facing away from the students and writing on the chalkboard in the first half of the image, and the second half of the image is from the teacher's point-of-view if they were looking at the students. Oliver is *not* one of the participants with any formal teacher training, so his production of this duality reflects knowledge from informal sources (in Oliver's case, primarily from other graduate students in his program).



Figure 17: Oliver's drawing. Response to the prompt "becoming a better teacher," showing a two-part process where the teacher begins by focusing on presenting content, but 'becomes a

better teacher' as they start consider what students are receiving from their content.

Stacy is working on a Scholarship of Teaching and Learning (SoTL) project measuring sense-of-belonging after students use iClickers to participate in class activities. She wants to know about engagement of students in large classrooms, which she considers a challenge to many doctoral student teachers. "I want to know [if]... talking to their [classmates] can lead to sense-of-belonging [in large classes where the teacher does not interact with each student]." As a second year PhD student, Stacy has rapidly internalized lessons from her fellowship program about the importance of student engagement. She is concerned with not just student success, but "what makes students successful," and distinguishes between the two as she discusses her own SoTL research and classroom practice.

# "Teaching the way I was taught"

Jolie shares that at the beginning of her teaching experience, "[her own style] was very much teaching-as-I-had-been taught," with an emphasis on "this is the way I learned best." As she moved through more teaching experiences, she relates feeling concerned that this "teaching as I had been taught" reaches all students. "Feedback," Jolie says, is what forced her to confront the issue that what "worked for [her] as a student" is not working for all students. As an interdisciplinary scholar, Jolie sits in both the humanities and natural science worlds, and thus is exposed to two very different pedagogical traditions. She claims this exposure led to her new technique, combining the two as "this is human experience in natural science" where we can "think about emotions" and "sense of well-being" while tackling environmental issues.

Pamela is very aware that her previous instructors have influenced her teaching behaviors. "At [her first post-baccalaureate school]," she begins, "one of my favorite instructors, and one that I learned the most from, did all short-answer questions [no multiple choice]... making students write out their answers." She tells me that when she was writing her first assessments, after trying several formats, she felt that, similar to her own experience learning more material in that particular class, students demonstrated more learning when they had only short-answer responses. But, being on the other side as a teacher and not an instructor, merely copying what she saw is not enough. "My struggle," she says, "is are my questions hard enough? Are they not hard enough? Are they testing the appropriate content? The multiplechoice exams I can get psychometrics around, whereas a short answer exam I don't." This tension between trying to mimic the way she was taught but not having the educational background to understand what happened "behind-the-scenes" of that particular approach has caused Pamela to question her approach.

Clara relates an interesting story about working directly with two TAs who had taught the course previously. Since the course had a new instructor, she felt the other two TAs had a difficult time "overcoming notions of what the class used to be," while she has had an easier time due to lacking those pre-conceived ideas. The new instructor has tried some non-traditional techniques that Clara feels created a "steep curve for [the other two TAs] to adapt to," whereas for her, the expectations were not changing since this was her first time teaching this particular course. This is an interesting story because it relates an important dimension of doctoral student teacher development: the tendency towards inertia, or at the least, to repeat what was done before. Like Pamela, Clara feels that trying to simply copy what was done previously is not enough, and that her peer's feedback was not about helping students succeed, but rather keeping themselves, as instructors, in the most comfortable spot.

#### Relationships

In this section, I will recount how doctoral students felt their relationships with others facilitated or impeded their development as teachers. Relationships in this section means the combination of perceptions and interactions held by the doctoral student and another person or group. This definition allows a way to group up several themes from coding the interviews, including interactions with different groups or individuals, perceptions of different groups or individuals, and perceived perceptions of those individuals and groups of the doctoral student.

# With Students

Nadia's discussion offers an interesting contrast between the student-centeredness in teaching technique, as discussed above, and the way that relationships with students drive teacher development for some doctoral students. I'm really worried," she begins, "because we get a lot of students who have experience with one type of animal and not another, so if we have

an example about horses... I'm like, let's talk about sheep, or pigs!" This "worry," that students are not "enjoy[ing] the material" like she did as an undergraduate, leads Nadia to try and "figure out multiple sorts of examples" to keep students engaged. The key distinction here is that Nadia's drive is not necessarily to present the best possible techniques or insure the most student learning, but rather to try and get students to match the enthusiasm she showed as an undergraduate. Her drawing of "becoming a better teacher" depicts this pattern, and the "more developed" teacher in her drawing (see Figure below) is tellingly saying "What did/didn't you *enjoy*?" (my emphasis added). The key word here is "enjoy," rather than "learn" or "understand," which shows Nadia's focus on a more personal connection to students-as-people rather than students-as-learners. This finding is parallel to Nadia's story (see above) about being "so proud she cried" when a student she had spent time individually mentoring achieved a 3.5 grade in the class, despite a number of personal challenges.



Figure 18: Nadia's drawing. Response to "becoming a better teacher," which focuses on the transition from an instructor trying to learn from their peers and mentors to an instructor who directly asks students "what did/didn't you enjoy?" about the class.

Jolie's work with what she refers to as "not traditional teaching" has led to experiences like students "collaboratively selecting [syllabus] topics" and being able to bring a "spiritual heritage [and] cultural identity piece" to an ostensibly foreign-language classroom. This way to construct a classroom has satisfied Jolie's need to feel her "really immersive experiences [in a foreign country]" are "something that is relevant [to students]" in this part of the world. She states that her learning was about the need to "connect... her experiences with... broader topics [in her discipline]" and that was a teaching skill that she had not gained prior to starting the PhD. **With Peers** 

Peers, meaning other doctoral students, were one of the most referenced positive reinforcers of teacher development and participation in teacher development opportunities. Though some participants mention apathetic peers, the data from this study does not contain a single direct example of a peer discouraging a participant from involvement in teacher development opportunities, a marked departure from participant's stories of PIs, faculty members, and department chairs. Peers were also regularly reported as the primary source of information for participants about teacher development opportunities.

Sean reinforced this point when talking about his participation in a teaching certificate program. A friend of his said "if you're teaching anyways, you can get this certificate...you put it on your CV... kind-of-thing." And Sean's comment was that he looked into the certificate and thought "it seemed not super time-intensive, like it wasn't going to take away from the other things I was doing." From there, he relates getting connected to networks of other graduate students, then into a fellowship program, and eventually that these opportunities "expand [from techniques] like active learning, backwards design... to some professional development and diversity and inclusion." There are two important pieces of this story. The first is how peers drove Sean's participation in his two major teacher development paths: the certificate program is too much of a time burden and chooses not to participate, then he likely misses the peer connections that drove him to join subsequent opportunities. This makes the initial peer endorsement of the certificate program of double importance.

Jolie has filled that exact role for her department, helping to link up other graduate students to opportunities for teaching and learning to teach. "The department of [Department Name]," she says, "part of their program requirement is that we need some kind of teaching experience. But they would much rather hire undergraduate teaching assistants—[so] graduate students generally don't have the opportunity to teach within [the department]." She has pursued several opportunities and feels like her background as an adjunct professor helped her more

easily access opportunities than some other graduate students. She tells me that "[other doctoral students] ask me sometimes [about how to fulfill the requirement], and I certainly do forward opportunities—the [program] fellows call just came out and I sent that through all the [department] communities." For students who consult with her specifically, she feels like as a veteran doctoral student, she can help guide them towards appropriate opportunities, but wants to let other doctoral students know that "more information is better than one type" and encourages people to talk across disciplines and programs rather than merely meeting the minimum requirement. I ask her if this is about advocacy for teaching, and Jolie replies "I would say leadership. There's more here than what [her department] has to offer... in my earlier [PhD years] I think I expected too much from [my department]" before concluding with that she feels the comfortable spot she has personally reached is that she can "be part of [her department] and I can go do all these other things too."

### With Non-Faculty Mentors

"A space to explore [becoming a better teacher]" was Jolie's phrase to describe the benefit of her fellowship experience for her teacher development. This direct phrasing led me to go back and re-analyze some small sections of data from other participants, and Jolie's word "space" was more appropriate than what I had used in my initial coding (affect-belonging). The key to the word "space" in the understanding that it is created with intentionality to be about teaching. In Jolie's case, this was the fellowship program and the specific attitude of the fellowship director. For others, they spoke of spaces where they could think about teaching that included an office of peer-tutors, a series of meetings with other leaders of the same course section, or the car during a long commute. In each of these cases, participants related that the space was predictable, recurring, and directly facilitated their ability to think about teaching.

This creating of space was particularly relevant to those participants who related stories of apathetic or disconnected P.I.s or within-department faculty.

### With Faculty

Stacy's work with the fellowship program has been primarily rooted in her own department. Her PhD advisor is also her fellowship program mentor, and she wants "someone [she] knows [she] can trust to give good advice" that also shares an orientation "towards student success." I ask her about that choice, and she says she "could have branched out" but again references the "trust" she has with this advisor and how they have successfully completed past projects together. She also discusses how faculty at her previous institution drove her to the decision to attend MSU, because that is where they had successful doctoral experiences, but also discusses trouble transitioning into a comfortable relationship with faculty. "That [faculty member] is grading my exam next week, but it is okay for us to make small talk in the coffee line," she says, before continuing that it was a transition "to see my faculty as people with interests" rather than "people who are in the hallway upstairs or the lecture hall." Making that switch was, according to Stacy, critical in making herself "comfortable" enough to pursue projects jointly with faculty, including her SoTL work.

Oliver's story on the difficulty of interacting with faculty centers around grading. As Oliver sought advice on the average grade, the first faculty response he received was that grades should be "about an 80, maybe half the class gets an A or B, the other half gets less." However, Oliver's director supervising professor said his average during a previous semester's version of that same course was about a 60. Oliver's own average was well above both those numbers and closer to a 90. The issue was not the "heterogeneity among professors and grading," as Oliver puts it, but rather the guidance was inconsistent and seemed arbitrary. Oliver says that "I have

not been able to get a sense of where I want [the grades] to be," even after teaching several courses. In this case, we see a clear divide between the faculty being willing to answer questions and offer advice (they were) and being willing to help a doctoral student develop a very tough teaching skill (the ability to fairly grade a class). Oliver mentioned grading several more times in both the spoken interview and the rank-ordering exercise, and I could tell that this was an issue that was important to him. His discussion of the issue always reflected that initial frustration, that there should be something more to grading than an arbitrary assigning of scores to students. Oliver never vocalized that grades should be tied to some external factor (like content mastery) and was very clear that grades should reflect norms within a department; norms that Oliver could not pin down.

Leo relates that the experience of being a TA is vastly variable, depending upon the particular persuasions of the faculty mentor, and that it is often upon the doctoral student to "make something" of the experience. He says that "the first [faculty member he TA'd for] [was] just going in an solving homework problems [during the TA breakout session]," and that for the second, "[the faculty member] solved homework in class, so I [had] to go prepare materials on my own [for the TA breakout session]." The key is that it was never telegraphed to him which format he would have until the class actually began, and his instruction from both faculty members was minimal. I ask him which model was better for his development as a teacher, and he says that the first model helped him understand the differences between students, which he calls the "lower rungs" and "upper rungs" of the class, but the second model was more helpful for learning to differentiate instruction between those "rungs." According to Leo, those two diverse experiences have made him "better at... framing the material in different ways for how

different students learn," although he does conclude with a statement about how he feels "there's still a lot of room for improvement" in learning to differentiate instruction.

# Conclusion

In this chapter, I have presented three major themes: affect, technique, and relationships. These themes are the most important answers to the question "What concepts do doctoral students emphasize when they discuss teacher development?" In the next chapter, I build a discussion of teacher development for doctoral students from the lens of these themes, and then offer a set of implications for the practice of doctoral student teacher development.

#### **Chapter Five: Discussion and Implications**

The learning-about-math vignette that begins this dissertation could be humorous because there is an obvious and exaggerated mismatch between the learning situation and the expectations of the learner. My point was to highlight how doctoral students are cast into a world of just such mismatched expectations. They are asked to learn a very complex thing (how to teach) with instruction that is often sporadic, non-sequential, unguided, or absent. This situation has been well-documented (see Chapter Two) and many researchers have reached similar conclusions: that the historical basis of doctoral studies was not concerned with teacher development, and much of the modern situation of doctoral studies is not conducive to teacher development, even though there is an increasingly broad set of teacher development opportunities available to doctoral students. Most important, I believe, looking at both the literature as a whole and the findings from this study, is the lack of teacher development "coupled systematically with ongoing coursework, workshops, or deliberate feedback and coaching," or that is not "systematically organized to enable [doctoral students] to progressively learn and improve as teachers" (Marx et. al., 2016, p. 492; Austin & McDaniels, 2006, p. 54). It is this *system*, or lack thereof, that I wish to turn my attention to in this chapter.

However, rather than adding to existing literature in the same vein by outlining another argument that doctoral students are under-prepared to teach, often against their own desires and developmental goals, instead I wish to focus on how the unique situation of doctoral students can positively facilitate teacher development. This study contributes by outlining those positive ways doctoral students can be successful in teacher development, while paying specific attention and respect to the situation and system that doctoral students exist within. Rather than call for an establishment of new norms around doctoral education or a sea change to prioritize teacher

development at the same level as research development, these findings sit in the quieter space of where doctoral students are experiencing successful or unsuccessful development as teachers.

### Discussion

In this section, I will briefly discuss each of the three themes from the Findings sections. Then, I will discuss how the situations of each doctoral student can be viewed as a way towards a solution towards the underlying tension from the Golde and Dore (2001) report. I conclude the Discussion section with a few thoughts on how the findings of this study relate to the concept of systematic development for doctoral students learning to teach.

# Affect

Compared to the EC-12 environment, very little is written about the affect of teachers in higher education. The participants in this study consistently stated that their emotional orientation towards the act of teaching was not static and that the change over time indicated teacher development. Nine of the ten participants indicated nervousness or anxiety about approaching classroom tasks, and seven of those nine indicated that it had lessened over time. Byron claims that his increased enjoyment as a teacher over time led to him pursuing a switch from being a lab instructor to a recitation instructor, and he is now pursuing a summer teaching opportunity to make himself a more qualified applicant for lecturer positions after graduation. Leo's claim that he "just had to get better [at teaching]" is driven by his discovery that "[he] really enjoyed teaching, and watching students learn." He said that alongside his naturally thick skin, wanting to improve at something he enjoyed made him more receptive to feedback from students. Stacy discussed switching from a grade-oriented view of teaching towards one that emphasized that "every [student] has their own lived experience." All of these changes in the

affect of doctoral students towards teaching drive the development of the doctoral students as teachers.

### Technique

Austin's (2002) argument that graduates will enter a workplace that "is encouraged by external constituencies to strengthen undergraduate education by a switch from teaching to learning" was evident in several participant's discussions of their changes in technique (p. 98). Several participants drew pictures (see Chapter Four) that showed this distinction. Others mentioned how they had gained an educational vocabulary or familiarity with structures like Bloom's taxonomy.

The most common technique changes were the implementation of "active learning" techniques, and many participants stressed a dissatisfaction with traditional lecture. Oliver discussed creating an artificial market in his class where students chose how much they were willing to spend on certain products, a similar activity to Aiko's free-trade centered candy-swapping activity. Slightly behind these types of techniques in popularity were attempts to make classroom more "real-world relevant," to borrow Sean's term. For example, Clara shared with me a decision to move from traditional papers to faux grant-proposals in a science class she taught. Several participants also mentioned "student centered" techniques, especially as they illustrated "becoming a better teacher" (see Chapter Four).

### **Relationships**

Although there was considerable variance in how doctoral students in the study approached the students in their classes, several indicated that their teacher development required them to form different relationships with students than they expected. For example, Nadia felt like she was a much more effective teacher when she knows the names of her students, and

related that she struggled as the teacher of a class that did not attend her office hours. Byron talked about shifting from being a "resource of answers" to a "guide to questions" for his students, and how he had to intentionally adopt that shift to be an effective instructor after a curriculum change in his department. Pamela told me about how her peers challenged each other to create better lessons. In all of these situations, relationships drive the teacher development. As defined by doctoral students, teacher development is a sustained change in the affect, technique, or relationships of doctoral students that they are cognitively aware of.

### **Situation as Solution**

The situation of doctoral students may be harnessed to positively contribute to the development of doctoral students as teachers. Their unique space as both students and teachers offers something that is rare in other forms of teacher development, when the opportunities to develop as a teacher exist independently of content-centric work as a student. This connection offers an important point for planning development opportunities.

The situation of doctoral students also places many of them in excellent space for peerlearning. As established in Chapter Four, the participants in this study were very complimentary of their peers and very likely to attend development opportunities recommended by peers. Some of the participants took it upon themselves to serve as 'ambassadors' to the other doctoral students, and this ability facilitated development of both parties.

Finally, doctoral students are situated at large institutions with many opportunities. Though they need help navigating these opportunities, the persons concerned with teacher development may find that their institution has much more available than it thought possible. The opportunities to work with another department and view undergraduate posters or participate in a cross-disciplinary team to revise content in high failure-rate courses or the connections to

university writing and tutoring centers all can be viewed as opportunities. Many universities already offer these, and many other, types of experiences to doctoral students. More aligned models of doctoral student teacher development should take advantage of these experiences and facilitate the connections to other experiences that drive teacher development in the model above.

## Systematic Development

No exhaustive survey has been completed as to all the opportunities for doctoral students to learn to teach, nor the content of those opportunities. My own review of literature, and frameworks such as that presented by Desimone (2009), show an emphasis on the *technique* aspect of development. The findings from this study at least tangentially support such a notion; that the primary way that universities, schools, departments, and programs approach teacher development for doctoral students is through the lens of teaching technique. This is not intended to be a negatively judgmental statement, but rather, an important piece of context, because it sets up this important question: if universities, schools, departments, and programs were to broaden their approach *beyond* technique, how might they do so?

The content-centric answer is the subject of Chapter Four: supplement the studies of (primarily introductory) technique with more in-depth technical work, create programs that deliberately address affect and relationships, and do all of those things in a robust manner that fits within current programs rather than is 'bolted on' for only certain students. There exists, at this time, no single program that I can point to as an exemplar of this concept, but there are many that are moving towards these types of goals (see Chapter Two). What the participants continuously expressed was the gap between what their doctoral programs were providing and what their needs and expectations were for teacher development.

The other answer is for programs, colleges, and universities to carefully consider the place of teacher development and the connections between diverse opportunities. As participants in this study emphasized, there were preparation opportunities available, and quite a variety of them. However, even the participants in programs devoted to teacher development had trouble accessing strongly aligned opportunities for systematic development as teachers.

## **Implications for Practice**

There are several potential implications for practice, and in this section, I will review four implications I think are closely connected to the findings. The first of these implications is a need to shift away from one-time learning opportunities (like workshops or asynchronous trainings) to opportunities where doctoral students have chances to learn, practice, and reflect across time. In line with that recommendation, a second implication is that teacher development be more locally housed (in colleges and departments) rather than university-wide, and in doing so, emphasize a stronger connection between the teaching experiences of doctoral students and their learning opportunities. A third implication is a need for an increased focus on the affective dimensions of teacher development for doctoral students, in particular, the relationships between their anxiety, confidence, and ability to facilitate student learning. Finally, I call for increased attention to be placed upon the teaching of doctoral students as it relates to lifelong learning goals, and thus emphasize how the situations of doctoral students tends towards particular learning objectives rather than determining *a priori* objectives and attempting to force them to fit into doctoral studies.

### Shift to multiple-contact learning opportunities

Outside of the students in fellowship programs, participants in this study reported the most common form of direct instruction for learning to teach was the one-time workshop or

single-contact training. In these models, doctoral students are often exported to a university center (often labeled "Center for Teaching and Learning" or similar titles) and engage in a few hours or days of teacher preparation, often covering topics like developing a syllabus, university policies on discrimination and grading, and introduction to active learning techniques. Then, the university offers a series of voluntary-attendance workshops throughout the semester which are often based on a particular topic. Regardless of the quality of the work within these individual opportunities, the findings from this research point to needing to engage students at multiple steps of a process in order to facilitate teacher development.

This is not to say that good work has not already been done in this area. Some work has attempted to classify learning opportunities for doctoral students (see Desimone, 2009; Opfer & Peddar, 2011), but the thrust of most of the articles on doctoral student teacher development is to focus on a strategy for DSTD. The most modern bent has been towards including strategies that are of longer duration, include multiple meetings, and combine traditional transmission-based instruction with reflection, practice, and peer-to-peer education. This promising increase is exactly what the theory of processes that separate doctoral student teacher development from doctoral student participation in teacher-type experiences predicts will be more effective at fostering long-term DSTD. This exact set of recommendations is receiving attention in EC-12 literature as a way to bridge to research-to-practice gap problems (see: Neal, Neal, Kornbluh, Mills, and Lawlor, 2015; Korthagen, 2017).

In line with this implication, the data on what types of information that doctoral student found valuable was heavily slanted towards information that was immediate and personal. Sources that do not have this type of information (namely textbooks and articles) were much less valuable. This speaks against the idea that creating a "library of resources" is a strong plan for

doctoral student teacher development. Online resources were generally higher ranked than textbooks and articles, with particularly emphasis towards "googling" rather than using locally developed sites. This casts doubt on the effectiveness of DSTD programs spending large amounts of time developing local online resources that would not appear in the first few pages of a google search.

## Shift from broad topics to specific and immediately applicable topics

A clear parallel with expectations of adult learning (see Knowles) was that participants expressed desires that the trainings they were able to attend needed to be more immediately applicable to their situations. There are several related implications that stem from this heading. First, the idea that doctoral students perceive themselves as having had more satisfying or better training when they can implement that training immediately in their teaching practice. Second, that peer-to-peer teaching was useful to many participants due to the specific nature of it.

*Perceived uptake in practice and confidence.* Several participants were clear that there was a positive relationship between the specificity of their training and their development. In other words, training on general topics (such as broad learning strategies or philosophies) had little uptake and little influence on participant's actions. This was most clearly displayed in the confidence exercise. Participants consistently ranked their confidence in abstract strategies and philosophy lower than in specific teaching tasks and verbally indicated that the places they were most confident were the places they had consistent practice and feedback from a local actor, like a peer, faculty mentor, or supervisor of a TA assignment located within their department.

*Peer-to-peer teaching.* That said, some participants did specifically state that peer-to-peer education between departments was particularly fruitful. These were the participants who were involved in long-term fellowship models, which in general were rated by the participants as

highly effective. However, the thrust of *what* they found most effective was the same as mentioned in the previous paragraph: strategies, techniques, or advice they could use immediately in their classes.

For the participants where peer-to-peer teaching occurred within departments, it was the specificity of the training that participants found useful. Several of the social science participants mentioned going to the TA who had previously taught the course and finding very useful information or resources. Others relied on peer TAs for feedback or ideas when teaching different sections of the same course. The positive reports of these interactions almost all mentioned the immediate applicability of the peer interactions to teaching practice.

*Location of doctoral student teacher development*. Implicit in much of this section is a concern about the location of DSTD. Almost all participants referenced the "graduate school" at some point throughout the process, and all of the ones who referenced the graduate school explained that there were teacher development opportunities located at that level. This is where the consistency of the data ends. Participants had a wide range of knowledge and engagement with the graduate school, and for some, their only comment was that they knew other students said they might get something from the graduate school (Jolie specifically mentioned doling out this advice to other students, but could not say that it had been taken up).

Several students also mentioned that graduate-school and even college-level offerings lacked the specificity they found useful. Two participants directly said they attended some of these "workshops" and would not go back, with the reasoning that it was not directly "for [them]." This points to the usefulness of a more integrated model of DSTD that works at the lower levels, such as the programmatic level. This was also a distinct gap that several participants directly expressed; that programmatic-level opportunities were unsupported (such as

being appointed a TA with no development), unavailable, or even actively discouraged because mentioning teaching-tasks was met with a directive to refocus on research.

# Increased focus on the affective domains of teacher development for doctoral students

The overwhelming majority of the literature on DSTD focuses on skill development, particularly around technique. The secondary focus of literature on DSTD is around socialization to the profession in preparation for future faculty careers. Very little literature pays attention to the emotional development of doctoral students as teachers. This is in direct contrast to the tendency of participants in this study to discuss their change in affective terms: increasing confidence over time, lessening anxiety over time, situations where they felt inauthentic or outof-place, and the caring for students and student learning outcomes that was emphasized by several participants. An increased focus on the affective domain of teacher development might include learning opportunities that center a construct like anxiety and ask participants to work with peers to identify planning and preparation strategies that address their own worries about teaching.

What the concerns-based models in Chapter Two, and in particular the work by Cho, Kim, Svinicki, and Decker (2011) showed, is that the affective state of a teacher changes where they focus their classroom attention. Thus, it is theoretically supported that paying attention to the affective state of teachers is a way to influence classroom outcomes. However, this has not been strongly studied with higher education teachers, nor doctoral students as teachers. In this study, doctoral students reinforced the idea that their emotional state influenced their ability to teach; when they were feeling overly anxious, overwhelmed, or false, they also felt like they were not doing a good job educating students. Focus on affect awareness of doctoral students

who are teaching and on positive affect development has the potential for sustainable intervention with positive consequences for student learning.

#### Examine match between situation and learning objectives for DSTD

Finally, I strongly encourage more attention be paid to the strengths and limitations of the how the situations of doctoral students influence what skills, knowledge, abilities, and attitudes are most appropriate for learning opportunities. One primary example here is syllabus development. Several participants discussed a learning opportunity where they were asked to develop a syllabus (for one, it was the "final project" in a course on teaching and learning), and two participants mentioned mandatory attendance at multiple opportunities that focused on syllabus development. Yet, these same participants were not permitted to develop a syllabus for their own TA assignments. They were forced to use a department syllabus and "discouraged" from modifying it. Since one of the primary complaints about DSTD is that there is limited time to do it, it seems patently foolish to spend time on a competency (in this case, developing a syllabus) that doctoral students will be unable to practice (because they are not allowed to do so in their teaching roles). None of this to say that syllabus development, as a competency, is unimportant. Nor is it to say that similar competencies (selecting a textbook was another mentioned in similar stories) are not very important. It is to say that in the limited time currently allotted to DSTD for most doctoral students, the general situation of doctoral studies (as both learners and teachers, with limited ability to create syllabi or new courses, as teaching novices but content experts, etc.) should be a strong consideration when planning DTSD.

### Limitations

There are at least two limitations in applying this study to other contexts. First, it was a single site study and therefore the particular aspects of the university may limit the ways in

which the findings can be transferred to other institutions. Second, the sample was drawn across disciplines and levels, which limits the ability to transfer the findings to specific disciplinary or programmatic contexts. I suggest implementation of the findings and conclusions in this study be matched with robust assessment techniques to ensure and improve learning.

## **Future Research**

I suggest that future research highlight how an initiative to help doctoral students learn to teach fits within the situation of doctoral studies. For example, although the students receiving sponsored fellowship training in this study had some clear positive outcomes (most noticeably a familiarity with educational vocabulary and educational theory) above their non-fellowship peers, this type of high-contact program follows the "bolt-on" model, where is it attached to a program rather than integrated within it. That sort of situation means that many doctoral students will not have those opportunities. As expected, four of the seven students in this research who did not participate in the fellowship programs had never heard of the fellowship program as a positive way to influence teacher development for some students, and I encourage authors to add to their research by explicitly stating the types of students that were attracted to their learning opportunity and able to participate in it.

Additional attention needs to be paid to the affect dimension of teacher development for doctoral students. This was a nearly ubiquitous topic of conversation with very little direct attention in the protocol, and it was also an area where doctoral students could clearly state their development. The focus on affect by participants means that affect change is an area of teacher development where researchers and practitioners can influence doctoral students within their

current situation, and I would be excited to read research that focuses on how to influence that particular aspect of teacher development.

The role of the department on doctoral student's ability to learn to teach was not a major topic of discussion in this paper because it was not a major theme in the participant's responses. This is unusual and distinct from much other research on doctoral students, where departments are often credited or blamed as being the primary facilitator or inhibitor of a doctoral student's success. Tinto (1993) suggested that that doctoral students need integration into department and discipline, and theorists as far back as Berelson (1960) center the role of the department in doctoral student development. Thus, I remain unconvinced this lack of discussion of "department" in participant's responses was evidence of anything other than a matter of perspective: what the participants attributed to a faculty member or mentor could have been de *facto* or even *de jure* policy within a department. In her discussion of the causes of doctoral student attrition, Golde (2005) calls for increased attention on "the characteristics of the educational environment" in addition to the characteristics of students (p. 670). In this vein, more attention needs to be paid to the effects of departments and the awareness of doctoral students of the policies and procedures of their departments. The distinction, if any, between department and discipline also bears further investigation, particularly in cases where a department has successfully diverged from disciplinary trends in a way that positively impacts the development of doctoral students as teachers.

## Conclusion

Doctoral student teacher development is a growing issue. There are external reasons for administrators, faculty, and doctoral students themselves to pay attention to it, such as the increased interest from legislatures on undergraduate outcomes and the scrutiny by parents and

students themselves on undergraduate learning. Equations that relate the price of college to potential job outcomes are now regular news and will continue to be an increasingly large part of the dialogue surrounding public education. More credit hours and more percentage of credit hours than ever before are taught by doctoral students, and more students overall and of nearly every demographic category are enrolling at increasing rates. All of this points to a need to examine doctoral student teacher development and improve DSTD outcomes.

I wish to conclude with my sincerest thanks to all the participants in this study. I was amazed by your frankness, interest in the topic, and willingness to contribute to this project. I appreciated every moment of our time and I genuinely enjoyed speaking with all of you. Everyone I spoke to was engaging, interesting, and thoughtful. I believe doctoral students form an important piece of the structure of the modern university, and it is my hope that this dissertation does some small part in helping some doctoral students engage in positive and useful teacher development. APPENDIX
#### **Appendix Table of Contents**

#### **I. Recruitment Artifacts**

E-mail to Personnel E-mail to Students Social Media Posts In-classroom Posted Flyer

#### **II. Interview Protocols**

Consent Form First Interview Second Interview

#### III. "After-teaching" Responses

#### IV. Example continuums from video-recorded activities

#### V. Example Vignettes

Leo Jolie

#### Recruitment

#### **Recruitment E-Mail to Personnel**

Hello Dr. <<Name>>;

My name is Christopher Davis, and I am conducting a study of doctoral students as teachers for my dissertation in the Higher, Adult, and Lifelong Education department. The study has been approved by the MSU IRB and consists of two short interviews, a few e-mailed responses, and a collection of teaching artifacts. I am writing to ask for your assistance as the Program Coordinator for the Certificate in College Teaching in recruiting participants to my study. The participants I am looking for will be:

- At least in the second year of their doctoral program
- Have taught at least one semester previously
- Are teaching in the Spring 2019 semester

If you would be willing to recommend three to five students whom you think would be willing to participate in the research, I would greatly appreciate your assistance. Please feel free to either forward this e-mail to students, or to send me a list of names of students you think might be willing to participate.

My contact information is:

E-Mail: davisc76@msu.edu

Phone: 806-781-0150

I would greatly appreciate your assistance in recruiting appropriate participants to the study.

Thank you,

**Christopher Davis** 

#### **Recruitment E-mail to Students**

Hello <<Name>>;

My name is Christopher Davis, and I am doctoral student in the Higher, Adult, and Lifelong Education program here at MSU. I am writing a dissertation about doctoral students who are teaching, and I received your name from <<Program Coordinator>>. I would like to invite you to participate in the research project and share your experiences as a doctoral student and as a teacher.

The research consists of two short interviews (about 60 minutes each), a few e-mailed responses throughout the semester, and a collection of some of the artifacts from your class (like lesson plans, power point slides, or pictures of classroom activities).

If you would like to participate, please feel free to respond to this e-mail and I will be happy to set up a time for the first interview, where I'll also explain some of the parameters of the project. If you have any questions, I would be happy to answer them. You can contact me at this e-mail address (davisc76@msu.edu) or by call or text to 806-781-0150. I would really appreciate your participation.

Thank you,

Christopher Davis

### The Ph.D. Life...

## Student-by-day, Teacher-by-night!

Please participate in a research study about DOCTORAL STUDENTS AS TEACHERS!

If you are teaching in Spring '19 and have taught\* previously, please participate in our research study!

# Contact DAVISC76@MSU.EDU for more details and to set up an initial interview.

\* We want to hear from all sorts of doctoral students with many different teaching experiences! If you were a part-time teacher, a member of a teaching team, a labratory section leader, or a guest lecturer, you are still a teacher and we'd love to talk to you!

# How do you build a yellow brick road?

Are you a...

- Current MSU PhD Student
- Teaching this semester
- Have taught in any previous semester

Please participate in our research about teacher development paths for PhD students. We want to hear from you!

Contact davisc76@msu.edu for details!

Figure 19: Social Media Posts



Figure 20: Posted Flyer: Example from one of 70 classrooms. Flyer was located on the lectern close to the controls for the projector screen.

#### **Consent Form**

#### **Research Participant Information and Consent Form-Student**

You are being asked to participate in a research study. Researchers are required to provide a consent form to inform you about the research study, to convey that participation is voluntary, to explain risks and benefits of participation, and to empower you to make an informed decision. You should feel free to ask the researchers any questions you may have.

Study Title: Teacher Development Paths for Doctoral Students

#### 1. PURPOSE OF RESEARCH

The purpose of this research study is to understand how doctoral students view potential paths in their development as teachers.

#### 2. WHAT YOU WILL DO

If you chose to participate, you will participate in two interviews, four short e-mail responses, and a collection of artifacts from your teaching (for example, your lesson plans or lecture slides). Each of the interviews should take about 60 minutes.

#### **3. POTENTIAL BENEFITS**

Although you will not benefit personally from being in this study, we hope that, in the future, other people might benefit from knowledge about how doctoral students consider their development paths as teachers.

#### **4. POTENTIAL RISKS**

There are no foreseeable risks to participating in this study.

#### 5. PRIVACY AND CONFIDENTIALITY

Your privacy is of upmost importance to the research team. No one outside of the primary investigator and your interviewer will know you participated. You will be given the option to choose a pseudonym or one will be assigned to you. All recordings will be kept in password protected devices and software. Recordings will be kept until the end of the research study and will then be destroyed.

#### 6. YOUR RIGHTS TO PARTICIPATE, SAY NO, OR WITHDRAW

You have the right to say no to participate in the research. You can stop at any time after it has already started. There will be no consequences if you stop and you will not be criticized. You will not lose any benefits that you normally receive.

Your participation is voluntary, you may choose not to participate at all, or you may refuse to participate in certain procedures or answer certain questions or discontinue your participation at any time without consequence and with no impact on your grades, evaluations, or standing within the college or university. You may choose not to answer any individual question or to skip any question or portion of the study with no consequence.

#### 7. COSTS AND COMPENSATION FOR BEING IN THE STUDY

There are no costs or compensation for participating in this study.

#### 8. CONTACT INFORMATION

If you have concerns or questions about this study, such as scientific issues, how to do any part of it, or to report an injury, please contact the Primary Investigator or research assistant:

Primary Investigator Kris Renn renn@msu.edu 517-353-5979 Research Assistant Christopher Davis davisc76@msu.edu 806-781-0150

If you have questions or concerns about your role and rights as a research participant, would like to obtain information or offer input, or would like to register a complaint about this study, you may contact, anonymously if you wish, the Michigan State University's Human Research Protection Program at 517-355-2180, Fax 517-432-4503, or e-mail <u>irb@msu.edu</u> or regular mail at 4000 Collins Rd, Suite 136, Lansing, MI 48910.

#### 9. DOCUMENTATION OF INFORMED CONSENT.

Your signature below means that you voluntarily agree to participate in this research study.

Signature

Date

You will be given a copy of this form to keep.

#### 10. AUDIOTAPING

We would like to audio record this interview for verification purposes. Recordings will be kept only until the research is concluded and then will be destroyed. Your name will not be connected to your recording in any way.

I agree to allow audiotaping/videotaping of the interview.

☐ Yes ☐ No Initials\_\_\_\_\_

#### **Interview Protocols**

**Interview #1:** This interview will be conducted near the beginning of the semester of the study. The interview has several goals. First, to begin to build a relationship between the researcher and participants, as that will be key to data generation throughout the study. Second, to establish, in the participant's own words, their initial thoughts on teacher development paths, the phenomenon of interest in the study. Finally, to gain a baseline for the experiences of doctoral students prior to the study for clarity in reporting later.

#### Interviewer:

Thank you for joining me today. As mentioned in the e-mail, this interview is expected to take around an hour. I'm going to ask a series of questions about teacher development, but feel free to deviate from the questions, add more information, and let me know anything you think is important. The goal here is to collect the best information possible on how doctoral students think about teacher development, and the questions are more of a way to facilitate conversation than a specific protocol. Does that make sense?

Excellent. I also want to make sure you understand that participation in this interview is completely voluntary. You may withdraw your participation at any time. You may choose not to answer any question I ask or end the interview at any time. Are you ready to begin?

#### Section 1: Introduction

#### Q1: Tell me a little bit about yourself and how you got to MSU.

#### Q2: Tell me a little bit about your program and where you are in the program.

#### Q3: Tell me a little bit about your prior teaching experience.

#### Q4: Tell me about what you teach now.

#### Section 2: Unpacking Teacher Development

For this section, I'm going to ask about teacher development. A lot of these questions focus around the idea of change in thinking or practice, but if you have any other thoughts on teacher development, feel free to share them.

For the rest of this interview, when I say "class" or "classroom," I'm referring to a class where you were the teacher. When I say "student" or "students," I'm referring to the undergraduate students in those classes where you were the teacher. Is that clear? Please don't hesitate to ask for clarification on any of the questions.

Q5: Can you tell me about something memorable that occurred in the classroom, early in your teaching career? It could be an unexpected problem, something that surprised you, or just something you remember strongly. What was that experience like?

Q6: Can you tell me about something similar that happened recently?

Q7: With those two examples in mind, tell me about some differences between when you started teaching and what you do now. Maybe in planning, preparing, during the class time, or with office hours or outside-of-class spaces?

Q8: What about thinking? Any differences in the way you think about your teaching activities now, as opposed to when you first started, or somewhere along the way?

Q9: There are different terms in different fields that describe the experience of people learning to teach. How would you describe that experience? Do you have any specific milestones or goals, maybe ones you've already reached or ones you want to reach in the future?

Q10: Tell me about becoming a better teacher. If you were to describe to a new doctoral student how to become a better teacher, what might you say?

Q11: I'm going to leave the room for a few minutes and ask you to draw me a picture. It could look like anything... a flowchart, diagram, a collection of images, or just whatever comes to mind when you think about teacher development as a doctoral student. There's no wrong answer here, the idea is to get your thinking down in a different manner. What I'd like you to do is try to portray, in pictures, the concept "becoming a better teacher." I've got a paper labeled with that. If you're ready to start, go ahead, I'll be back in just a few minutes.

Q11a: Can you explain your picture to me?

Q11b: How does this picture relate to what you've experienced as a doctoral student?

Q11c: <<<Any other follow-ups generated by the picture>>

#### Interviewer:

Thank you for joining me today. I'll be in touch soon with the first of the after-teaching e-mails. After I receive your responses, we'll schedule a second interview, likely in about two months. Do you have any questions for me? **Interview #2**: This interview will be conducted after all other forms of data generated have completed and the researcher has become familiar with that data.

#### Interviewer:

Thank you for joining me again. As mentioned in the e-mail, this interview is expected to take about 60 minutes. Like before, we're going to talk about teacher development and I have a set of questions, but please feel free to deviate from the questions and share any experiences or thoughts you have. Additionally, you are never required to answer any question, and may skip any question at any time without giving me a reason. Any questions? Are you ready to begin?

#### Section 1: Re-connecting with participants

#### Q1: Tell me a little bit about your teaching this semester. Anything unique or exciting?

Q2: Tell me about conversations you have with other people, besides me, about teaching. Where are those happening, and what are those conversations about?

#### Section 2: Influences on development

#### Interviewer:

I'd like to start this section with a bit of an exercise. I've got some cards here with various resources written on them. I'd like you to rank them, with the ones you've been most influenced by at the top. Then we'll talk through each of them together, and I'd like to hear your stories about what that thing has meant for your development.

One thing here is that these can be both positive and negative... if you've got something that you thought really hurt your development, feel free to set it over to the side, we'll make a section for those and talk through them as well.

Provided notecards: Faculty, Online Resources, Textbooks, Research Articles, Peers [Other Doctoral Students], Supervisors, Materials from Previous Trainings, Attending New Trainings, Blank card [write your own], Asking Students Directly, Friends/Family, Mentors, Brainstorming

Provide the notecards. After the interviewee ranks them, take a picture. Then, move on to the next question, starting with the top resource.

Q3: Why did you put <<name of notecard>> at the top? What's the story behind that piece? (Continue moving down the list, asking the interviewee to share their thoughts on each resource).

Q4: How does being a doctoral student relate to your teacher development?

- Are there challenges to teaching that are unique to doctoral students?
- Are there benefits to teaching as a doctoral student?

#### Section 3: Reflecting on Materials

<<This section refers to the gathered responses from artifacts and in-the-moment responses. As such, it is difficult to write, since each participant may bring something difficult to the

discussion. The focus of this section is on what those materials can tell us about how doctoral students are thinking about their own development as teachers.>>

Section 4: Revisiting Teacher Development

Q5: How do you know when things are not going right in the classroom? What are the metrics/signs? How did you learn to look for those?

Q6: We've talked a lot about classrooms and shared some of your experience with the materials from this semester. I'd like to ask about what happens outside of classrooms. Can you tell me about things that happen when you aren't teaching that relate to your development as a teacher?

Q7: Tell me the ideal case of teacher development for you, as a doctoral student. What would that look like, and how is it similar or different to what is available to you now?

#### Section 5: Conclusion

Q8: Is there anything else you'd like to share with me about your experience as a doctoral student teacher?

Q9: Are there any other thoughts you've had about teacher development?

#### "After Teaching" Responses

This part of the protocol was designed explicitly to examine the act-of-teaching as it may or may not relate to teacher development. In the original design, these questions were supposed to accompany a specific class period. Due to the fact that many of the participants did not have consistent teaching during the interview period, the questions were changed to be reflective questions on current or past in-class teaching experiences.

#### **Question #1**

Now that you've been with the class for a few weeks, compare and contrast how the students are different from previous classes you've taught. Are you anticipating any unique challenges, problems, or moments with this class? Is there anything you'd wish you'd known before the semester began?

#### **Question #2**

Can you tell me about something you did today [or recently], as a teacher, that you remember learning? Where did you learn it, and why did you do it for today's lesson?

#### **Question #3:**

I'd like to hear about a time something went wrong when you were teaching (preferably this semester). What does "going wrong" mean to you? How do know if something is going poorly in the classroom? In your example, did you change tactics or adjust, and if so, where did your new/adjusted strategy come from? How would you avoid this problem in the future?



**Example Continuums from Video-recorded Activities** 

Figure 21: Example Continuum Exercise

Example of an in-progress exercise. At this point, the participant is narrating their choices while the camera keeps a visual record of what they are saying. This presents additional data in the form of the physical actions of the participant, such as hesitating, moving a card around multiple times, or decisively placing a card in a certain area.



#### Figure 22: Example Finished Continuum

An example finished continuum, where the participant put two key blocks (Spouse, Peers, and Faculty on the "Most Useful" side and Conferences and Textbooks on the "Least Useful" side) and then filled in the others between them.

#### **Example Vignette: Leo**

Leo is the only participant to directly link the act-of-teaching to his development as a teacher. As one of the participants with the least amount of teaching experience, his stories start with inclass happenings, and he is both amazingly specific and astoundingly frank.

I heard comments, first-year comments kind of percolated up to me through some of my friends in the office, like 'yeah dude, [the students] think you fucking suck.' There were things that, I can just look back and say I was pretty obviously not doing a good job... my tone was off, I was using words like, for example, what I was trying to convey was 'oh look, you guys can do this, this is something approachable for you,' and what I would say was 'if you look at it like this it's actually pretty easy.' That's not a good thing to say.

He continues with one of the most unique relationships I hear about in the entire project; he has learned about teaching from one of his current students, whose former career was as a high school mathematics teacher. She came into his office and directed him, firmly, to stop using phrases that other students were finding derogatory, such as "this is a really simple concept" and "this is easy stuff."

This feedback-from-students is where Leo has found the most teacher development happens for him, an orientation echoed by several other participants. Where Leo is unique is that he offers an actual heuristic for how he manages his teaching based on student non-verbal signs:

I've learned that you really kind of need to teach to the lower rungs of the class and not the upper rungs of the class. And that's something I've gotten a lot better at, I've kind of picked out—so in my mind, I've picked out the students that I know 'you're good.' So if they're not nodding along in all the right places, then I know something's wrong. Then there are also the students who always not really nodding along at the right place.

However, if I can get them nodding along, then I know we're on the *right* path now. This is a fairly sophisticated difference that shows Leo has achieved a more nuanced understanding of the relationship between teaching and learning than he talks about in his earliest teaching experience. One key to this example is that Leo is not looking at the 'the class' as a single entity, but rather, as composed of different 'levels' of students. By breaking the class into levels and then using that distinction to give himself two different types of feedback [things are going wrong, versus things are going right] and then reflect upon that strategy to me, Leo demonstrates both his understanding of classroom practice as well as a self-reflective tendency that matches with [and potentially explains] his value of student feedback for teacher development.

In our second interview, I press him on this point, and ask about what factors make for successful teacher development. "All this stuff is in respect to what you're trying to teach," he begins, and continues with "so if you're not trying to teach the right thing, or your goals aren't conducive to what you want the students to take out of it, then none of [the cards] matter. You can be great at assessment and grading and teaching diverse students, but if you're teaching them shit, then what does it matter?" This is the only time I have heard concerns about alignment from any participant, and Leo's philosophical perspective here shows the deep consideration he is giving to his self-reflection on teaching. Our conversation turns to the idea of resilience as I ask about his feedback, and eventually, we arrive at the interesting idea that resilience to

negative responses may be an important skill of PhD students, who will doubtless receive poor reviews at some point (in qualifying exams, paper proposals, article and grant submissions, etc.) and may be receiving such frankly negative feedback for the first time in their lives.

When I ask Leo about why he continues with teaching in light of this negative feedback, he responds that he's "found that [teaching] is a lot of fun! It's a really rewarding experience." Then he directly links teaching to his development as a PhD student when he says "one of the nice things about being forced to teach something is that you're forced to know it. You don't have an option, because you're grading. So you need to have the correct—not just a passable answer, you need to have *the* answer." This is an interesting flip from the traditional method of using the research skills inherent to PhDs in order to improve teaching skills, and it comes from Leo's opportunity to teach graduate students. That particular experience also has led to some of his unique perspectives on teaching. He puts "motivating students" as the lowest card on his continuum of confidence in teacher abilities, and when I ask why, he states that "I just don't care. They're graduate students, it's not my job to motivate them." He contrasts this with teaching undergraduates, where he says that in that case, "you're a representative of your field," and it does fall on you to offer motivation to students who may have chosen this course "because there was an open seat and it fit into their schedule."

This separation from the relationships with the student sets Leo apart from several other participants in the study, who prioritize the development of their students. To Leo, it is their responsibility to be motivated, prepared, and ready to learn. He couples this with a nonchalant philosophy about attendance, relating that several of his students no longer attend recitation, because they're "doing their own thing" and don't need the support. Where this is particularly interesting is in conjunction with Leo's earlier statement about "teach[ing] to the lower rungs of the class." From this, I take that Leo has been placed, as a very novice teacher, into a difficult teaching situation with a great amount of student diversity by preparedness. Leo describes a tension between wanting to "hold [student's] hands versus push them off the cliff... because [they're] adults, they want to be treated like adults, and they want all the tools available to them. But at the same time, they're first-years." He states the problem with "this kind of paternalistic attitude that you so often see in teaching in academia" and said that he has advised a specific student that "you shouldn't be coming to recitation, because this is a waste of time for you." In Leo's mind, his development is not about making a relationship with students to tailor his teaching to meet their diverse needs, but rather letting students who do not need or will not benefit from his teaching to look for more appropriate options.

Leo struggles with evaluating his own performance as a teacher. On one hand, since his job is to prepare students for comprehensive examinations, the pass rate should be an indicator. On the other, as he says, "I'm not setting the homework, I'm not setting the exams, I'm not setting the curriculum." This is a similar tension echoed by other doctoral students. Without control over the learning situation, how are they to gauge their own performance as teachers? And without a gauge of their performance, how are they to know if they are doing well or improving? Other participants also referenced student test scores, but always with caveats attached about their own involvement, which usually does not include writing test questions or choosing the content.

#### **Example Vignette: Jolie**

Jolie spent her undergraduate at a small private university, then worked in West Africa for a period before returning to US to take an adjunct post and pursue a Master's degree. She has a self-professed inability to "let anything go" that has led her to a STEM-PhD program in the College of Agricultural and Natural Resources (CANR) and teaching experiences as a foreign language instructor, a biology instructor, a non-traditional facilitator through the Bailey Scholars program, and a fellowship in the Residential College of Arts and Humanities (RCAH). I suggest to Jolie that she alone could be a case study for teacher development, because her experience is unique and so few people merge the strong-STEM background with Arts and Humanities teaching. She replies that this type of interdisciplinarity is "very satisfying… it is very satisfying to be in both worlds," and that her advice to new doctoral students is "come to [her department], but… connect to somebody else. [The department] is a good place to be, but be somewhere else too. You're going to need both of those."

When I ask if there has been interdisciplinary collision, and if so, if it has shaped her understanding of teaching, Jolie shares that she "expected too much from [her department]" as a starting PhD student, and as she has grown into the program, "the more I have been able to get out [of the department] because I needed to, because I wanted to, the more I've realized that Michigan State has a lot to offer." In this way, she feels her "[department] is part of that, but one part. I can be part of [my department] and I can go do all these other things too." This may be the most unique aspect of Jolie's experience; other participants share interdisciplinary stories, but none have quite as striking a notion of encouragement to go outside the department, and none so clearly state the rewards of extra-departmental exploration. When I ask Jolie what drove her to seek those external experiences, she has both a personal and a functional reason. On the personal level, her background as a teacher was something she wanted to continue, and something she hopes will be part of her future career path. Functionally, Jolie shares that she has a "program requirement that [PhD] students need some type of teaching experience. But [the department] would much rather hire undergraduate teaching assistants because they're cheaper than graduate students, so graduate students generally don't have the opportunity to teach [within the department]." This seems like quite a burdensome requirement given the lack of opportunity to fulfill it, but Jolie has thrived under the condition because it has connected her to the other places at the university that she finds so rewarding.

The tension between Jolie and her department shows an interesting contrast between the intentions, rules, and realities of teacher development in a PhD program. When I ask her if she is enjoying her program, she says, "well, it's a PhD program, and I'm in my seventh year... that should say something. It's definitely been a process," before continuing with "[being] a student is kind of awkward. And I mean awkward as in a bottom-of-the-totem-pole kind of thing." When I ask her to elucidate, her words shorten, and she gives me a bit of a run-around about it being "difficult to find a balance [between being an expert and a student]." It is pretty clear this is not a subject she is comfortable discussing, but she does turn to a more positive point when she talks about the diversity of study within her program. "Connecting experiences" is key to Jolie's practice as a teacher, and she reflects upon her time in West Africa as something she had to make sense of before she could bring it to her classroom. Her program, that includes people that study one unifying theme in many iterations, seems to facilitate that type of thinking. Jolie

says that her benefit has been from "being in the arts and humanities and thinking about the 'how are human experiences communicated' and then [bringing] that into natural resources."

Jolie's view of teacher development is an introspective one. Her diagram of "becoming a better teacher" is a flowchart that situates learning around the center and involves the individual becoming a better teacher reflecting on the four-W questions: Who is doing the learning, What is the content, Why is the learning happening, and Where is the learning happening. Each of these initial points of reflection is tied to a sub-set of points, such as "natural curiosity" and "professional development" as the "Why," and Jolie indicates to me that such divergences indicate different things a teacher might do, once they've reflected. This thinking-about-teaching is something that Jolie has done quite a bit of, but she gives extra credit to the fellowship program for giving her "language to talk about" some of her experiences and beliefs as a teacher. In line with this introspective view, mentions of faculty are almost entirely absent from my discussion with Jolie. At one point, I ask her about mentor-type relationships that influenced her teacher development, and she hesitates before replying that "No, no one—not that I want to diminish anyone," though she does laud "the atmosphere that [her fellowship director] creates."

One of these phrases that she has learned from the fellowship is "scholarship of teaching and learning," and Jolie explains it to me as she points to the Teaching Fellowship Program that she has ranked at the top of her "Most Useful for My Development" continuum. "The fellowship has been wildly beneficial," she continues, and then ties that to the next two cards [Brainstorming] and [Peers – Other Doctoral Students] as she credits the fellowship has letting her "have space to think about teaching and learning. In those spaces, the supervisors, the other doctoral students, the brainstorming that comes from that shared space, has been really useful." On the far side, Jolie places Textbooks, Conferences, and her PI as the Least Useful to her teacher development. She does mention that she recently guest-lectured in a course her PI was teaching, but that was purely a matter of subject-matter expertise rather than a teacher development opportunity, and eventually, Jolie tosses the Textbooks and PI cards into the "N/A" pile.

When our conversation transitions to the skills of teachers, we have an interesting moment when talking about teaching diverse students. Jolie is quite cautious of this topic despite [or perhaps because of earlier mentioning attending several workshops on student diversity, inclusive classrooms, and difficult dialogues about race in the classroom. She is very hesitant to place the [Teaching Diverse Students] card and presses me for an alternate term than "diverse students." I ask her "if there was a student from a background you were not familiar with or had never taught before, are you confident in your ability to help that student learn?" She hesitates for several moments before saying that "within the settings that I know, I think I would put it more towards the Confident side," but says that "it would be somebody she would get to know, and I would need to be in a setting where I can get to know someone." This leads me to ask about large classes, and Jolie replies that "I've guest lectured in a class of 40-50, but-well, everything that happens with teaching, doesn't happen at once in my world." She does say "I think it would be interesting to develop a course-maybe a collaborative course," and that she has not had the opportunity to do so. However, the possibility excites her, and we conclude our interview with a discussion of how our own personal research might or might not translate into course-level content objectives. Jolie's metaphor for learning objectives is that they should be a "guiding

light" for students, but she is not sure how to do that, and she says might want to get better at it before she designs a full course on her own.

REFERENCES

#### REFERENCES

- Austin, A. E. (2002). Preparing the Next Generation of Faculty: Graduate School as Socialization to the Academic Career. *The Journal of Higher Education*, 73(1), 94–122. https://doi.org/10.1080/00221546.2002.11777132
- Austin, A. E., & McDaniels, M. (2006). Using doctoral education to prepare faculty to work within Boyer's four domains of scholarship. *New Directions for Institutional Research*, (129), 51–65. <u>https://doi.org/10.1002/ir.171</u>
- Barnes, B. J., & Randall, J. (2012). Doctoral Student Satisfaction: An Examination of Disciplinary, Enrollment, and Institutional Differences. *Research in Higher Education*, 53(1), 47–75. <u>https://doi.org/10.1007/s11162-011-9225-4</u>
- Barr, R. B., & Tagg, J. (1995). From teaching to learning A new paradigm for undergraduate education. *Change: The Magazine of Higher Learning*, 27(6), 12–26. https://doi.org/10.1080/00091383.1995.10544672
- Bell, A., & Mladenovic, R. (2008). The benefits of peer observation of teaching for tutor development. *Higher Education*, 55(6), 735–752. <u>https://doi.org/10.1007/s10734-007-9093-1</u>
- Berliner, D. (1988). Implications of studies of expertise in pedagogy for teacher education and evaluation. In Pfleiderer, J. (ed). *New directions for teacher assessment*. Paper presented at ETS invitational conference, New York (39-68).
- Berelson, B. (1960). Graduate education in the United States. New York, NY: McGraw-Hill.
- Berliner, D. C. (2001). Learning about and learning from expert teachers. *International Journal* of Educational Research, 35(5), 463–482. <u>https://doi.org/10.1016/S0883-0355(02)00004-6</u>
- Boyer, E. L. (1990). *Scholarship reconsidered: priorities of the professoriate*. Princeton, N.J: Carnegie Foundation for the Advancement of Teaching.
- Brightman, H. J. (2009). The need for teaching doctoral students how to teach. *International Journal of Doctoral Studies*, 4(1), 11.
- Cassuto, L. (2018). The grief of the ex-academic. *The Chronicle of Higher Education*. February 25<sup>th</sup>, 2018.
- Cho, Y., Kim, M., Svinicki, M. D., & Decker, M. L. (2011). Exploring teaching concerns and characteristics of graduate teaching assistants. *Teaching in Higher Education*, *16*(3), 267-279.
- CIRTL Network Commons. (2018). About us. Retrieved November 29, 2018, from <u>https://www.cirtl.net/about</u>

- Cowan, J., & Goldhaber, D. (2015). National board certification and teacher effectiveness: Evidence from Washington. *Center for Education Data and Research*. CEDR working paper 2015-3. University of Washington, Seattle, WA.
- Cyranoski, D., Gilbert, N., Ledford, H., Nayar, A., & Yahia, M. (2011). Education: The PhD factory. *Nature News*. Retrieved September 19, 2018, from https://www.nature.com/news/2011/110420/full/472276a.html
- DeChenne, S. E., Lesseig, K., Anderson, S. M., Li, S. L., Staus, N. L., & Barthel, C. (2012). Toward a measure of professional development for graduate student teaching assistants, *The Journal of Effective Teaching*, *12*(1), 4-19.
- Denzin, N. K. (1978). Triangulation: A case for methodological evaluation and combination. *Sociological methods*, 339-357.
- Denzin, N. K., & Lincoln, Y. S. (2012). *Collecting and Interpreting Qualitative Materials*. SAGE Publications.
- Desimone, L.M. (2009). Improving impact studies of teachers' professional development: Toward better conceptualizations and measures. *Educational researcher*, *38*(3), 181-199.
- de Valero, Y. F. (2001). Departmental factors affecting time-to-degree and completion rates of doctoral students at one land-grant research institution. *The Journal of Higher Education*, 72(3), 341-367.
- Dilthey, W., Makkreel, R. A., Rodi, F., & Dilthey, W. (1985). *Poetry and experience*. Princeton, N.J: Princeton University Press.
- Ellingson, L. (2009). *Engaging Crystallization in Qualitative Research*. SAGE Publications, Inc. <u>https://doi.org/10.4135/9781412991476</u>
- Ellingson, L. L. (2014). "The truth must dazzle gradually": Enriching relationship research using a crystallization framework. *Journal of Social and Personal Relationships*, *31*(4), 442–450. <u>https://doi.org/10.1177/0265407514523553</u>
- Flaherty, C. (2017). Full-time jobs in English and languages reach new low, MLA report finds. *Inside Higher Ed.* Retrieved October 19, 2018, from <u>https://www.insidehighered.com/news/2017/11/21/full-time-jobs-english-and-languages-</u> <u>reach-new-low-mla-report-finds</u>
- Fuller, F. F. (1969). Concerns of teachers: A developmental characterization. *American Educational Research Journal*, *6*, 207-226.
- Gibson, G.W. (1992). *Good start: A guidebook for new faculty in liberal arts colleges.* Bolton, MA: Anker.
- Giorgi, A. (2009). *The descriptive phenomenological method in psychology: a modified Husserlian approach*. Pittsburgh, Pa: Duquesne University Press.

- Glaser, B.G., & Strauss, A.J. (1967). *The discovery of grounded theory: Strategies for qualitative research*. Chicago: Aldine.
- Golde, C., & Dore, T. (2001). At Cross Purposes. Retrieved July 2, 2018, from <u>http://phd-survey.org/report%20final.pdf</u>
- Golde, C. (2005). The role of the department and discipline in doctoral student attrition: Lessons from four departments. *The Journal of Higher Education*, *76*(6), 669-700. https://doi.org/10.1080/00221546.2005.11772304
- Gorsuch, G. (2012). Working theories for teaching assistant development: time-tested & robust theories, frameworks, & models for TA & ITA learning. Stillwater, OK: New Forums.
- Griffee, D. T. (2012). Using grounded theory to develop emergent explanations on how TAs and ITAs construct their teacher theory. In G. Gorsuch (Ed.), *Working theories for teaching assistant development* (pp. 201-230). Stillwater, OK: New Forums.
- Huba, M. E., & Freed, J. E. (2000). *Learner-centered assessment on college campuses: shifting the focus from teaching to learning*. Boston: Allyn and Bacon.
- ISSOTL 2018 Conference | International Society for the Scholarship of Teaching and Learning. (n.d.). Retrieved July 2, 2018, from <u>https://www.issotl.com/issotl-2018-conference</u>
- Jick, T. (1979). Mixing qualitative and quantitative methods: Triangulation in action. *Administrative science quarterly*, 24, 602-611. Retrieved September 19, 2018, from <u>http://www.business.illinois.edu/josephm/BADM504\_Fall%202015/3\_Jick%20(1979).pdf</u>
- Knowles, M. S. (1980). *The modern practice of adult education: From pedagogy to andragogy* (Rev. and updated). Englewood Cliffs, NJ: Cambridge Adult Education.

Knowles, M. S. (Ed.). (1984). Andragogy in action (1st ed). San Francisco: Jossey-Bass.

- Koehler, M. J., Mishra, P., & Yahya, K. (2007). Tracing the development of teacher knowledge in a design seminar: Integrating content, pedagogy and technology. *Computers & Education*, 49(3), 740–762. <u>https://doi.org/10.1016/j.compedu.2005.11.012</u>
- Korpan, C. (2011). TA Professional Development in Canada. University of Victoria.
- Korpan, C. J. (2014). The apprenticeship of teaching assistants: time to change? *Transformative Dialogues: Teaching and Learning Journal.* 7(3), 1-17.
- Korthagen, F. (2017). Inconvenient truths about teacher learning: Towards professional development 3.0. *Teachers and teaching*, 23(4), 387-405.
- Lattuca, L. R., & Stark, J. S. (2009). *Shaping the college curriculum: academic plans in context* (2nd ed). San Francisco, CA: Jossey-Bass.

- van Manen, M. (1990). *Researching Lived Experience: Human Science for an Action Sensitive Pedagogy*. Albany, State University of New York Press. Retrieved from http://ebookcentral.proquest.com/lib/michstate-ebooks/detail.action?docID=3408268
- Maslow, A. H. (1979). Humanistic education vs. professional education: Further comments. *Journal of Humanistic Psychology*, *19*(3), 17–25. https://doi.org/10.1177/002216787901900307
- McDaniels, M. (2010). Doctoral student socialization for teaching roles. *On becoming a scholar: Socialization and development in doctoral education*, 29-44. Stylus.
- Miles, M.B., Huberman, M.A., Saldaña, J. Qualitative Data Analysis: A Methods Sourcebook. 4<sup>th</sup> Edition. SAGE.
- National board of professional teaching standards (NBPTS). (2016). What teachers should know and be able to do. Retrieved from <u>http://accomplishedteacher.org/wp-</u>content/uploads/2016/12/NBPTS-What-Teachers-Should-Know-and-Be-Able-to-Do-.pdf
- Neal, J. W., Neal, Z. P., Kornbluh, M., Mills, K. J., & Lawlor, J. A. (2015). Brokering the research–practice gap: A typology. *American journal of community psychology*, 56(3-4), 422-435.
- Nikolic, S., Vial, P. J., Ros, M., Stirling, D., & Ritz, C. (2015). Improving the laboratory learning experience: A process to train and manage teaching assistants. *IEEE Transactions* on Education, 58(2), 130–139. <u>https://doi.org/10.1109/TE.2014.2335712</u>
- NSF National Science Foundation. (n.d.). Retrieved November 30, 2018, from https://www.nsf.gov/
- Opfer, V. D., & Pedder, D. (2011). Conceptualizing Teacher Professional Learning. *Review of Educational Research*, 81(3), 376–407. <u>https://doi.org/10.3102/0034654311413609</u>
- Park, C. (2004). The graduate teaching assistant (GTA): lessons from North American experience. *Teaching in Higher Education*, 9(3), 349–361. https://doi.org/10.1080/1356251042000216660
- PhD Career Guide. (2018). Retrieved July 2, 2018, from http://www.phdcareerguide.com/career-information.html
- PhD Career Path Tracking | CIRGE Center for Innovation & Research in Graduate Education. (n.d.). Retrieved July 2, 2018, from <u>https://www.education.uw.edu/cirge/phd-career-path-tracking/</u>

Preparing Future Faculty. (n.d.). Retrieved July 8, 2018, from http://www.preparing-faculty.org/

C. Quintana, J. Krajcik and E. Soloway, "Issues and methods for evaluating learner-centered scaffolding," *Proceedings IEEE International Conference on Advanced Learning Technologies*, Madison, WI, USA, 2001, pp. 353-356.

- Simpson, R. D., & Smith, K. S. (1993). Validating teaching competencies for graduate teaching assistants: A national study using the Delphi method. *Innovative Higher Education*, 18(2), 133–146. <u>https://doi.org/10.1007/BF01191891</u>
- SoTL Conferences & Institutes | Scholarship of Teaching and Learning Illinois State. (n.d.). Retrieved July 2, 2018, from <u>https://sotl.illinoisstate.edu/conferences/</u>
- Tagg, J. (2003). The learning paradigm college. Bolton, Mass: Anker Pub. Company.
- Tigelaar, D. E. H., Dolmans, D. H. J. M., Wolfhagen, I. H. A. P., & Vleuten, C. P. M. van der. (2004). The development and validation of a framework for teaching competencies in higher education. *Higher Education*, 48(2), 253–268. <u>https://doi.org/10.1023/B:HIGH.0000034318.74275.e4</u>
- U.S. college enrollment statistics 1965-2027. (n.d.). Retrieved October 19, 2018, from <u>https://www.statista.com/statistics/183995/us-college-enrollment-and-projections-in-public-and-private-institutions/</u>
- Vagle, M. D. (2014). *Crafting phenomenological research*. Walnut Creek, California: Left Coast Press, Inc.
- de Valero, Y. (2001). Departmental factors affecting time-to-degree and completion rates of doctoral students at one land-grant research institution. *The Journal of Higher Education*, 72(3), 341-367. <u>https://doi.org/10.1080/00221546.2001.11777098</u>
- Wulff, D. H., & Austin, A. E. (Eds.). (2004). *Paths to the professoriate: strategies for enriching the preparation of future faculty*. San Francisco: Jossey-Bass.