CITE

Critical Issues in Teacher Education

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CITE

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Critical Issues in Teacher Education (CITE) is a double blind reviewed refereed scholarly journal of the Illinois Association of Teacher Educators. CITE will publish empirically based or original research articles, synthesis papers, book reviews, and special reports on topics of interest to teacher educators.

The purposes of the publication of CITE are to:
1. Stimulate research and scholarly activity on teacher education;
2. Inform teacher educators about current research, promising practices, and significant issues concerning teacher education; and
3. Provide a forum for discussion of significant issues and problems in teacher education.

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REFLECTIONS ON EDUCATOR AND TEACHER EDUCATOR DEVELOPMENT: IMPLICATIONS OF A PEDAGOGY OF TEACHER EDUCATION SEMINAR ON PRACTICE

by

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Abstract

Learning to teach and do the work of teacher education is often seen as a "self-evident activity." To continue recent conversations around the complexities inherent in developing an identity as an educator and/or teacher educator, this article details the experiences of five doctoral students as they attempt to enact their emerging identities as educators and/or teacher educators following completion of a doctoral seminar on teacher education and self-study research methodology. The narratives at the center of this article uncover the challenges and opportunities provided to doctoral students as they critically reflect upon their professional development.

The presumption that anyone can teach shapes perceptions about preservice teacher education (Labaree, 2004; Lortie, 2002). Although this presumption is critiqued as the reality of teacher education is increasingly seen as complex (e.g., Darling-Hammond, 2005; Dinkelman, 2011), it is a presumption that is all too often seen in doctoral-level teacher education (e.g., Dinkelman, Margolis, & Sikkenga, 2006a, 2006b; Labaree, 2004). Feiman-Nemser (2001) notes that within teacher education, a few years of teaching experience at the elementary or secondary level is often seen as enough preparation to complete the work of teacher education at the university level.

As a result, new doctoral students are often assigned to teach undergraduate courses or supervise student teachers with little insight into how to effectively educate preservice teachers (e.g., Cuenca, 2010; Ritter, 2007). However, teacher educators have begun to acknowledge the complicated nature of becoming a teacher educator and provided levels of support for doctoral students as they develop as pedagogues and researchers (e.g., Kosnik, 2011; Dinkelman et al., 2012). Some of this support occurs in the form of doctoral coursework or on-going seminars with an explicit focus on teacher education. For instance, Claire Kosnik of the Ontario Institute for Studies in Education (OISE) taught a doctoral course, *Current Issues in Teacher Education*, and after the completion of the course, Kosnik, other faculty members, and many of her students continued to meet in spaced they labeled Becoming Teacher Educators (BTE).

A study of the BTE space showed that participation in the community space influenced doctoral students' identities, practices, knowledge, and skills as teacher educators and researchers (Kosnik et al., 2011). Additionally, Todd Dinkelman at the University of Georgia offered a similar space for full-time doctoral students in social studies education. In contrast to the voluntary participation seen in Kostnik et al. (2011), Dinkelman constructed his seminar space as an official component of the doctoral students' coursework and professional development as part of their graduate teaching assistantship.

In a study that reflected on the impact of the seminar space on emerging teacher educator-researcher identity development, Dinkelman et al. (2012) found that participation in the space helped doctoral students understand and enact teacher education research, value collaborative inquiry, and to recognize the importance of teacher education. As a participant in the on-going seminar space at the University of Georgia, Brandon, the first author, experienced firsthand the positive impact of collaborative inquiry into teacher education practice and research. However, as a new faculty member at Old Dominion University (ODU), he observed an academic culture that was at times isolated and not often focused on issues related to teacher education or teacher educator development.

In an attempt to encourage doctoral students to view their education and professional development as part of a larger collaborative and on-going process, Brandon received permission to offer an elective seminar, *Pedagogy of Teacher Education* (PTE). A core component of the course was for doctoral students to develop identities as teachers and emerging teacher educators (Butler et al., 2013). The five students enrolled in the seminar initially acknowledged an uncertainty of teacher education and research but were able to develop a degree of confidence of their potential roles as teacher educator-researchers. As educators and doctoral students, they had few positive experiences with open and honest collaborative inquiry and, as such, were hesitant and at times unwilling to share opinions, fears, or uncertainties because of different backgrounds or potential perceptions of ability.

However, over time, the students felt less vulnerable and wanted to actively engage in community spaces. By the end of the course, the students became critically reflective of their practice and willing to acknowledge the complexities inherent in further developing their identities as educators, teacher educators, and researchers. Although the doctoral students acknowledged that their educator and teacher educator identities developed through participation in the course, they were concerned with a question raised by one of the course readings: "What does it mean for identity to develop in practice, in settings so often characterized by uncertainty, instability, and change" (Dinkelman, 2011, p. 318)?

The students believed that Dinkelman's question – although focused on teacher education programs and faculty – was directly relatable to their experiences because their individual institutional settings were wrought with a number of challenges and uncertainties. They openly wondered if the identities developed in the course could be translated into practice. The purpose of this article is to highlight how this set of doctoral students in a course focused on teacher education pedagogy, identity and reflection, enacted their learning into practice upon completion of the course. The question that guides this article is: What challenges and opportunities are experienced as five educators and/or emerging teacher educators enact learning from the Pedagogy of Teacher Education seminar into practice?

In the next two sections, we provide an overview of the seminar goals and assignments and the course participants as context for the challenges and opportunities experienced by the five doctoral students through participation in the seminar. We then turn to five participant narratives that reflect what they learned from the seminar and how they enacted that learning in practice. These narratives are meant to provide a powerful means for understanding how individual teachers make sense of their practice (Connelly & Clandinin, 1999; Kelchtermans, 1993). Finally, we consider the implications of participation in a course like the PTE seminar and its impact on the developing identities of educators and emerging teacher educators.

The Pedagogy of Teacher Education Seminar

The PTE seminar provided doctoral students in the Curriculum and Instruction program with an introduction to the complex nature of teacher education (Dinkelman, 2011). Because teacher education has an expansive scope that includes all discipline areas (i.e., mathematics, science, social studies, language arts, health and physical education, fine arts) and a range of preservice and inservice experiences and environments (i.e., mentoring, supervision, methods courses, etc.), the course instructor and first author, Brandon, saw a need to focus the course goals on specific issues.

As such, he developed a course around four goals, that students would: (a) explore historical and current trends and interpretations of teacher education; (b) identify and enact key aspects of an effective pedagogy of teacher education; (c) investigate and apply research methodologies and theoretical frameworks associated with an effective pedagogy of teacher education; and (d) construct an identity as a teacher and/or teacher educator by examining closely the assumptions, beliefs, and values underlying what and how one teaches and relates to students. Of the four course goals, the primary focus of the course was identity development. To that end, the course design explicitly highlighted reflection in two areas of teacher education that could assist the doctoral students in as they developed their identities: developing a pedagogy of teacher education (Loughran, 2006); and exploring self-study of teacher education practices.

Loughran (2006) notes that reflection is a core component of developing a pedagogy of teacher education as teacher educators are encouraged to critically consider the personal relationships, values, and beliefs that impact teaching and teacher education. Additionally, Loughran (2007) argues that "enacting a pedagogy of teacher education means developing ways of delving into, and working with, the problematic nature of practice" (p. 3). Teacher educators who are concerned with reflective practice and developing their pedagogy of teacher education often use self-study of teacher education practices as a research methodology to uncover their problems of practices and grow as pedagogues. In fact, Dinkelman (2003) "cast[s] self-study as a way to promote reflection that is not so much a stand-alone technique as it is an approach to the work of teacher education" (p. 8). Taken together, the concepts of pedagogy of teacher education and self-study provided a framework for a doctoral seminar focused explicitly on reflective practice.

Labaree (2004) suggests that:

> The place of reflection takes on greater significance when considered in concert with experience and jointly offers genuine ways of helping students of teaching to value their developing knowledge of practice such that not only what they know, but also how they know it, and the manner in which it can impact their understanding of teaching and learning across pedagogical contexts may be viewed as significant to the development of professional learning. (p. 136)

The five students' prior experiences as educators would serve as a rich source of critical investigation for the course.

Explorations of prior practice in relation to the course readings and assignments and in a collaborative context would allow the students to develop their pedagogical practices educators, emerging teacher educators, and researchers. This form of professional learning would be essential in order to achieve the end goal of developing explicit teacher educator identities with an eye toward purposeful reflection. Students were required to complete a set of reflective assignments throughout the semester. At the start of the class, students were required to submit a written autobiography of their education-related experiences followed by an in-class

deliberation of those experiences (Bullough & Gitlin, 2001). Students would later interrogate their autobiographies upon completion of the course as one part of a reflection upon their professional growth.

The autobiography assignment was followed by critical summaries of readings assigned for each class meeting. These critical summaries served as entry points for discussions and students were provided with critical feedback of each critical summary. Additionally, students were required to keep a journal to which they were to add at least one entry per week. The journal assignment from Cole and Knowles' (2000) *Researching teaching: Exploring teacher development through reflexive inquiry* served as a frame of reference for the assignment. Also, after each class meeting Brandon completed a reflection-on-action of events that transpired in class meetings. These posts were meant to model reflection for the students and, in order to encourage dialogue and critique, the students were required to reflect upon and respond to half of the reflection-on-action posts.

Finally, the course assignments and conversations (e.g., audio-recordings of class meetings, online posts) served as an analytic tool for the collaborative final project. Throughout the seminar, the students were exposed to various aspects of self-study research methodology (e.g., Lassonde, Galman, & Kosnik, 2009; Loughran, Hamilton, LaBoskey, & Russell, 2007; Zeichner, 2007). Brandon modeled a variety of data collection and analysis procedures used in self-study research; and the students individually and collaboratively collect and analyze course documents and conversations to understand how their identities as educators and emerging teacher educators developed through participation in the course.

Five initial themes of identity development emerged from an analysis of course documents and assignments. Each student selected one theme around which they wrote draft findings and presented at a mock conference attended by faculty and doctoral students. Additional data analysis occurred upon completion of the course and these findings were presented at the annual meeting of the American Educational Research Association in the Self-Study of Teacher Education Practices (S-STEP) Special Interest Group roundtable sessions (Butler et al., 2013).

The Course Participants

Five students enrolled in the PTE seminar in Summer 2012. Each student had one-to-three years of experience as doctoral students and came from a variety of academic disciplines. Katrice is an assessment coordinator at a local university and a former literature and composition instructor at several community colleges, James is a high school health and physical education teacher, Elizabeth is a library media specialist at the elementary level, Alisa is an elementary school teacher, and Christina is a high school English teacher. These five part-time doctoral students enrolled in the course with different career goals and purposes for taking the seminar.

Some students, like Christina, were intrigued by the idea of teaching in a higher education setting but were unaware of the complicated nature of teacher education. Other students, like Katrice, were interested by the general purpose of the course and were open to learning new perspectives of teaching and learning. In the remainder of this section, we provide brief background of the five course participants that will serve as context for the narratives in the next section.

Katrice was in her third year in the Curriculum and Instruction doctoral program and near the end of her coursework when she enrolled in the PTE seminar. Her undergraduate and master's degrees are in English, and is the only student of the five enrolled in the course that did not have a teaching degree or licensure. She spent five years teaching first-year composition and introduction to literature courses

in higher education before switching careers to higher education assessment. Before Katrice started the doctoral program, she had not taken coursework in education and had little experience with reflection. As such, she was initially hesitant of the merits of reflection, and questioned what constituted "quality" reflection. Additionally, she did not consider that there might be differences between preparing teacher educators and preparing faculty in other disciplines.

Elizabeth enrolled in the PTE seminar after she completed her first year of coursework. At that point in her studies, she found herself conflicted about her professional future. She felt she wanted something more than the K-12 setting had to offer, which is why she pursued the doctoral degree. However, Elizabeth thought she would inevitably find herself employed in a school district-level office. As she spent more time in academia, Elizabeth was drawn to the influence university faculty have on shaping preservice librarians and the collaborative research communities that can exist on university campuses. The PTE seminar provided Elizabeth with an opportunity to reflect on how much a university faculty position aligned with her goals of engaging in the work of teacher education and developing communities of practice where she could explore and share research interests with others.

Christina is a high school English teacher who entered teaching as a second career. Like Elizabeth, she enrolled in the PTE seminar after she completed her first year of coursework. In the seven years of teaching prior to the course, Christina had the opportunity to mentor two student teachers and was scheduled to host a third student teacher the following semester. While taking the course, Christina was asked to become an instructor for the Virginia Teachers for Tomorrow program, which provides high school students interested in a teaching career with opportunities to explore teaching in elementary and middle school settings. Christina was interested in the PTE seminar due to her role as a mentor teacher, involvement in professional development, and a desire to work in a higher education setting as a teacher educator.

James is a high school health and physical education teacher who, like Katrice, was near the completion of coursework in the Curriculum and Instruction doctoral program. His teaching career started 13 years prior to the PTE seminar with a "sink or swim" induction (Feiman-Nemser & Buchmann, 1985, 1987). As a first year teacher without an established curriculum or standards, he was tasked with developing a health and physical education curriculum for his school. In his four years at this school, James provided guidance and mentoring to three novice health and physical education teachers. James often viewed himself as a student without a home. Because the health and physical education department at our institution does not have a doctoral program, James enrolled in the Curriculum and Instruction program even though no coursework was offered that aligned with his content specialty.

Alisa was new to the doctoral program when she enrolled in the PTE seminar. Prior to the course, Alisa had taken one other doctoral course in educational statistics. Although she was a new doctoral student, the PTE seminar caught her attention because of her long-term goal of teaching preservice teachers. In addition to her part-time status as a doctoral student, Alisa was a full-time first grade teacher and reading tutor for students PreK-12. Alisa was perhaps the most in-tuned of the five students to the concept of reflection. In her preservice teacher program, reflection was strongly encouraged through the regular completion of journals in coursework and field experiences. However, reflection became a secondary focus as Alisa took a full-time teaching position. But because reflection had been engrained in her throughout her preservice program, it was a concept Alisa was ready to enact upon completion of the PTE seminar.

The PTE Seminar Reflected in Practice

The PTE seminar provided an environment for reflection and growth for the five course participants. As a group they became a community, an environment where they shared their practice, experiences, and understanding of the roles and responsibilities necessary as emerging teachers and teacher educators. Additionally, each student took away unique pedagogies and perspectives into their individual practices and institutional contexts. Several factors determined the outcome of the seminar for the students as each had different reasons for taking the course.

Although the students are enrolled in the Curriculum and Instruction program, they came to the course with different educational experiences and had unique career paths somewhat pre-determined. Course participants were also at various points in their programs of study, some just starting out while others were further along in their course work. All of these factors played a part in what was ultimately learned and taken away from the seminar. In the following pages, each course participant reflects on how the PTE seminar affected his or her practice in the year after taking the course.

After I completed the PTE course I realized I needed to reinvest in reflective practice. Prior to my experiences in the seminar, I would reflect on my teaching in an informal manner. Yet this reflection was often inconsistent. Therefore, my experience in the course resulted in a renewed recognition that there was room for me to grow in this capacity. My hope was not only to become more productive as an educator, but that my students would benefit from my more purposeful reflection. As such, I began to consciously ask myself a question often posed in the seminar: "Why?" This question was a daunting one to contemplate, yet I believed it would allow me to explore critical components of practice I had previously overlooked.

My initial intent was to use a journal to document my experiences in the classroom. In my preservice teacher preparation program I had a positive experience with journaling, and it was a regular requirement of the PTE seminar. Based on these experiences, I thought that keeping a journal would serve as a beneficial reflective tool as I sought to systematically reassess my teaching practice. However, after numerous attempts to enact the journaling process, I came to the conclusion that this model was impractical for a number of reasons. If I wanted to review my teaching in any given school year, I would have to review not only my lesson plan book but also search through a journal to find corresponding entries.

I also found that writing separate reflective journal entries became a time consuming process. I am currently a full-time elementary teacher in a school district that increased workload requirements for all teachers and staff. As a result, I found my work-related responsibilities more prevalent than in previous years. I am also enrolled in two courses as a doctoral student each semester, and I tutor students part-time. With these professional and academic commitments, the time I have available to journal on a consistent basis is limited.

Although my original plan to regularly journal did not work, I knew from my experiences in the PTE seminar that the impact of reflection was too important to disregard. Otherwise, I would soon lose focus of the goals I had set for myself before the start of school. I quickly decided to shift my practice and found a solution I had not previously considered. I decided to combine my lesson book and reflective practice together. I would continue to write my lesson plans as I had in the past. However, when I completed a lesson plan or planned for the following weeks' instruction, I would record my thoughts next to the corresponding areas. I have found that this is a manageable solution for recording my reflections. As I complete my first

year using this approach, I am hopeful that this approach will aid in my future planning as my lesson plans and reflections are more accessible.

This form of reflection has immediately benefitted my students. For instance, several months into the school year I taught my students how to tell time. I initially began teaching my students the concept in whole group mini-lessons because this approach had worked effectively in previous years. However, I quickly realized that my students' knowledge varied in how much they knew about time. Previously, I had wanted to find a way to incorporate math stations in my classroom. Upon reflection, I decided to incorporate differentiated instruction on this concept through the math stations set up in the classroom.

I altered instruction as I grouped students in pairs by ability level and positive peer interaction. When the pairs moved to the "teacher station," I worked with them on their skills for telling time. This procedure provided all students the possibility to build on their current skills and each child was able to progress at their own level. Therefore, I was able to teach all of my students the grade level standards in-depth, and instruct some students on skills that needed attention.

Reflective practice has also been beneficial to my students through our Response to Intervention (RtI) time. After reflecting on a lesson about the differences and similarities of fiction and non-fiction, I noted a divide in my students' skills. There was one group of students who had a solid foundation in the basic characteristics of these types of texts, and another group who had not grasped the skills and knowledge yet. Once this difference was identified, I determined that I needed to instruct the students who had a solid foundation on a more challenging skill that would further their reading development, while providing remediation for the other students. I felt if I had some students who were already proficient with the basic skills, then the sooner they were exposed to text features the more they would benefit academically.

My thought was, "If I am able to work with these students, in a small group, intensive setting, they will only benefit. Not only will these children gain valuable literacy skills, it will also better prepare them for second grade expectations" (personal journal entry). During this time the students were taught a variety of text features and how to use them to comprehend a text. Recently, my students were assessed using the state program and the benefits of the text feature differentiation were reflected in their comprehension levels. They were able to accurately answer high level questions and thoughtfully respond to writing prompts that were based on a firm understanding of text features.

My hope for my future as an educator is that reflection becomes more routine and automatic. In order to achieve this, I feel as though I must remain conscious of reflectivity in my teaching practice. As I continue down this path, I am confident that the more reflective I become the more my students will benefit. I have learned that by becoming more reflective, I have unlocked potential I was not previously aware of. I began the school year with the mindset of reflecting through a personal teaching journal. Unfortunately, it did not worked out as I had initially hoped. However, through my solution of making reflections more manageable and incorporating them in my lesson plan book, I feel as though my initial mode of reflection has blossomed into something much more beneficial for me, and my current and future students.

The process of becoming a teacher educator typically begins with teaching at the elementary, middle or high school level. My teaching area is health and physical education, which I have taught for 13 years in grades that ranged from kindergarten to 12th grade. The challenges faced within health and physical education (H/PE) are varied, but it is safe to say it is not put under the same microscope as the "core" disciplines of mathematics, language arts, science, and social studies. This can be advantageous for the caring, dedicated, reflective, H/PE teacher who stays current with educational trends and attend professional workshops and conferences. However, my experience is that this does not always happen.

The lack of scrutiny or frequent isolation experienced by being the only H/PE teacher within a school can lead to an antiquated teaching style and limited student outcomes. Nowhere is this more pronounced than in the high school setting, where the "old school" football coach often runs the H/PE department, and negatively, but effectively, indoctrinates any new H/PE teachers. This is accomplished through various methods – seniority, scheduling, and what some colloquially call the "good old boy" network. Certainly, this is not indicative of all high school H/PE systems, but this practice still exists today.

This background is important and relevant, as I have experienced both the sense of isolation and the recipe for mediocrity at the high school level. With hard work and a strong pedagogical approach, I was able to transform the recipe for mediocrity into a recipe for success. From my personal experience, I can unequivocally say that the ability to reflect on my practice—teaching, grading, student expectations, etc.—allowed me to process, synthesize, and apply the ideals of progressive teacher education taught in the PTE seminar.

The PTE seminar was a course I was interested in taking, considering my goal of becoming an H/PE teacher educator. However, my preconceived notions of teacher education were quickly shaken during the first couple of classes when we were encouraged to be open and unguarded about our current teaching practices, thoughts, and feelings. As a fairly introverted person, I struggled at first, particularly when these traits coupled with my background as an H/PE teacher. Skepticism stemmed from my initial inability to link what I was learning with what and how I taught. But over time I was able to incorporate principles acquired through the course to alter my teaching strategies, with reflection as the most significant takeaway.

I would be dishonest if I said I was able to immediately alter my approach to teaching in the K-12 setting after the PTE seminar. My aim was and still is to become a more considerate, reflective practitioner. Yet this was certainly not the case at all times as I seek to balance my teaching practice over a decade with what I learned in the course. But I have used some valuable strategies I did not apply before; with the best illustration being wait time. As a classroom teacher, in my haste to get through comprehension questions at the beginning of a PE unit, I would often call on the first student who raised his or her hand.

As I now know, this provided no incentive to those students who were still processing the question or were formulating a response. Once my students understood my pattern of calling on the first student, only a few students would remain engaged in the thought process. The worst part about this sudden realization is that I have been doing it most, if not all, of my teaching career. I was, and still am, astonished that there are pedagogical practices an experienced educator could learn.

Another experience allowed me to fully consider and implement what I learned in the PTE seminar. The semester after taking the PTE seminar, I was able to teach an undergraduate methods course for preK-8 teachers. The course goal is to provide preservice teachers with basic knowledge and teaching strategies in case their respective schools do not have an H/PE teacher. An additional purpose of the course is to illuminate the beneficial collaborations possible between a classroom teacher and H/PE teacher. I had great intentions and expectations to transform my

instruction of college-aged students. However, multiple factors impacted my practice the first semester; in particular, class size and the complicated nature of a methods course. Couple these factors with a full-time job and my status as a doctoral student, time became a precious commodity.

As a skill, preservice and novice teachers are often challenged with time management. A significant amount of responsibility is thrust upon them, without the experience or previously created resources for support. The first and/or second year of teaching is critical for a variety of reasons, and it is imperative that as teacher educators, we make our preservice teachers aware of the difficulties that await them and the challenges that they will experience in the induction years. These new teachers need to know that with continued reflection, their journey as teachers will grow and expand in competency, student engagement, self-worth, and fun.

My journey through the first semester teaching a methods course was a somewhat daunting ordeal. I attempt to improve my instruction from year to year, making refinements along the way. The challenge I face, and will continue to work on, is how to bring about reflective practice in my high school and undergraduates students. The important question for me is: How do I teach the necessary content while providing opportunities to practice reflection in action? As I continue to reflect on my own practice, I hope to continue to impart the attributes previously mentioned to the students I teach.

When I first enrolled in the PTE seminar, I envisioned that I would learn what it meant to be a teacher of teachers. I never thought I would have the ability to put the knowledge and awareness from the course into immediate action. Instead, I thought that the ideas and pedagogies learned would help me when I one day became a college professor. As the course continued, I realized that my practice as a secondary English teacher, who was also highly involved in the design and implementation of various professional development and support efforts, reflected what I learned in the course about the roles and responsibilities of mentor teachers (Butler & Cuenca, 2012). The past school year provided me with two specific opportunities in which I was able to implement my learning, as: (1) mentor teacher for a student teacher; and (2) instructor of the Virginia Teachers for Tomorrow course.

A consistent theme of the PTE seminar was the necessity of teacher educators/mentors to make the implicit explicit through transparent dialogue between mentor and mentee (Loughran, 2006). As an experienced teacher mentoring someone new to the field, I came to find that open and honest dialogue is the most assistive for the professional growth of preservice and novice teachers. This pedagogical practice requires that I, as the mentor, am willing to closely examine and effectively communicate the rationale behind my instructional and classroom management decisions. Just as important is the necessity to create an environment that encourages the mentee to develop an introspective, reflective, and transparent mindset. My first opportunity to put these philosophies into practice occurred when I was assigned a student teacher, Colin.

As Colin and I began our mentor-mentee relationship, I was aware of how important it was to his professional development that we have a relationship that allowed Colin to become a consistently reflective practitioner. Colin was the third pre-service teacher I mentored, yet our relationship was different from the previous two experiences. With prior student teachers, I spent more time telling them what to do without discussing with them the *why's* of teaching. Although I would ask them about the outcome of a particular lesson or what they might have done differently, it was not a conscious decision or an integral part of the education process.

With Colin, our exchanges were part of a dialogic process. My questions sought to focus Colin and myself on the rationale behind decisions made in the classroom. Rather than attempt to exhibit my "expert" status and provide all of the answers as I had previously, I found that the PTE seminar had changed my focus so that rather than give answers and advice that Colin and I would uncover answers together. Because of the PTE Seminar, I was a much more effective mentor for Colin as well as a more effective teacher for my high school students.

In addition to my role as a mentor teacher, I had the opportunity to work with high school students interested in the teaching profession through the Virginia Teachers for Tomorrow program. This program is, in a sense, a pre- pre-service teaching program. High school students who wish to become teachers spend the first year of the program introduced to learning styles, barriers to learning, the history of education in the United States and their home state of Virginia, and are provided with a culminating twenty-five hour field experience in which they are placed with a mentor teacher in an elementary or middle school setting. The challenge for me as the instructor of this program has been to have students view teaching from the perspective of a teacher rather than a student.

Many of our discussions, especially early in the year, revolved around student complaints about the decisions teachers made in regard to instruction, classroom management, and student-teacher interaction. I continuously encouraged students to think about what they would have done differently if they were the teacher or why they think the teacher made the decisions he/she made. During class discussions, I have observed the students make this shift in thinking. Now, rather than complain about teacher practice, the students suggest alternatives to these practices.

I have even used my own experiences as a classroom teacher to provide scenarios for the students to work through to identify the instructional and/or classroom management strengths and weaknesses and to offer alternatives. Opening up my own practice to high school students has engendered a great deal of trust and growth in my students and me. The result is the confidence the students are taking into their internships and their ability to ask probing questions that get to the heart of instructional decisions rather than remaining passive consumers of educational experiences.

What has become apparent from these two mentoring experiences is that my philosophy of what it means to be an educator has changed dramatically. I find that I am much more deliberate in my decisions as an educator. Like Alisa, I always ask myself the question: *Why*? Why should my students engage in a particular discussion? What do I want them to take away from a specific lesson or activity? While I believe these have always been considerations in my practice, they have become more deliberate and purposeful because of the PTE seminar. Rather than just be reflective, I have become more proactive in examining the motivations behind all of the decisions I make as an educator and mentor (Loughran, 2006). I no longer feel that I must provide all the answers.

Instead, I and my students, preservice teachers, and/or colleagues explore and uncover the answers to important questions together. In prior experiences, I felt a great deal of pressure to be seen as the expert. This mentality often prevented me from being open to new knowledge. Following my experience in the PTE seminar, I recognize I have learned more from Colin and the students in the Virginia Teachers for Tomorrow class about what it means to be an educator and a mentor than I had in previous years. This is a direct effect of the discussions and exchanges in which I engaged in the seminar. Because of the PTE seminar, openness, transparency, honesty, and reflection have framed my growth as an educator.

One of the primary benefits of the PTE seminar was the way it helped shape my interest and understanding of the roles and responsibilities of teacher educators. It prompted me to seek opportunities to enact the work of teacher education as a doctoral student so that I will be prepared to work in a teacher education setting upon graduation. During one of the final exercises we conducted in the seminar, I stated the desire to develop more collaborative opportunities beyond my doctoral program in which I could enact the teacher educator role. It was in this specific area I chose to focus upon as I continued on my path as an emerging teacher educator.

In an early, post-seminar conversation with the group, I found myself questioning the doctoral program in which I am enrolled and how well it is preparing me for the role of teacher educator. Through this conversation, I realized perhaps it was not the program that was not adequately preparing me. Perhaps I was not adequately preparing myself. I came to understand that I must create opportunities to engage in teacher education. By engaging in the reflective practice that was so much a part of the seminar, I came to identify what areas of my own doctoral program of study were not meeting my needs as I prepared to enact the role of teacher educator and researcher. Our group had discussed numerous times the difficult situation part-time students experience in their doctoral programs. A common concern was that we were being asked to prepare for a teacher educator position while remaining on the periphery of the position we hoped to one day join.

 Because most part-time students have a full-time K-12 teaching position in addition to their academic studies, part-time doctoral students are often prevented from many teaching and research opportunities available to full-time doctoral students with assistantships. Additionally, we are not on campus during the day, which excludes us from a number of opportunities to interact with faculty members. I determined that if I could overcome some of these challenges, I would be able to bridge the divide between educator and teacher educator. The PTE seminar alerted me to the fact that one of the largest gaps in my program was the lack of opportunity to engage in teaching experiences with preservice teachers. Without this experience, the supervision, teaching and mentoring capacity of teacher education would be difficult to achieve. This was further complicated by my area of specialty of school library media.

The opportunity to teach a university-level course in school library media is difficult because the courses are only offered at the masters-level and must be taught by a professor with a terminal degree. To overcome this obstacle, I sought alternative opportunities to demonstrate my instructional abilities. After speaking with the school library faculty at ODU, I was given the opportunity to act as a teaching assistant where I developed and taught curriculum for a library course under the guidance of a professor. The course to which I am assigned requires students to complete field experiences where they collaboratively develop and teach an integrated unit. This experience afforded me the opportunity to teach at the university level, but it also allowed me to supervise and advise students as they engage in teaching. Though I am new to the experience, I am enthusiastic that teaching this course will provide me a variety of opportunities to develop my practice as a teacher educator and grow in my understanding of the role.

Labaree (2004) spoke of the isolating conditions in which teachers perform on a daily basis. As the only librarian in my school, this feeling is intensified. I continue to reflect upon Dinkelman's (2011) thoughts on the relationships he developed with colleagues and the conscious thought he gave to these relationships as he developed his teacher educator identity. With much of my job reliant upon the relationships I have with my colleagues, I determined that a second area of personal focus should be the development of communities of practice (e.g., Klein & Connell, 2008; Wenger, 1998).

I felt that a strong community of practice in the library educator field could help validate my research and teaching interests, and help me establish professional connections beyond my university. The first step I took on this path was attending the American Association of School Librarians (AASL) annual conference in Greenville, South Carolina. For three days I attended sessions and met with faculty from across the United States. I collected business cards and established connections. This experience proved immediately beneficial in several ways.

I was recently appointed to serve on the AASL Common Core Implementation Task Force by the president of the association. This opportunity to serve on a national-level task force, working on one of my primary research topics, will provide me with contacts and experiences to expand my community of practice that I would not have been able to facilitate through independent research alone. Other members of the task force include leaders in the library research field, university professors, and education leaders across the country. The working relationships I developed through this community will be beneficial as I continue to explore my research interest of the Common Core State Standards and develop my dissertation study.

Conference attendance also afforded me the opportunity to meet several university faculty members who invited me to guest lecture in their library courses. These experiences will allow me to enact the role of teacher educator in an environment different from my own university and provide me with different perspectives on teacher education. Had I not pursued the opportunity to expand my community of practice beyond the faculty I work with in my school building and the faculty in the library program at my university, I would not have had these opportunities to engage in these teacher education practices.

Because of the PTE seminar I re-examined my intended path and what aspects of the seminar would be most beneficial to me as I sought to make the shift from educator to teacher educator. In the PTE seminar, it became apparent that persistence was necessary to facilitate my path as an emerging teacher educator. As I continue to follow this revised path I hope to build on these areas and include additional opportunities to engage in teaching, mentorship, and research.

Although it is difficult for me to track the changes in my practice as an educator because of the PTE seminar, the seminar has directly altered and enhanced my growth as a doctoral student and practice as an assessment coordinator. The course provided me with a view into the mind of the pedagogue, so that now I am cognizant of not only the content taught but also the instructional strategies employed. In essence, the seminar made me a more discerning student who is more aware of not only my interactions with teachers, but also teachers' interactions with students. The seminar most impacted my persona, or identity, as a doctoral student and how I reconciled the tensions that arise from an exploration of one's own academic and professional history through the lens of teacher education.

At the end of the seminar, I at least marginally identified as an emerging teacher educator. However, the impermanence of this identification became readily apparent as the new school year began and the exuberance that filled me as a seminar participant faded. At my institution, absent a programmatic culture that lauds self-study research and a cadre of faculty committed to developing their own reflective practice as well as that of their students, I found it difficult to maintain the identity that emerged as a result of the seminar as a doctoral student and in my professional role as an assessment coordinator. While both roles may seem ripe for reflective activities, the minutiae of daily responsibilities often override all other

considerations. However, I have a greater appreciation and understanding of the importance of relationships and community in my academic development because of the seminar.

The seminar marked the end of my second year in the doctoral program, and I had begun to believe that forming relationships with fellow doctoral students was marginal in importance when compared to completing the degree in a timely manner. Yet, my willingness to engage in reflective activities is due in part to the judgment free zone of the PTE seminar. The seminar provided us with the ability to discuss our fears and anxieties, which highlighted how fraught with emotion the work of teaching is and provided the context for our community development. I now yearn for that sense of community, and I have become more proactive in initiating fruitful relationships with other doctoral students.

The courses I have taken after the PTE seminar have required little reflection, and because I am not a practicing teacher, there is no discernable way to link what I learned in the seminar to my practice as a more reflective and informed teacher. However, I have become more aware of the struggles teachers experience in K-12 settings. I compare those struggles to those I faced as a literature and composition instructor, and I speculate as to how I would have reacted to or handled various situations. As an assessment coordinator, the seminar sparked my interest in the reflective practices of the faculty with whom I work. I regularly conduct collaborative assessment workshops with faculty in the humanities and natural and physical sciences.

In lieu of the traditional workshop evaluation, where participants simply rate the effectiveness and usefulness of the workshop on a Likert scale, I implemented a Reflection and Feedback Form. Faculty members are asked to reflect on their instructional and assessment practices and to consider how they might alter their practice as a result of the collaborative assessment workshop. The disclosures in faculty comments have been surprising and affirming, as faculty have admitted to shortcomings in their instructional practices, indicated plans for improvement, and revealed an appreciation of reflection and a need for a collegial community to reduce isolation and increase collegiality. The usefulness of reflection to faculty of all disciplines becomes apparent once one is exposed to its tenets. However, substantial motivation is needed to sustain that reflection.

Aside from practice, I am more convinced of the legitimacy of self-study research and more aware of what self-study is not. Self-study is not simply recognizing or documenting a problem. The class discussions I have engaged in since the seminar with my fellow students, most of whom are classroom teachers, underscores the importance of not simply recognizing and identifying a problem, but also the centrality of actively working to resolve the problem or issue related to an individual or group's practice. In addition, the work required will not always be solitary. While an important outcome of self-study research is awareness of one's own practice, we must not bristle when our own practice or even our reflections are interrogated, as critical friends are an important part of our development (Logan & Butler, in press; Schuck & Russell, 2005).

During the seminar, I called for a more inclusive definition of the role of teacher educator that extended to academic disciplines outside of education. Despite teaching introductory college English courses, I was not trained in a teacher education program, and I wanted to expand the definition to include those like myself. However, I now see the importance of distinguishing between the work of teacher education and the work of faculty in other disciplines (Labaree, 2004). After the seminar, I realized that many of the doctoral students in our program see teaching as holding some innate, indefinable quality.

That view of teaching minimizes the ongoing and complicated work one should engage in to be most effective. Formal and informal self-study is important to practitioner development, as it provides the vehicle for making the work of teaching more explicit. Until this is the dominant view of teachers and teacher educators, I have concluded that an expansion of the definition of teacher education might be ill advised. The seminar has provided me with the confidence to form my own identity, even if it is sometimes at odds with the emerging teacher educator identity that the seminar promoted.

Discussion

The PTE seminar assisted five doctoral students as they identified and discussed effective pedagogies of teacher education and developed individual identities as educators and teacher educators. Each participant entered the seminar with different expectations due to the personal perspectives and challenges he or she carried into the course, and each left with new insights on the work of teacher education. However, there was shared belief about the power of reflection and its importance toward continued development as educators and/or emerging teacher educators.

Through the process of reflection and engagement in a self-study community of practice (Kitchen & Ciuffetelli Parker, 2009), the five students sought to build identities as teacher educators. The reflection-oriented course assignment and activities led to a shift in mindset for the students, which not only allowed them to gain an appreciation of reflection, but also to develop a willingness to critique their own practices for the purpose of continued improvement. In doing so, they became more critically reflective of their pedagogical practices, status as doctoral students, and roles and responsibilities as emerging teacher educators.

As doctoral students, the five students exhibited a dedication to improving their practice and education in general (Labaree, 2004). What the PTE seminar provided was a space that enabled the students to step back from what had often been a linear progression of professional development with limited consideration of prior educational experiences. The seminar challenged this mindset, as participation in the seminar required the students to critically reflect upon their educational experiences and consider new dimensions of teaching and learning.

As Loughran (2006) argues, "Teaching about teaching … involves unpacking teaching in ways that gives students access to the pedagogical reasoning, uncertainties and dilemmas of practice that are inherent in understanding teaching as problematic" (p. 6). Although five students entered the course with a degree of certainty about who they were as educators and what they hoped to accomplished with a doctoral degree, they left the seminar with new insights into the nature of teaching and teacher education and the extent to which they were continuously involved in the "act of becoming" (e.g., Dinkelman et al., 2006a; Ritter, 2007, 2009).

While the participants each grew in their understanding of the roles and responsibilities required in the enactment of teacher education, the tentative path each student has embarked on will continue to shift and change over time. The stories shared in this article provide 'snapshots' of how the five doctoral students enacted their learning from the PTE seminar. As such, these narratives are not meant to lay claim to the lasting effects of the PTE seminar on the students' growth as educators and teacher educators. Perhaps it is too early to identify the long-term implications of the seminar. However, there is some evidence of the permanence of these identity shifts and the importance of reflection. Several of the students are

preparing for or currently conducting dissertation research with an explicit focus on teacher education.

As noted in several of the narratives, some of the students have taken initiative to teach preservice teacher coursework as they maintain their part-time doctoral status, while others have expressed interest in shifting to full-time doctoral status. The students have attended professional conferences to share with others the implications of a seminar-like space on the development of teacher educator identity. And even though the students come to teacher education from a number of disciplines, they have continued their conversations of teacher education and provided support for one another as they complete their doctoral degrees,

Before concluding the article, we want to briefly return to the question posed by Dinkelman (2011): "What does it mean for identity to develop in practice, in settings so often characterized by uncertainty, instability, and change" (p. 318)? Given the dynamic landscapes in which the five students engage with on a daily basis, uncertainty, instability, and change is an ever-present concern in regard to their identity development and continued reflection. But the fact that each student found ways in which to personally reflect and grow as educators indicates that identity can develop in a number of contexts, given the appropriate support.

Conclusion

Our purpose in this article was to provide some insight into one opportunity provided in a specific doctoral program that helped a set of doctoral students develop identities as educators and teacher educators. As we have addressed identity development elsewhere (Butler et al., 2013), we used this space to identify the challenges and opportunities that arise as educators and emerging teacher educators attempt to enact those identities in practice. We hope that by sharing how the PTE seminar helped sustain further development of those identities and practices as educators and teacher educators, others can gain an understanding of how identity develops in "in settings so often characterized by uncertainty, instability, and change" (Dinkelman, 2011, p. 318).

This is not to say that teacher educators interested in helping doctoral students develop their identities and practices as educators and teacher educators should blindly replicate the PTE seminar in all its facets or expect similar outcomes from students. This work is informed by institutional contexts and the personal biographies of course participants. Such courses should be designed in a manner that takes into consideration institutional aims, programmatic contexts, and student ability, interest, and status. However, what is evident is that to affect change in how doctoral students identify as educators and teacher educators, they require opportunities to critically inquire into their educational experiences and beliefs and practices of teaching and learning.

Kosnik et al. (2011) argue that with the ever-present and uncertain fiscal state of teacher education, experienced teacher educators must find economical ways in which to support novice teacher educator development. Formal spaces like the PTE seminar are institutionally beneficial because they provide enrollment opportunities for students, and are professionally beneficial for doctoral students as the students are provided with opportunities to develop their identities as teacher educators. However, for spaces like the PTE seminar to have a long-term effect, students who take such courses must acknowledge the potential in sustained inquiry and reflection of their pedagogical practices and identities as educators and teacher educators.

For the students represented in this article, their understanding of their development is limited by the short period of time since the seminar. Only future collaborations and scholarly work by PTE seminar participants will determine if the orientation toward reflective practice is sustained. However, there is evidence in the work of others (e.g., Dinkelman et al., 2012; Kosnik et al., 2011) that the outcomes are well worth the risk of providing doctoral students with formal spaces to explore their growth as educators and teacher educators.

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AWAKENING THE TEACHER WITHIN:
EMBEDDING REFLECTION IN A TEACHER PREPARATION PROGRAM
by
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Abstract
This mixed methods study used multiple measures to assess the extent to which graduates of a program emphasizing reflective practice were infusing reflection in their work as educators. Surveys sent to graduates of the program were analyzed. The words from a focus group meeting of teaching candidates and graduates were also studied to determine the extent to which reflection had become embedded in their lives as teachers. Data was collected during student teaching, during the first year of the graduates' teaching careers, and after teachers had been teaching for a number of years. Data suggested that graduates continued to use elements of reflective practice extensively in their professional lives. In addition there was substantial evidence that graduates of this program understood reflection as a process best done with their students.

The Graduate Programs in Education is comprised of two similar but distinctive programs. The Master of Arts in Teaching (with the theme Awakening the Teacher Within) is designed for aspiring educators seeking initial licensure. The Masters of Education is designed for practicing teachers who wish to think more deeply about their craft and is driven by the theme Renewing the Teacher Within. The two programs share many of the same foundational texts and both emphasize the development of teachers as reflective practitioners. *The Courage To Teach* (Palmer, 1998) helps candidates in both programs focus inwardly on what they bring to the teaching profession. *The Passionate Teacher* (Fried, 2001) helps all candidates reflect on the craft of teaching and the structure of classrooms and schools. *The Light in Their Eyes* (Nieto, 2011) helps all candidates reflect on culture and diversity.

The Master of Arts in Teaching is the only teacher education program of Earlham College, a Quaker liberal arts college. Consistent with the mission of Earlham College, the practice of reflection is an important component of our work with teaching candidates.. As our theme of "Awakening the Teacher Within" suggests, the importance of helping develop this reflective ability in our teacher candidates was not something we could simply put in as a course component or construct. We had to find a way to take each candidate as they came to us and explicitly teach them each how to develop those reflective skills. The process of awakening the teacher within is grounded in Quaker principles of learning how to be still and focus inwardly. Such a focus is intended to help candidates understand how to ground their teaching in personal discovery and growth (Palmer, 2004).

York-Barr, Sommers, Ghere, and Montie (2006) liken reflective practice to the ability to "bridge the gaps between what we say {or see} and what we do {or should do}" (p. 13). The Earlham Graduate Programs in Education puts a similar emphasis on using reflection to take action. We knew that helping our students bridge this gap between what they say and what they do would be a foundation for how we teach reflective practice. Therefore, we began our program with a very intentional design that embedded reflective practice, a design in which each teacher

candidate would learn multiple ways to embed reflective practice into the way they experienced coursework and interactions with faculty and other cohort members. Furthermore, we understood that our own actions as the administrators and faculty of the program would also be a model of that reflective practice.

Supporting Literature

A strong body of work supports the importance of critical reflection in teaching. Some of the literature has emphasized that teacher learning supports student learning (Barth, 2001; Burney, 2004; Darling-Hammond, 2008; Osterman and Kottkamp, 2004) and that specific protocols are helpful in nurturing teacher reflection (McDonald, et al., 2007; McEntee and Hole, 2003). It has been suggested that embedding reflection in teacher education programs is important to help teacher candidates challenge assumptions and connect theory to practice (Darling-Hammond, 2006).

Fullan (1993) notes that reflective practice and action research are two possible strategies to help teachers engage in continuous learning while Schon (1983) asserts that reflection on action is an important skill for professionals. Mezirow (2000), describing transformational learning theory, maintains the importance of critical reflection on assumptions while Fullan (2007) and Easton (2005) maintain that teachers must develop the capacity to examine assumptions about professional learning in order to be able to apply what they are learning to their practice.

Cochran-Smith and Lytle (2001) write about reflection as inquiry and describe what they believe to be a new understanding of how teachers create professional knowledge. They maintain that traditionally, teachers generated knowledge about teaching by depending on ideas from university researchers or educational consultants (knowledge-for-practice). Cochran-Smith and Lytle explain that another common practice for teachers is to reflect on their own teaching practice (knowledge-in-practice) which might be called practical knowledge. They also describe a third way of looking at teacher learning, knowledge-of-practice. This approach assumes that teachers create knowledge about the profession by examining their own questions about teaching and learning. The process that Cochran-Smith and Lytle describe suggests that teachers embed reflection by engaging in ongoing inquiry. (Cochran-Smith and Lytle, 2009)

The Earlham College Graduate Programs in Education were based on the premise that helping teachers and teacher candidates develop reflective practice would be more likely to help them make needed changes during the program and throughout their careers. We wanted our students to be able to reflect on action, reflect in action, and from action (Schon, 1983). We knew that in order to become fully reflective teachers they would have to know and understand how to reflect in each of those ways. In order to accomplish this, we developed an approach of embedding reflective practice into our curriculum in a way that would complement the teacher candidates' overall growth and learning (Bean and Stevens, 2002) and relied on Schon's ideas to help create our metaphor of "From the mirror, to the window, and back again". These images became the symbols for the embedded pieces of the reflective work.

The intentional infusing of reflection throughout all phases of this program is grounded in adult learning theory. (Mezirow, 2000; Brookfield, 1995) We teach M.A.T. candidates how to reflect on their practice by modeling, engaging them in collective reflection, giving them feedback as they reflect, then asking them to continue to reflect independently. Knowing that it is important to create disequilibrium in adult learners in order to facilitate their learning (Mezirow, 2000), M.A.T. faculty

(who supervise as well as teach the cohort of teaching candidates), pose questions intended to create such disequilibrium.

The Earlham M.A.T. explicitly cultivates the capacity of teaching candidates to become reflective practitioners. The purpose of the explicit focus on reflection, first in classroom activities and later in student teaching, is to make reflection a systematic part of what one does as a teacher in order for reflection to become a habit of practice. The action research component begins during the summer semester and continues into the fall before culminating with the candidates implementing an action research project embedded in their teaching in the spring and presenting the results of their research at an Educational Forum just before graduation. Such a systematic focus on embedding reflection in teaching is intended to help teaching candidates continue to include reflection as an ongoing part of what it means to be a teacher. Reflective practice must become an instinctive part of who they are becoming as educators.

This approach is similar to what Hargreaves and Fullan describe in their discussion of how to transform teaching in schools:

Reflective practice isn't just an act of will or the result of encouragement. You have to build it into people's practice, make it a part of their day. When reflection becomes more structured and systematic, it becomes what... Kurt Lewin first termed action research in 1946. (Hargreaves and Fullan, 2012, p. 99)

Hargreaves and Fullan go on to say how difficult it is for teachers to be reflective due to the school culture of many schools and the current climate they characterize as mindlessly following scripted curricula focusing too much on test scores of lower level skills rather than needed 21st century skills. (Hargreaves and Fullan, 2012)

Our goal has always been to help teaching candidates learn skills and habits of mind that will help them develop the capacity to reflect on professional readings, reflect on student performance, and reflect on their own practice, all for the purpose of improving their teaching.

The Earlham M.A.T. has come to understand reflection in teacher education in terms of mirrors and windows. The process begins with the mirror as teacher candidates focus on reflecting about themselves as teachers, about course readings, and about the knowledge being created by the M.A.T. cohort. The mirror establishes the importance of teachers being self-reflective, able to reflect about their beliefs, their own assumptions about teaching and learning, and about students. Through the practicum experiences, the element of the window is added as the M.A.T. teacher candidates begin to understand that reflection as a teacher must also involve looking outward at their students and schools. The window symbolizes the next step in building a reflective process during which a learner can look upon situations and other people and use those occasions to reflect on what they were seeing in order to create emerging understandings.

In the third step of the process M.A.T. candidates are encouraged to return to the mirror and use what they have seen through "the window" as they continue to reflect on their performance, their own personal growth, and the complex interplay of their own instruction and their students' learning. Each reflective step can be seen in the various assignments and work done at each level of the program. By the end of the program, candidates are expected to continually reflect on their teaching and their students' learning with the ultimate goal of reflection becoming a habit of practice.

Reflection on Action: The Mirror

During the initial summer semester, we begin our cohort with the reflective model of the "mirror" and ask our students to focus on self. We know that if good teaching comes from the identity and integrity of a person (Palmer, 1998), the starting place is the self. Handing out journals on the first day, we begin by asking students to reflect on the characteristics of poor teachers and excellent ones. We ask them to write about their own experiences as students and how they might build on or change such experiences. We ask them to reflect on readings and record important ideas from course readings as well as their own ongoing questions. The journal becomes a record of their ongoing reflections during the summer and beyond.

Our teacher candidates begin by reading, writing, and thinking about important issues in education. They develop skills in questioning beliefs and assumptions and in reflecting on who they are as people. Journals are used heavily throughout this process as well as readings from *The Courage to Teach* (Palmer, 1998), *The Passionate Teacher* (Fried, 2001), and *The Light in Their Eyes: Creating Multicultural Learning Communities* (Nieto, 2010). Questions, conversations, and exercises are all designed to help them discover who their inner teacher is and how that affects their outward teacher and classroom stance.

In the summer semester, M.A.T. candidates look at ideas and theories and use multiple lenses to explore who they are as educators (the mirror). During the intensive summer semester where classes meet four days a week for six hours per day, reflection is embedded in various ways. Discussions and activities help our teacher candidates challenge assumptions of the authors of texts. They are often asked to pose their own questions about the readings and reflect on emerging understandings that they can apply to their future work with students.

After activities and presentations, the candidates are asked to reflect on how they did and how they are incorporating ideas from course readings into their practice. (Was your presentation effective? How do you know? Would Palmer agree with that statement? Why do you think so? Would the activity that you just demonstrated work in a high school as well as middle school classroom? Why do you think so?)

Reflection in Action – The Window

The second semester begins with M.A.T. teaching candidates in their placement schools learning from their mentor teachers in a year-long placement. The candidates are in their schools full time for the first two weeks of school then come back to campus three days a week from 1:00 – 5:00 for further coursework. This format allows candidates to continue to learn needed theory but also to make ongoing connections to what they are seeing and doing in their placement classrooms.

During this fall semester we continue with the reflective approach of the mirror but add the window – where students use a variety of reflective practices designed to help them analyze what they are seeing in classrooms and apply insights to their coursework. We continue with the journals and add more layers including the "Day in the Life" assignment, where M.A.T. teaching candidates shadow a public school student for a full day and reflect on what is hindering or helping the learning from that student's perspective. We also ask them to get involved in the school community and reflect on how knowing the community will help them know their students so they can know how to teach them. Much of this semester is spent "looking through the window" into the practice of others and using that reflection as a way to begin to build that bridge between what they are seeing and what they would do in the classroom.

As the candidates begin to work in classrooms during a fall practicum, we ask them to reflect on their own initial attempts at teaching. They do this with both mentor teachers and M.A.T. supervisors who engage them in conversation about what went well, what didn't and what changes they can make to improve the performance of their own students. They also formally write a reflection about the impact their work sample made on student learning.

Reflection from Action – Back to the Mirror

During the third semester of the M.A.T. program, teaching candidates begin their student teaching. They teach full days in their schools under the guidance of a mentor teacher and a college supervisor who observes and coaches candidates weekly at first, then every other week later in the semester. Candidates come back to campus one day per week after school to reflect collaboratively on their teaching experiences.

In this third semester of full-time teaching, our teaching candidates are asked to constantly reflect on their practice from multiple perspectives. This practice of blending reflection during personal action becomes the place where we hope the reflective practice becomes embedded in each of our teaching candidates. Our goal is to nurture the ability to reflect on personal practice without prompting from instructors. This continues with the required action research projects which have a major reflective component. Each student presents her own research at our annual Scholar-Practitioner Forum. At the end of the semester the candidates write a reflective essay related to the theme of the program "Awakening the Teacher Within", asking them to consider how they have developed as a teacher and a reflective practitioner.

Continued Reflection – Balancing the Mirror and Window

Our teaching candidates earn their initial teaching license, but they take one more class online in their first semester of teaching to earn their master's degree. Here we encourage them to apply the reflective process in their respective schools. We ask them to share successes, issues, and questions with the rest of the cohort and collectively discuss implications. This provides support for their continued reflective practice in their important first year of teaching.

Throughout the course of the all-important first semester of full time teaching, M.A.T. candidates are asked to reflect on their new classrooms and on how they continue to apply ideas from course readings on such topics as teaching for understanding, reaching all students, and teaching diverse populations. Within the online classroom, instructors pose questions and give feedback to the candidates, but over the course of the semester, more of the responsibility for questioning and responding to each other is placed on the candidates themselves.

The final assignment of the online course asks candidates to design and share a five year plan in which they explain how they will continue to grow professionally. The expectation is that candidates will continue to reflect on their professional growth, continuing to renew the teacher within.

Assessing the Reflective Habits of Our Teaching Candidates

As the program grew and was sustained over the past 10 years, we became increasingly aware that the feedback we were getting from our graduates and from their colleagues and administrators was very different from what seemed to be the norm in secondary schools. Our graduates talked to us about continuing to be reflective. They reported that they were becoming teacher leaders in their own

schools, working on committees, developing curriculum and teaching strategies, and also being looked at as those who knew how to engage in reflection. They seemed to have embraced reflective habits as part of their teaching. It was evident that we needed some evidence to support these assertions.

We began by looking at how M.A.T. teaching candidates were reflecting after finishing student teaching. The candidates are expected to apply reflection in their student teaching. Reflection is part of the coaching model of supervision employed in the program, but candidates also reflect in their spring work samples and their final assignment of the spring, a capstone essay. A previous study of 37 M.A.T. candidates in two different cohorts suggested that the candidates had used reflection on an ongoing basis to foster both personal growth and professional growth, often reflected with their students or used student reflections as part of their own reflective process, and posed questions as an ongoing part of the reflective process. (Berghoff, Blackwell, and Wisehart, 2011)

Capstone Essays

This new study analyzed 66 capstone essays of four different cohorts and reinforced similar themes from the earlier study. (Berghoff, Blackwell, and Wisehart, 2011) Candidates overwhelmingly indicated that the program helped them grow both personally and professionally and some linked professional growth to personal growth. Several candidates referred to growing in unexpected ways, learning from mistakes, or feeling uncomfortable before a period of growth, all suggesting that the program had been successful in helping candidates benefit from the "disorienting dilemma's" considered crucial in adult learning. (Mezirow, 2000) Nearly all candidates reflected on readings, student achievement, and their own instruction. Several candidates indicated that they were developing the mindset of continuous learning. Another consistent theme was the propensity of M.A.T. candidates to use their observation of student engagement to make adjustments to their practice.

The earlier study (Berghoff, Blackwell, and Wisehart, 2011) suggested that the capstone essays showed evidence that M.A.T. candidates were already using reflection in many aspects of the professional and personal lives. As Allison from cohort 6 said:

> The answers are hidden, bit by bit, in each class I teach. They are in my experiences with my students, my colleagues, and with my own inner teacher. They are in my ability and willingness to reflect on myself as a teacher and my own performance in the classroom. The information exists with my colleagues in their hundreds of collective years' of craft knowledge. The answers I seek are in my students, if I will only humble myself enough to ask them. (Berghoff, Blackwell, and Wisehart, 2011, p.23)

A review of further capstone essays for this study gave more examples of this. In a quote typical of candidates who indicated that they had grown in unexpected ways, Lucas from cohort 6 said:

> This year has been a year of extreme growth for me, both as an educator and as a person. I have developed in unexpected ways and in new directions I could not have anticipated when I began. I would not have understood the person I would become in eleven short months….So many aspects about myself that I might consider new were already there to begin with, only buried deep within, awaiting the circumstances that would bring them out.

Kevin from cohort 6 added, "The past year has been a long and interesting one. I started out knowing actually how to be a good teacher. Then I found out I only knew the tip of the iceberg." These quotes were typical of many teaching candidates who indicated that they had just begun to learn what they needed to know to become successful teachers in the future.

Several candidates wrote about making mistakes. Lauren from cohort 8 indicated that her mistakes led to not only professional but personal growth: "I don't think I would change a second of my student teaching experience because I am who I am today because of my mistakes…" Melanie, cohort 9, also spoke to the impact of the program on her personal growth when she said, "What the M.A.T. program has given me is more than my identity as a teacher; it helped me develop my identity as a young woman in society and define my beliefs." Other candidates made more explicit connections between personal and professional growth as Brigid from cohort 10 who said:

> Throughout the course of the M.A.T. program, I began to explore the inner workings of myself, reflecting on why I want to teach and what qualifies me to do so. During this search for myself I successfully awakened the teacher within me and developed into an educator who recognizes the value in lifelong learning, reflection, and relevance within the classroom.

Several candidates wrote of how they had grown based on initially being made uncomfortable by course readings. Scott from cohort 6 wrote: "Though I dislike Palmer's writing style, he said some things that tugged at me and made my uncomfortable. He challenged me to find the voice within myself and ignore what the world tells me I ought to do." A large number of candidates also expressed that they had come into the program thinking that they already knew a lot about teaching but came to understand that they had much to learn. Mary from cohort 8 wrote about how a case study she wrote as part of her coursework had helped her to come to a new understanding.

> Starting out the program, I thought for sure I had all of the right answers…Teachers to me had just one job – to teach the subject….The case study that I prepared on an 8th grade girl brought all of the students a real quality to them. I wasn't just teaching Janie in row 3; I was teaching Janie, a girl who comes from an impoverished background. A girl who likes to do gymnastics but whose parents can't afford lessons because they're in and out of jail.

Previous themes noted in the analysis of capstone essays were reinforced but more candidates were beginning to use their students' reflections as part of their own reflective process. One graduate described a day in which her students seemed to rebel. In response to the student meltdowns, the graduate reported that she invited them to talk to her.

> I asked them how they found themselves in this mess and what they expected from me at this point.. So in a way this worked out better than I could have hoped, because they reached such a crisis point that I finally had their attention and we could talk about what happened before they disappeared into the hallways.

Still other candidates reflected on how asking students to reflect on their learning had become part of their own reflective process in gauging student learning. Cyrus from cohort 10 said:

> My most convincing evidence of student learning came from the personal interviews I conducted with students on the last two days of my work sample…a handful of students discussed the aural elements of poetry and the fact that poems are meant to be read aloud: as such, attention to meter and rhythm enhances the 'out-loud' performance of poetry. Others noted that the sounds words make were important to poetry, and explained that

poets' use of alliteration, assonance and consonance could both bring life and interest to poetry, but also reflect the meaning of content.

A final theme that was apparent was being in the mindset of a lifelong learner or continuous growth. Tracy from cohort 6 wrote: "The awakening is a continual process that needs constant questioning and self-reflection. If I do not question the why, what, and who of teaching, then I should not be teaching." Other candidates indicated that they were already beginning to make ongoing reflection part of their routine as teachers. Allison from cohort 6 expressed it this way: "As we were taught, I build this into my teaching. I have a space on my lesson plans to jot down notes about each lesson….The M.A.T. program taught me to look at teaching with a kind yet self-critical eye. I should see the weaknesses as well as the strengths and not be afraid of either."

Allison also expressed a common theme when writing that her ability to reflect would help her meet future challenges:

I know that each day-every day-for my whole career-will bring unique challenges….Therefore I must be prepared to deal with change. And the best way to do so is to be an effective monitor of the fluxes within myself, my students, and my school. I have to reflect on my teaching.

Clearly the capstone essays showed that teaching candidates would be entering their first year of teaching understanding that they needed to continue to reflect in order to continue growing personally and professionally.

Final Online Course Reflections

We wanted to look for evidence that teaching candidates were carrying over their habits of reflection into their first semester of teaching. For this study, the online responses of four different cohorts and 66 different M.A.T. candidates were analyzed. Similarly to the analysis of the capstone essays, the previous study done by Berghoff, Blackwell, and Wisehart (2011) on a portion of our graduates' work had suggested that teaching candidates were continuing to reflect and were seeing reflection as embedded in many aspects of their personal and professional lives. However the online responses were much less philosophical and much more focused on reflection that helped the teaching candidates deal with practical issues related to motivation, instruction, and organization.

Candidates showed that they were willing to use the shared reflection of the online environment to make changes to their own practice ("I copied Kristen and switched to clusters of four…." "Reading your post made me take a deep breath and refocus.") as well as pose questions to each other to continue the reflection:

You've separated your students into three tiers, if you will. Does this conceptualization of your class play a role in how you organize individuals and groups? We've been exposed to a few theories on how to best organize classrooms that have such varying degrees of performance as you've described. Have you experimented with any?

The teaching candidates were able to engage in collaborative reflection similar to the conversations from seminars during their student teaching the previous year. They would talk back and forth in the online environment about issues from their own classrooms and schools and share or question possible solutions to problems.

Another recurring theme, which was seen in the capstone essays and which had also been noted in a previous study of some M. Ed. graduates of this program (Wisehart, 2008), was the increasing incidence of M.A.T. candidates to use input from students as part of their own reflective process as teachers. Keith from cohort 6 wrote about reflecting on self-evaluations he had required from students. "First trimester I had my students develop their own classroom expectations for themselves and myself… This tri, I decided to have my new round of students

develop a rubric to use as a self-evaluation tool based on those expectations." Writing about a suggestion from one of her students, Tess from cohort 6 reported: "I have found that the more we listen to the ideas of our students and respect their voices the more excited and willing they are to listen to what you have to say."

Several candidates reported asking their own students for feedback and reflecting on the responses. Mary from cohort 6 said:

These responses gave me insight into who I had become as a teacher… Here are the answers I was surprised by: 'Class went differently because we got to work together and on a worksheet and you didn't give a long lesson that would make us talk and be bored in the duration of the lesson.' One of the 5 students that I had the most problems with wrote 'Cuz we had Freedom to do wut we wanted to do.' I had put the responsibility on the students to study for their finals. I had taken myself out of the spotlight of the classroom and students rose to the occasion. I was floored by this realization.

Although it is not a requirement of the program that teaching candidates use student reflection as part of their own ongoing reflection, for several candidates it seemed natural and authentic to do so even during the first year of teaching.

The words of some of the 66 teaching candidates reviewed for this study show that during the program, these candidates were already reflecting on their personal and professional growth, were reflecting on how course readings applied in their teaching, and especially in the online component, reflecting on how to meet the learning needs of all students. Most impressively, candidates were beginning to use the voices of their students in their own reflections.

Reflection- A Habit of Practice

Through these past 10 years of the program, though we have had evidence of our teacher candidates' growth in making reflection a habit of practice during the program, we had not done any formal research to find out how lasting this habit might be. Therefore, we decided to gather some evidence over the entire program, focusing on our graduates to see if they were using reflection, in what ways they were using it, and whether reflection had become a habit of practice for them.

A survey was developed and sent to 173 M.A.T. graduates from the past 10 years and to 63 of our M.Ed. graduates from the past 7 years. Out of the total 246 surveys mailed, 76 total were returned, 53 from M.A.T. graduates and 23 from M.Ed. graduates. The survey was a mix of specific questions on their use of reflection in practice and an open-ended comment space for specific experiences that helped them develop their ability to reflect on their practice.

Results

When asked questions regarding their use of reflection as a daily practice in areas such as testing, lessons, classroom assessments, and professional development, over 90 of respondents indicated" agreed/strongly agreed" that they reflected on those items as a part of their daily practice. Looking more closely there also seemed to be a trend to reflect more strongly on areas that were more classroom-centered than on those centered on individual skills or professional development strategies. While those more individual numbers overall were still high in regards to the use of reflection, responses fell more in the "agreed" category than in "strongly agreed". This overall trend of the frequent use of reflection for the classroom indicates to us that our graduates use reflection as a component of their daily classroom teaching practice and for their own individual development (See Table 1).

Table 1: Breakdown Showing How Graduates Reflect by percent

Reflection Event	Strongly Agree	Agree	Disagree	Strongly Disagree
Standardized Test Data Tests/Major	30	56	12	2
Summative Assessments	56	43	0	1
Formative Assessments	61	38	0	1
Lessons I am teaching	70	29	0	1
Lessons I have taught	77	22	0	1
Professional Readings	32	63	4	1
Workshops or professional development sessions	53	45	1	1

The next series of questions asked them if their reflecting on those areas of classroom and individual uses resulted in their making adjustments to their work and practice. Again, results showed that the vast majority did use results to make adjustments in their work. Adjustments resulting from standardized tests was the one area where the majority simply marked "agreed" and not "strongly agreed" (See Table 2).

Table 2: Adjustments Made Based on Reflection by percent

Reflection Event	Strongly Agree	Agree	Disagree	Strongly Disagree
Standardized Test Data Tests/Major	33	51	15	2
Summative Assessments	59	38	1	1
Formative Assessments	63	36	0	1
Lessons I am teaching	72	27	0	1
Lessons I have taught	79	20	0	1
Professional Readings	33	59	7	1
Workshops or professional development sessions	46	51	1	1

Perhaps the question we were most interested in was the next one which asked graduates to respond to the statement "Reflection is so embedded in how I teach that reflection seems to be nearly continuous." We knew that the responses to this question were at the heart of what we were trying to accomplish in the program, to equip and develop our graduates to become reflective practitioners long after they ended their program with us. Their responses to this question showed that 99 per cent marked "agreed/strongly agreed"" that reflection is an embedded part of how they practice as teachers. Within that 99 per cent, 28 per cent marked "agreed" and 71 per cent "strongly agreed".

Reflections on Reflecting

The survey clearly demonstrated that the graduates were using reflection on a daily basis and that it had become so much a part of their practice that it was not something they were even aware of doing. However, what resonated to us were the graduates own words from the open-ended comments describing how this process of reflection had become such a part of who they are as teachers.

"The work samples, action research and portfolio all helped me develop an ability to reflect. They helped me find a rationale for everything that I did in the classroom and develop a habit of doing so"

"MAT helped me to realize that my observations and reflections are legitimate reasons for doing or not doing something"

Everything about this program forced me to become a more thoughtful practitioner. It started with day one when I was asked to describe why I was a good teacher and then continued when I was told it's not enough to know you are good if you can't identify what makes you good!

I think reflection was such a prominent part of the MAT program experience that it was natural when I transitioned to full time teaching. I think the MAT gave me the skills I needed to be a reflective teacher in several ways: data analysis, formative and summative assessments, professional development, and before, during, and after actual teaching of students in the classrooms. After all, reflecting on teaching is really all about reflecting on how to keep students learning and engaged. Now, my principal told me that I reflect more on my own teaching than any of my coworkers and she praises me for it. I know I still have my faults and weaknesses as a teacher, but I know reflection will keep me grounded and rational too, making choices to benefit my current and future students.

These words from the open-ended section of the surveys, highlighted the extent to which graduates built upon specific elements of the Master of Arts in Teaching program and continue to infuse those principles into their practice. Through teaching practices, discussions and questions, action research, and purposeful reflective strategies, our graduates are showing they have become reflective practitioners making reflection a habit for themselves and their students.

While the above results from the surveys of our graduates gave us some good insights into the impact of the program and its components on the continued work of the graduates as teachers, we knew that it was not the entire story. We also needed to hear from the candidates in person how they describe their experiences. We organized a focus group and invited some of the local graduates to come and spend a few hours with us on a Friday afternoon, reflecting on their work in their schools and classrooms. The graduates that showed up ranged in years of experience from two years to fifteen years and represented a variety of schools, districts, and personal experiences. Several had been together in different cohorts but no one knew everyone so their personal experiences with the M.A.T. and M.Ed. programs were their shared experience.

What is Reflection?

We began our conversations with them by asking them to define reflection, to tell us what it was. After some moments of silence, Karen shared, "That is hard to answer. That is like asking us if we breathe! How now can any of us ever think about teaching without reflection?" As heads nodded in agreement, the first part of the group time was spent with them trying to define reflection. We quickly realized reflection had become so much of a habit that it would be more difficult than we had imagined for them to define it.

"It's working out the kinks, changing it, thinking about the process, understanding the obstacles." –Robin

"Making connections with your students, making it work for you and when it happens, it is smooth, easy. Continual implementation – it becomes the way you do things, not a mandate."- Jeremy

"Finding a deeper way based on what happens with the students. I always ask for feedback – every day. It is the closure for my classes. I have to ask and listen to them – they are the ones learning." - Anika

Jeremy continued talking about reflection saying, "It's not something you do in addition to… it's organic." The focus group discussed how reflection seemed to be embedded in what they did and not something separate or added on to their job. Karen said that it is inherent in what you do. "You don't sit down and write it in a journal." Jeremy said that describing it is difficult "It just happens. You don't notice it….unless it doesn't happen well."

The conversation soon turned to the culture of reflection in their classrooms and schools and the effects on their students. It seemed to them that they could not easily talk about reflection and the importance on their practice apart from their students. Listening to their students had become a part of the habit of reflection. They talked about the importance of including their own students in the process of reflection in two distinct ways. Several of them explained that their own reflections weren't complete unless they were using their students' reflections. Anika said that "My reflection comes when I'm reading their reflections," and Karen added, "When in doubt; ask the students." Yet, they all agreed that the ultimate goal was to teach their own students to reflect.

The group's conversation turned to how and why reflection was not working in schools. "It's the culture." Karen said "It has to do with fear with the new RISE (Indiana Teacher Evaluation System)." Jeremy said that the new teacher evaluation system made teachers feel as though they are "guilty until proven innocent" and that "someone's out to get you"- making teachers feel as though they have to use numbers to prove they are doing a good job, but the expectation is that they are doing a poor job". The graduates indicated that this made it very difficult to nurture a culture of reflection in their departments or schools such as what they had experienced in the Earlham College Graduate Programs in Education.

On the other hand, the members of the focus group shared stories that showed that M.A.T. and M.Ed. graduates, unlike other teachers, liked to talk about teaching, to reflect on teaching and often were the only ones talking in school professional development meetings. The focus group talked about the importance of trust and that you "have to have a similar language". They experienced that in the M.A.T. and M.Ed. program but not so much in their schools.

Robin said that "Numbers mask what you need to be a good teacher." The members of the focus group indicated that they understand the need to use data and numbers to measure student success but also see lots of things that are difficult to measure that are more important to them. They clearly said that they reflect on the numbers but also indicated that there were other questions inherent in their analysis of those numbers that led them to look at other factors when they reflected on what they needed to do differently to help students learn. When talking about the required quantification of learning to help evaluate teachers, the members said that often reflection became just analysis, that they saw looking at numbers/student scores just as analysis and not reflection and that it often became playing the game. "They need data, they get data. It's in the drop down menu," said Jeremy.

They understood the process of reflection as looking beyond the numbers, as being a "hopeful process, inherently proactive and optimistic", and one that "values students in a different way". However, they also acknowledged that those things, "the important stuff, is harder to put a number on."

What Reflective Teachers Do

Karen spoke of a paradox inherent in reflection "The more confident you are, the more you want to improve." Jeremy said that reflective teachers are not just "producing stuff, but doing something meaningful." It was in the conversations around the idea of reflection as being meaningful to their work that again heads were nodding in agreement. They each acknowledged that reflection had given them that increased tension of knowing how to go deeper and get the true answers from and about their students' learning while at the same time, knowing it was not enough, that there would always be room for improvement.

`   Karen shared her understanding of reflection as a teacher, always hearing those "voices in her head" telling her this might not work, or that this student needed more. The difference now was that she knew she could and should listen to those voices because "that is what good teachers do." The group responded that they are confident in themselves to ask the tough questions of their own practice, to listen to their "inner self" and to use their reflections to guide their practice. They agreed that reflection had become a habit of practice for them as teachers, something that was as "natural as breathing" and it had become almost impossible to separate it from their teaching self.

Awakening the Teacher Within

The embedding of reflection in our teacher education programs began with the intention and desire to "Awaken the Teacher Within" for each of our graduates. In doing so we developed programs and processes that led to an intentional approach to embedding reflective practice in teacher education. This study has shown that our candidates and graduates use reflection on a daily basis in varied ways. They reflect in, on, and about practice. They reflect on their lessons and on student assessment results. They reflect on professional development and professional readings. They reflect with colleagues and with students. Reflection has become so natural that it is difficult for them to separate reflection from their daily experience as teachers. Our graduates are showing us that they have become true reflective practitioners making reflection a habit of practice for themselves and for the benefit of their students.

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EXPLORING USE OF A REFLECTION LINE TECHNIQUE TO STIMULATE BEGINNING TEACHERS' PRODUCTIVE INTROSPECTION
by
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Abstract
We describe the use of a charting technique designed to support focused reflection over time. The method was developed in a small-scale study that followed six beginning secondary science teachers in the UK through their initial training year and into their first teaching post. Firstly, we outline perspectives on teacher learning upon which this work was premised, and offer a brief review of other charting methods that informed development of our 'reflection line' approach. An example is then presented to illustrate features of the technique, and advantages and limitations are discussed. It is suggested that the approach has potential to promote individuals' awareness of critical stressors from the outset of their teaching experience, and perhaps ultimately help towards productive handling of these.

In the UK, and elsewhere, many well qualified graduates and experienced professionals are attracted into teaching. And yet reports continue to reveal a shortage of teachers in certain subjects, particularly mathematics and science (The Royal Society, 2007 and 2011). Further, over 40 percent of starting teachers leave the profession within 5 years (Wilson and Demetriou, 2006). Research suggests that a mismatch between new teachers' expectations of their roles and careers and how these are subsequently experienced, can be influential (Kyriacou and Kunc, 2007).

Supporting beginning teachers as they learn how to operate both within the classroom and in the wider school environment is central to teacher education. Many programmes emphasise the importance of personal reflection as new teachers seek to evaluate and develop their own practice, aided by tutors and mentors. However, practical strategies for promoting such introspection, especially relating to affective experience, may be less fully discussed.

The study referred to in this chapter took place within the setting of a University science teacher education programme and followed six teachers during their initial training year and on into their first teaching post. It was part of a wider project, concerned with understanding and supporting teachers' early career experience, particularly regarding stressors that might contribute to early attrition. The work included design of participative techniques intended to help novices identify and reflect productively on critical events which occurred during their teaching practicum.

We begin by outlining perspectives on teacher learning and reviewing charting techniques which jointly informed the development of our method. Drawing on case study data, we illustrate use of the reflection line technique and discuss advantages and limitations of the approach.

It is increasingly understood that the process of learning to teach is deeply personal and inexorably linked to an individual's identity and life story (Carter and Doyle, 1996). Ttransitions involved are complex and demanding (e.g. McNally and Gray, 2006; Kelchterman and Ballet, 2002). The highly individualized nature of the process is underlined by the fact that the school-based experience is different for each novice teacher. Further, each new teacher brings to the context their own preconceptions about the nature of effective teaching and learning and set of expectations about how to develop the professional knowledge that they will need (Burn, Hagger, Mutton, and Everton, 2003).

At the outset however, beginning teachers are unlikely to appreciate the extent to which professional learning and teacher knowledge are embodied, contextual and embedded in practice. Eraut (2004) distinguishes two types of teacher knowledge: explicit and tacit. Explicit, codified academic knowledge is related to intellectual development and progresses through a hierarchy leading to greater levels of abstraction and a deeper understanding. Tacit teacher knowledge, on the other hand, is context specific and difficult to make explicit or to represent in a textual form because it is largely acquired informally through participation in complex classrooms. Such tacit knowledge is often so 'taken for granted' that teachers are unaware of its influence on their behaviour, let alone articulate it as a rationale for action.

Yet developing both forms of knowledge is important in learning to 'think' as a teacher (Furlong and Maynard, 1995), including, for example, taking account of where the learner is 'at', having regard for the nature of that which has to be learnt, and subsequently planning appropriate sequences of lessons which bring about student learning. Encouraging the recognition, sharing, and development of such knowledge is a key commitment within the field of teacher education.

Teaching is also an emotional occupation, and how a novice perceives and evaluates their own performance, contributes to their overall progress. While an individual's knowledge, skills, and experience are shaped through their life course to date, how these are brought to bear in any moment relates, in turn, with personal perceptions, goals and circumstances.

The individual's sense of self-efficacy, or beliefs about their own capabilities within a given role or context, can have a powerful effect on their enactment of that role (Bandura, 1997). Indeed, according to Tschannen-Moran and Woolfolk Hoy (2007), self-efficacy beliefs can become self-fulfilling prophecies for beginning teachers, validating beliefs either of capability or of incapability. Thus, self-efficacy may influence a teacher's persistence, enthusiasm, commitment, and teaching behaviour (Klassen, Wilson, Siu, Hannok, and Wong, 2013). A low sense of self-efficacy can contribute significantly to teacher stress and an ongoing perception of failure may ultimately lead an individual to step away from the profession.

Ryan and Deci's (2002) work suggests that if key psychological needs are unsupported or thwarted within a social context, there will be a detrimental impact on the wellbeing of the individual within that setting. They also show that development of strong self-efficacy beliefs are linked to the individual's experience of autonomy, competence, and relatedness within the setting. Tschannen-Moran and Woolfolk Hoy (2007) found contextual factors to be highly influential for new teachers, as well as verbal persuasion and availability of enabling resources. Teacher's self-efficacy beliefs appeared to be most malleable at the outset of their classroom experiences. This suggests that greater attention should be paid not only to the environment in which new teachers begin to operate, but also to helping them become aware of the psychological processes at play as they encounter helpful and difficult conditions.

The challenge for teacher educators is therefore to support beginning teachers not only in the development of teaching identity, pedagogical expertise, and enactment of a professional role, but to do so in ways that attend to the dynamics of wellbeing (Wilson and Deaney, 2010). One possible contribution would be the introduction of heuristic techniques which aim to focus participants' thinking upon particular aspects of the practicum that affirm, or undermine, their positive feelings of self-efficacy.

Reflexive Elicitation Techniques

It was from this perspective that we set out to devise a participative method that would (a) encourage participants' critical reflection upon their initial teaching experience, and (b) help us to access and explore these thoughts through further conversation. Recognising that simply reflecting on experiences in an unfocused way, without constructive support, can compound difficulties, we wanted to provide a scaffold which enabled affective implications of events to be identified and reviewed more readily. Also, since experience plays out within a time continuum, research techniques incorporating the temporal element as a principle component seemed useful to explore.

Different forms of timelines, grids and line drawing techniques have already been found to be effective as reflexive stimuli and research tools within the context of teacher education. Examples include the 'Life path' approach described by Korthagen (2004) where students draw a timeline indicating important events and persons that were – or still are – influential in their development as teachers (p.84). Similar techniques promoting introspective reflection include Denicolo and Pope's (1990) 'career rivers', 'snake interviews' (Cabaroglu and Denicolo, 2008), and 'rivers of experience' (Burnard, 2002), where each bend in a winding path represents a significant event. These diagrammatic approaches encourage identification of critical incidents over the life course, and can promote reflection on change in self (Burnard, 2004).

In a study with university graduates during their pre-service training to become teachers, White and Gunstone (1992) developed the use of 'Fortune lines' where participants drew lines representing their self confidence at different time points during the year. Peaks, troughs, and general trends were easily apparent from the diagrams, but the *reasons* behind the students' choices for the slopes were not apparent (p.118). More recently, Meijer, DeGraaf, and Meirink (2011) used a similar line drawing technique to examine how new teachers pictured their development, what they identified as key experiences, and how they coped with these.

Key experiences, events, or episodes may also be referred to as 'critical incidents'. In common usage, the latter term is usually associated with some unexpected or problematic interruption to regular activity. In teacher research, it has been used to refer to periods of strain and turning points that are brought about by surprise or shock (Burnard, 2004). However, Angelides (2001) helpfully characterises critical incidents as being not necessarily sensational events, but 'minor incidents, small everyday events that happen in every school and every classroom'(p. 431). Further, 'their criticality is based on the justification, the significance, and the meaning given to them' (op cit). Crucial here, is *who* decides what will count as critical, and why.

Subjectivity is inherent within the processes of identifying, collecting, analysing, and interpreting critical incident data. Providing an opportunity to reflect upon events and seek alternative perspectives and explanations – for example, through peer discussion, is therefore held to be of value in both disclosing tacitly-held understandings and strengthening trustworthiness of findings. Importantly, in the context of teacher education, such conversations may provide a powerful forum for professional development.

However, Lyle (2003) observes that an individual's capacity for direct reporting of introspective reasoning is an important consideration, and ideally the length of time between an event and its subsequent review should be as short as possible (p.862). It is here that use of video can be particularly effective. Even so, there may be conscious censoring of recall by the participant, or tendency to 'sanitise' accounts (Calderhead, 1981).

Thus, the context of recall may be influential upon an individual's reflection on events. For those working as teacher educators, mentors, or researchers – and indeed for the teacher her/himself, the challenge lies in recognising such interpretive filters, and perhaps even seeing beyond them.

Whichever form of media is used to stimulate recall, including the static charting techniques already discussed, we would question whether tacit processes within any moment of experience can ever be *fully* represented, articulated or conveyed. With this in mind, the approach described below was designed to offer a simple means of stimulating introspection and reflection both contemporaneously and retrospectively. We aimed to meet dual research and educative goals: engaging participants in reflexive activity while not imposing undue burden at a time when they would have a multitude of other calls on their time and attention.

The Reflection Line Approach

Our six participants were drawn from a cohort of science graduates at the start of a one-year course leading to a Postgraduate Certificate of Education (PGCE). Two had just completed their undergraduate studies, two were within 5 years of graduating and two were at mid-career stage. Leading to qualified teacher status, the programme included both subject and professional studies, with placements in two different schools.

In encouraging individuals to reflect upon, and share with us, what they were experiencing as they started out in their training year, we were particularly interested in the three dimensions associated with self-efficacy: relatedness, competence, and autonomy (Ryan and Deci, 2002), referred to earlier in this article.

The tool was constructed as a timeline grid. Columns represented weekly intervals over the period of a term. The grid was divided horizontally into three rows, headed respectively 'relating', 'self-confidence' (adopted in preference to 'competence' to distinguish from the 'standards' discourse) and 'autonomy'. In later versions, following user feedback, the first row was subdivided into 'relating to colleagues' and 'relating to students'. See Figures 1 and 2.

Each row was split into four further divisions, each labeled to represent levels of feeling relating to the particular dimension; for example, 'Very low' to 'Very high' on confidence. Participants were asked to review their experience at weekly intervals and place a marker (e.g. X) in the four relevant cells. Positional marking in relation to perceived levels relied upon subjective, self-referential 'measures', rather than ratings against a standardized scale. The method was not designed to produce quantitative readings, though it could be adapted to do so.

A set of prompts was provided as an adjunct to the grid, drawing on basic psychological need theory relating to workplace satisfaction (see Bard, Deci and Ryan, 2004). Prompts asked, for example, to what extent individuals felt that they were getting on well with people in school, and felt involved in their department (Relating to colleagues); to what extent they felt competent at what they were doing (Self-confidence); and to what extent they felt they had an input in deciding how they should do the job (Autonomy). We explained that prompts were not intended to be prescriptive, but were offered as a stimulus, to focus thinking towards experience relevant to the three strands. In addition, we suggested that participants annotate the grids with supplementary notes or memos describing any 'critical' episodes that had influenced their feelings relating to the dimension in question, to create a record that could act as an aide memoire both for continuing personal reflection and discussion at a later point. The format of these supplementary notes was left to the individual.
Procedure

During the first term, participants attended Faculty sessions for course teaching and were also introduced to their first school placements. We asked them to complete reflection line grids at the end of each week and suggested that they referred to the prompts if necessary for clarification about the focus of each of the

dimensions. At the same time, we asked them to identify critical events on their own terms, and to reflect analytically upon these.

Using the Faculty's virtual learning environment (VLE), participants posted grid documents in their personal folder after each update. Here they were available to the research team, who reviewed returns on a weekly basis.

Participants were interviewed at the end of the first term, then again at the end of the second and third terms, during which they completed an extended placement in a different school. They continued to complete reflection lines over this period. Subsequently we followed four of the teachers over 2 further years as they took up their first teaching posts, and interviewed them twice during that time. Rather than completing grids on a weekly basis, we asked them to use the same technique, but to represent the overall trend for each dimension over half term periods.

Prior to each interview, the interviewer (one of the authors) reviewed the relevant grids and noted points to explore further with the individual, for example any distinctive alterations of trajectory, or details of particular interactions. Interviews were semi-structured, around 90 minutes long. Since they took place within the remit of the wider project, and served its aims, discussion of the grids formed only a part of the conversation during each meeting. A small set of core general questions (for example concerning institutional arrangements and support) were included in each interview too. In the first interviews conducted, grids were discussed at the outset of the session. In later meetings however, as both participants (researcher and teacher) began to develop shared, situated understandings (Mercer, 2000), the grid came to be used more flexibly as a reference for the conversation which flowed around it.

The following sequence has been selected to illustrate how the tool acted as a prompt and aide memoire.
The extracts below show how the grids supported further reflection about events, both at the time and subsequently, in interview.

During Term 1, students started in their first placement school. Sam's grid (Figure 1) shows that his feelings in relation to colleagues and students dipped a little in week 8. At the time, Sam wrote the following reflection about events:

> Friday, 02 November
> This week had a bit of a confidence knock when a class just refused to listen to instructions and subsequently failed to get much across about their practical. 'Relating to students' therefore took a bit of a knock when it can be seen that 2 groups of 6 students who are diligent and attentive on their own, when combined and added to by a few key individuals can change so much. However, subsequently enjoyed a successful attempt at my own analogue idea for limiting factors that seemed to turn the lights on for a few pupils. Have already spoken to the individual pupils concerned and seen an improvement however, whole class not present due to [attending school] trips so will take this as a good opportunity to, next week, have a practice at re-asserting the classroom rules especially with regard to practical…
>
> I am enjoying A -level support role hope to be able to do a starter or similar for these once block placement begins. Assignments are now going to become a major focus to try and clear some work out the way before the block placement. Also looking forward to open evening on Wed and getting a chance to speak to parents/younger pupils.

Figure 1: Sam's grid for Term 1

	Level	Wk 4 1 Oct	Wk 5 8 Oct	Wk 6 15 Oct	Wk 7 22 Oct	Wk 8 29 Oct	Wk 9 5 Nov	Wk 10 12 Nov	Wk 11 19 Nov	Wk 12 26 Nov	Wk 13 3 Dec	Wk 14 10 Dec
Relating to colleagues and students	Very positive							X	X			
	Positive		X	X	X		X					
	Negative					X						
	Very negative											
Self Confidence	Very high							X				
	High		X	X		X	X		X			
	Low				X							
	Very low											
Autonomy	Fully in control									X		
	Partly in control								X			
	Somewhat in control		X	X	X	X	X					
	Not in control											

We returned to this episode during the interview later in the Term, when Sam was invited to revisit the grid:

> Interviewer: Shall we just have a look at the reflection line – what do you see as the significant parts on that?
>
> Sam: Something happened on the week of the 5th – let's have a look – I'll just have a quick read to remind myself – yeah, so that was a week that the class I had seen I'd taken some pupils out for an enrichment lesson just to get to know six of them, and I did that first of all with a very high ability group and it went really well – they did lots of work and they followed instructions – then I did it again with a lower ability group and, surprisingly, they did even more work - so that was good – and then the first lesson we came to team-teach, myself and another PGCE student, with obviously those two groups of children in the class, plus just a few others, and they ended up at one point just completely refusing to follow any instructions at all.
>
> It was a really – it was a bit of a confidence knock because I thought they would – given that when they were on their own they behave so well, I didn't realise that when they put them in a class situation they can behave completely differently, and I felt a bit like, 'So what am I going to do if I can say instructions and they just completely refuse to follow me? – a whole class'!

Clearly, the grid acted as a visual prompt and the notes provided an additional aide memoire. Sam was then able to elaborate on events in some detail. We were interested to know whether the incident had prompted any learning that could be acted upon in the future, and if so, what might have contributed to developing that understanding:

> Interviewer: Yeah. So did you get any feedback on that, or what happened?
>
> Sam: I think in the end I spoke to the head of the department, and also to the professional tutor, and they suggested some management techniques – and they worked out ok – but it was, basically, if you start sending a couple out, hopefully the rest come into line – but most of all making very clear at the start of the lesson, 'If you don't follow my instructions' – I think actually we started off with a set of rules and we projected them up, and we got them all to look at them one by one – so I think it was a bit of a transitional thing – maybe they wanted to see how far they could go with us, as

opposed to their normal teacher.

> So I guess it happens, but that was actually felt like a bit of a confidence knock – because previously to that it was like, 'Yes, this is easy, I can do this, excellent' and suddenly it was, 'No, hang on, it's not actually going to be that easy after all'.

It was evident that Sam had sought advice from more experienced colleagues about the situation, and later comments showed that he implemented some new strategies successfully. However, his account also reveals that these events had an impact at an emotional level too, in terms of challenging prior expectations and lowering confidence.

By the third term, we had altered the grids to include separate rows for relating to colleagues and relating to students. Sam noted that while there had been short term fluctuations, he had felt generally more positive in relating to students. Further, he explained how he had come to consider the effect of his own approach in relation to how the class responded:

> Sam: when you've … had three classes and they all seem to be playing up - you can't help but feel a bit negatively; on another hand it's sometimes it just seemed that it went really well and, strangely, it seemed to happen that regardless of the class – even if they were my very difficult class that I had a lot of issues with – it would seem that all my three different classes in one day would either seem to respond positively or negatively, which led me to believe that perhaps it was something about how I was dealing with it – possibly how much time off I'd had the night before I thought might be a consideration of it, in terms of how stressed you go into the classroom situation.
>
> Interviewer: Interesting… your observation about your own approach and your being perhaps more relaxed – and actually that was helpful
>
> Sam: Yes, certainly I think; it's a lot about how you respond – you can't do anything about how they turn up to the classroom but – if you yourself respond as positively as you can you can sometimes turn the atmosphere I think.

Figure 2: Sam's grid for Term 3

	Level	Wk 26 7 Apr	Wk 27 14 Apr	Wk 28 21 Apr	Wk 29 28 Apr	Wk 30 5 May	Wk 31 12 May	Wk 32 19 May	Wk 33 Half Term 26 May	Wk 34 2 Jun	Wk 35 Faculty 9 Jun	Wk 36 Faculty 16 Jun
Relating to colleagues	Very positive						X	X	X	X	N/A	
	Positive			X	X	X						
	Negative	X	X									
	Very negative											
Relating to students	Very positive						X		X		N/A	
	Positive	X	X	X		X			X			
	Negative							X				
	Very negative											
Self Confidence	Very high						X		X	X	X	X
	High	X	X	X	X	X		X				
	Low											
	Very low											
Autonomy	Fully in control						X	X	X	X		
	Partly in control	X	X	X	X	X						
	Somewhat in control										X	X
	Not in control											

Reviewing the grid before interview, we noticed that while 'relating to students' and 'self confidence' dipped a little in Week 32, feelings of 'autonomy' remained high, and asked Sam about this during the discussion.

> Sam: I think this is because I decided how I was going to teach the lesson so I was in command of how I did it when I went in … that particular very first class was a bit negative, but as I said after that then I adapted the techniques and it went up – in actual fact at the end one pupil said to me, 'That was a really great lesson', and he was ADHD un-medicated and had been previously sent home for aggressive behaviour … and so it was good to see him saying that he actually enjoyed part of that lesson, and that was again why I think I felt quite good about that.

Sam had been given increasing responsibility within his classroom teaching during the second placement; correspondingly, the general level for 'autonomy' was higher overall on the grid for term three than in term one. Despite setbacks, it seemed not only that Sam was feeling more able to take charge of classroom events, but importantly, becoming more aware of his own reactions towards them.

Participant Feedback

As well as discussing the content of the grids within our interviews, we asked participants to comment on use of the reflection line tool itself. (Pseudonyms are used in the following description.) All of them found the grids clear and easy to use. They appreciated having flexibility to make entries at any point, and reported that the onus to post returns at weekly intervals was a stimulus to completing them.

We were interested to find that individuals soon adapted the tool to their own style and use. Ellie preferred a structured approach to writing, and tended to work through the prompt headings suggested. Toby quickly "slipped from using them" to talk about "issues that I'd come across and in particular, things I thought were 'good'", while Gina "tried to write down 'what I think is a useful reflection for me'". Toby originally objected to the idea of categorizing "how confident I am feeling" on the grounds that "it probably zig-zags all over the place over the course of a week", but further acknowledged that the grid gave him "something to think about" as a starting point for other aspects of his work, and for the comments that he then recorded. Later he concluded that the tool had stimulated an awareness of different levels of thinking in relation to his teaching.

Participants noted that whereas reviews of lesson performance with their mentors mainly centred around "the nitty gritty' of meeting objectives, the grids gave "a lot more freedom to say how you're feeling". This was encouraging, given the project's aim to steer attention towards affective aspects of the practicum experience.

As weeks progressed, Sam mentioned looking back at the gradients of his lines "out of interest, just to see how things were going". He described how previous markers became points of reference: "Is that right, am I feeling better this week than last week, am I feeling worse in this respect?".

All but one of the participants said they found it relatively easy to reflect on their own thoughts and feelings but there was agreement that the process of writing aided deeper levels of reflection, in which they would not have otherwise engaged. Ellie commented on the sense of connection and security generated by communicating in this form:

> I have found it quite helpful, if only to give an outlet to how you're feeling – because then you can write it down… it's almost like talking to someone about it… you know that then someone out there, [the team], or whoever, has read it… so there's a kind of security blanket to it as well in some ways, although I know I could just email but it's slightly different'.

Clare, however, expressed reluctance to engage in further reflection on what she perceived as negative experiences:

> I can do it, but I don't like doing it too much otherwise I disappear into this world of my head…. If I've had a bad week then it tends to just make me feel worse because then you end up sitting and thinking about it… I'm quite introvert and thinky person anyway so if that sort of stuff is going on I don't always want to have to sit and put it on paper.

Nevertheless, Clare's grids often included interesting and thoughtful comment which we discussed during the interviews that followed. Conversely, Gina explained how reviewing her grid trajectories had facilitated a switch to more positive perspectives:

> It does help clarify, you know, one's feelings at the end of the week as well and then…you can think, 'Well, how do I want this week to be?' You know, if I felt a bit frustrated or annoyed about the class this last week, 'Well, what am I going to do to change this week?' I can actually look back and see that, no there *were* times when I felt really positive, and I can feel like that again.

These comments reveal how individuals adapted the tool to suit their own preferences. While some found it easier to engage in introspection than others, most found the guiding prompts provided helpful stimuli both to engage in reflective thinking about their contemporary experience, and on occasions, make adaptive changes in response.

Discussion

The reflection line and follow up discussions assisted the process of introspective reflection by providing a scaffold for novice teachers and tutors to use during professional conversations. The grids provided a clear display from which highs and lows could easily be distinguished and readily discussed. The stimulated recall interviews using the grid enabled the novices to self evaluate more accurately and helped them to articulate how they felt about the resources and demands of the experience during the practicum. Positioning of markers captured fluctuations of feelings in relation to the three dimensions of *relatedness, confidence,* and *autonomy* and indicated changes in both positive and negative directions. Tracing an individual's trajectories across the parallel dimensions enabled broad visual comparisons to be made both within and across cases.

Participants had free rein in deciding what to record in their written notes. Some treated these notes as journal entries, building up a systematic record, while others made more cursory jottings which they expanded upon during interview. The dual use of grid and notes offered advantages over the use of written journals alone, for example affective aspects were simple to represent by the placing of grid markers, and written accounts could be further contextualized through the medium of the grid.

One of the main differences between our approach and many instances of time-line examples in the literature, is the completion of grids prior to, rather than during, interview. Although we provided guidance relating to the grid dimensions, these prompts were less prescriptive than those used in reconstructive methods (e.g. Kahneman, Krueger, Schkade, and Stone, 2004). The timing at which grid material was written up, and content in terms of what participants chose to reveal, remained within their control; notes could also be expanded or edited upon reflection.

Reviewing their use of line drawing to explore new teachers' perceptions of their development, Meijer et al (2001) noted the danger of simple lines conveying too

general a picture and a lack detail. Similarly, White and Gunstone (1991) recognised that their fortune line method did not reveal the reasons for a student's choice of slopes. Combining annotated grids and follow-up interviews afforded us a powerful way of accessing fuller accounts of thinking.

For each interview, we printed out the individual's grids and notes and used these as a shared focus. One key consideration in arranging interviews was allowing sufficient time for the researcher to peruse the materials thoroughly before the meetings. Having sight of the grids in advance of the interview proved useful to us in several ways: it enabled us to identify episodes which might illuminate the wider focus of our research; it also allowed us to think about phrasing questions so as to elicit further reflection upon events reported.

We found that familiarity with an individual's grid and notes was crucial in being able to recognize, and follow responsively, links they mentioned during subsequent interview discussions. In our view, this opportunity for prior reflection was also of great value in enhancing the interviewer's interpretive sensitivity to what was being said, and the way it was conveyed (Taylor, 2001). Retaining the fluidity afforded by a semi-structured interview technique was helpful so that the conversation could take new directions as the participant was invited to elaborate upon what he/she had written.

On a practical note, we found that providing photocopies of grids on A3 paper afforded greater visibility in collaborative discussion, with the advantage of giving space to add further annotations. As a development of this, digital whiteboard tools could be used to display and develop an interactive grid record, where available.

The reflection line technique offers both flexibility, and the potential to yield rich data. Complementary methods which could be introduced in conjunction with the tool include narrative biography and visual records.

Our grids set weekly intervals, but the charting method lends itself to being scaled up or down, so data can be recorded at shorter or longer interval points, for examples minutes, days, terms or years. Perhaps customizable applications for personal digital devices (or mobiles) might be developed to provide platforms for grid-based tools such as the one presented here. Design decisions would include when data should be collected (fixed time, or event contingent – and if former, how often); over what length period, and what form prompts might take.

Limitations

In common with other participatory methods, useful outcomes of the reflection line approach are dependent upon the goodwill and commitment of those involved. Reconstructive methods have been shown to create considerable time imposition – of levels proportional to the granularity of analysis proposed.

While our approach adopts only moderate requirements for reporting, we are aware that engaging with these activities is likely to be an issue for busy teachers, especially during the very first stages of their career. The amount of time required to capture, and reflect upon, events and feelings in an effective and consistent way, especially over a series of short intervals, can create additional burdens for those whom we are seeking to support. While we believe the reflection line approach offers considerable potential as a tool both for research and professional development, we suggest that implementation should seek to balance relevant aims and methodological ideals in a pragmatic way.

There are time implications in relation to the interview component too. Given the breadth of scope for exploratory and formative conversations afforded by the grids, it is easy to underestimate the time required for discussion. This factor should be taken into special account when planning and conducting interviews. Likewise, researchers and mentors might heed the fact that discussions will necessarily be selective.

The susceptibility of recall methods to the distorting effects of time have already been discussed, but there are many other potential influences upon participant reflection that might affect how they portray themselves or others in any given situation. For example, individuals may be inhibited by anxieties about their remarks reflecting badly on their progress, particularly within a course that leads to accreditation. Again, others may try to present things in a more favourable light, so as not to be thought of as personally 'needy' or failing.

The desirability of fostering reflective practice is consistently underlined within the literature, and prominent in policy and standards documents, yet practical tools for supporting such activity seem few and far between. The scope of our research does not enable us to judge the extent to which teachers who took part may have sustained, over time, a reflexive awareness of the particular dimensions that we introduced. However, our evidence suggests that during involvement with the project, they were able not only to associate elements of their experience with the areas of relatedness, self-confidence, and autonomy, but to reflect analytically upon their feelings in relation to these. Furthermore, our example shows how, during interview, collaborative review of Sam's visual reflective record helped to elicit his own articulation of the professional learning that had taken place as a consequence of an incident which he had perceived negatively at the time.

Conclusion

We have shown how completion of the grids served as a stimulus both for introspection and for retrospective reflection as individuals reviewed their own trajectories. In setting out a critical account of our methodology, we have also aimed to provide information that could enable other researchers, teacher educators, mentors, and practitioners to take up or adapt the reflection line approach as an heuristic, for use in their own settings.

Drawing student teachers' attention to the dimensions of self-efficacy may afford considerable empowerment. While student teacher distress has impact both upon and beyond the individual (Gardner, 2010; Chaplain, 2008), increasing self-efficacy can reduce the stress of school-based practicum experiences (Klassen et al, 2013). The work reported here offers one practical way in which new teachers might be supported to become mindful of the causes of their stress so that they can go some way to lessening these effects through subsequent mediation.

Among additional possibilities are longitudinal applications, where completed grids could be harnessed as tools for further professional development. For example records could be revisited after a year or two has passed, to consider critical episodes in light of further experience. The activity could tap into an individual's developing 'expert' knowledge by asking them to consider questions such as 'What alternative perspectives can *I* now bring to bear on this situation?', or 'How would *I* advise a beginning teacher encountering the experiences and feelings that are revealed here?'.

We have reported on the use of a charting and interview technique designed to stimulate teachers think reflectively about their professional learning experiences. By incorporating dimensions relating to self-efficacy and focusing attention towards them, the tool enabled participants to become more alert to the situational features that impacted on their feelings of relatedness, confidence, and autonomy. We suggest that fostering such introspective awareness may help beginning teachers to contextualise their experiences, and draw upon them responsively, both to develop

resilience, and to inform the nuanced, deliberative judgments that characterise growing professional expertise.

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THE SYNERGY OF A THREE TIERED ASSESSMENT SYSTEM IN TEACHER EDUCATION AND ITS POWER TO CHANGE PROGRAMS
by
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Abstract

Teaching and learning no longer occur in silos within universities. Faculty from many disciplines are coming together to design assessment systems that represent the goals and values they share for their future candidates in education. This article addresses how one university in the Midwest has brought faculty together from the Colleges of Education and Human Services, Science, Liberal Arts and Agriculture to establish formative and summative assessments aligned to state and national standards, as well as their conceptual framework. While the initial impetus for this collaborative work was to meet requirements for national accreditation, the synergy of the group has propelled some members to consider what the Carnegie Foundation (Hutchings, P., 2010; Hutchings, P. and Shulman, L. 1999) refers to as the "Scholarship of Teaching and Learning".

The landscape of assessment practices at universities has changed over the last twenty years (Arends, R. I. 2006; Cochran-Smith, 2005). Prior to the accountability movement of the twenty-first century, many university assessment systems consisted of collecting syllabi from individual faculty members to verify that program goals and objectives were being evaluated in courses. Faculty taught their courses in isolation and the evaluations of student learning were only accessible to the course professor. However, faculty today are encouraged to share the results of student learning outcomes from their courses with their colleagues and to discuss how these results impact the future work of their programs of study (Hutchings, P., 2010; New Leadership Alliance for Student Learning and Accountability, 2012). The New World Dictionary defines the term synergy as "a combined or cooperative action." This article will describe the synergy of the assessment system at Southern Illinois University's (SIU) Teacher Education Program, which is dependent upon the cooperative action of the teacher education faculty to implement a system that is a comprehensive and continuous reflection of the candidates' progress and is based on a coherent framework (NRC, 2001).

Foundations of the Assessment System

Faculty from two committees, the College Assessment Committee and the Portfolio Sub-committee, developed the initial parameters for the current assessment system. The committees established a continuous system that would include formative and summative assessments guided by benchmarks. One goal was to assist the teacher candidates in their journey as they moved from 'novice' to 'expert,' as is defined by the National Research Council (2001) in *Knowing What Students Know*. This does not mean that we think our undergraduates will be 'expert' teachers by the end of their program. However, we hope they will have an understanding of teaching and learning within their discipline, they will apply this knowledge to their practice in various contexts, and they will synthesize and evaluate their experiences from coursework and field placements during their Capstone Portfolio presentations. The committees also used Bloom's Taxonomy (1956) as a model for the three tiers of the benchmarks, which is described further in a later section of this article.

We believe that our candidates come to us with prior knowledge about the act of teaching based on their personal experiences as a student. With this as a starting point, the faculty aim to scaffold our teacher candidates' understanding of teaching and learning using Vygotsky's (1986) model where the "more knowledgeable peer" guides the learner from "spontaneous concepts" to "scientific concepts." In this case, the "spontaneous concepts" are the teacher candidates' initial schema based on their prior experiences, and the "scientific concepts" are those explicated by faculty through research, standards, and theoretical models of education.

A second goal of our assessment system was to infuse the element of reflection from our college's conceptual framework into the assessment benchmarks. Dewey's definition of reflective action supports our beliefs that the faculty will guide teacher candidates as they connect theory and research to their practice. He said reflective action is the "active, persistent, and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the further conclusions to which it tends" (Dewey, 1933, p. 9). So, teacher candidates write reflection papers to accompany their portfolio artifacts at each benchmark.

With the beginning of an assessment framework in place, the College Assessment Committee and the Portfolio Sub-committee took their work public. They began by adopting an online, electronic assessment platform for the college. Using LiveText, the faculty began to see the assessment system come to life. At this point, administration suggested that the work of a few faculty members needed to be more inclusive and representative of all stakeholders engaged in the assessment process, hence the beginning of our assessment system.

The Teacher Education Program's Assessment System

Faculty from within the Colleges of Education and Human Services, Science, Liberal Arts and Agriculture work together to establish high expectations for students defined in course, program, and unit level assessments. Representatives from the various programs associated with teacher licensure meet monthly as members of the Unit Assessment Coordinating Council (UACC) to determine the processes and parameters for data collection at each level. The UACC also discusses revisions to the teacher education program based on the available program and unit data. At the program level, twenty-eight faculty members represent their individual programs at the UACC meetings. Our teacher education assessment system at the program level is based on a framework provided by various national professional organizations. At the unit level, members follow our progress towards meeting the standards established by the Illinois State Board of Education (ISBE) and the National Council for the Accreditation of Teacher Education (NCATE). As interest in data-driven decision making within the education community has increased in recent years (Marsh, Pane and Hamilton, 2006; Cochran-Smith , 2005), the UACC has served as the perfect vehicle for exploring student learning outcomes. Zeichner (2006) believes that this type of effort to broaden the institutional commitment to teacher education is critical to the future of college- and university-based teacher education.

The impetus for this collaborative work began with external pressures from the National Council for the Accreditation of Teacher Education (NCATE); however, the conversations today are moving in the direction of what the Carnegie Foundation has described as a Scholarship of Teaching and Learning (Hutchings, P., 2010; Hutchings, P. and Shulman, L. 1999). Shulman (1998) describes the Scholarship of Teaching as an intentional inquiry into the act of teaching based on evidence of student learning that is subject to review by professional peers. When the UACC

began to meet in 2005, the focus was on receiving updates from the NCATE Coordinator regarding the new requirements for accreditation. Today, the faculty meet monthly to review the conceptual framework, to identify key assessments, to discuss the validity and reliability of assessments, to share how data from these assessments has informed practice, and to discuss questions for future research projects. At a UACC faculty retreat in 2007, a subset of the larger group decided they wanted to better understand their teacher candidates' impact on pupil learning. So the six faculty members began a research project in which they conducted and analyzed interviews, observations, and capstone portfolio presentations of two cohorts of teacher candidates. Two research articles have been published based on this inquiry, a third article has been submitted for publication, and a fourth article is in progress (Mogharreban, C., McIntyre, C. & Raisor, J., 2010; Killian, J. E. & Glassett, K., 2013). The synergy of the smaller research group and of the larger UACC group has contributed to a culture focused on the scholarship of teaching and learning.
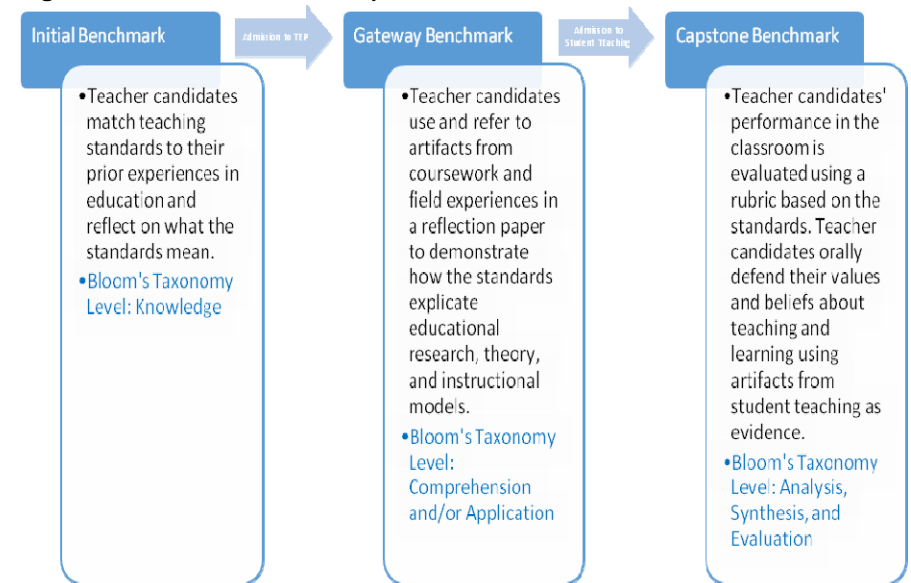
Teacher Education Assessment Benchmarks

One of NCATE's requirements is to develop an assessment system with clearly delineated benchmarks or transition points. In order to accomplish this goal, faculty designed a three-tiered assessment system that incorporates three benchmarks that collect data through the use of teacher candidate portfolios in order to monitor the developmental progress of teacher candidates' through the teacher education program. In a policy brief by the Assessment and Accountability Comprehensive Center, the authors define the purposes of benchmark assessments.

> Benchmark assessments often serve four interrelated but distinct purposes: (a) communicate expectations for learning, (b) plan curriculum and instruction, (c) monitor and evaluate instructional and/or program effectiveness, and (d) predict future performance (Herman, J. L., Osmundson, E., and Dietel, R., 2010, p.3)

The Initial Benchmark phase of the teacher candidate's program occurs prior to their admission to the teacher education program and includes the Initial Portfolio. During this benchmark, all candidates must successfully complete the "Introduction to Education" course. This course was developed in collaboration with four area community colleges since more than sixty percent of our candidates transfer from community colleges. The intent of the Initial Portfolio was to introduce candidates to the Illinois Professional Teaching Standards (IPTS). Course instructors provide candidates with clear definitions and examples of the standards. The candidates then use that knowledge to select artifacts to address the IPTS for their Initial Portfolio from the examples shared by the instructors. Finally, candidates summarize their understanding of the standards and the artifacts they have selected by writing a reflection paper in response to a set of guiding questions regarding their beliefs about teaching. Faculty hope these reflections will demonstrate Bloom's 'knowledge' and 'comprehension' levels on his taxonomy (1956). In addition, all candidates at the Initial Benchmark level must pass the Illinois Test of Academic Proficiency, pass the Initial Technology Competencies, pass a criminal background check, pass two basic English courses and have an overall grade point average of 2.75 as a prerequisite for admission to the Teacher Education Program.

Once students are admitted to the teacher education program, they enter the Gateway Benchmark phase. The Gateway Benchmark encompasses all coursework and clinical experiences encountered by candidates from admission to the Teacher Education Program until student teaching. During the Gateway Benchmark, candidates begin work on their Gateway Portfolio. The twenty-eight different teacher licensure programs created Gateway Portfolios to reflect their national content standards, as well as the Illinois Professional Teaching Standards. The goal for candidates at the Gateway Benchmark is to interact with these standards using artifacts from their course and field experience assignments. Our expectations are that the candidates will be able to address and reflect upon these standards at the 'application' and 'analysis' levels of Bloom's Taxonomy (1956). Each program has identified a set of artifacts that are required of their candidates for the Gateway Portfolio. Often, these artifacts are specific course assignments that have been identified by their NCATE SPA as "key assessments" for that program. In most cases, the required artifacts cover half of the standards within the Gateway Portfolio. The remaining artifacts are self-selected by the candidates from their course and field experience assignments. Faculty members guide candidates in their analysis of their course experiences to determine which assignments best represent the remaining standards. The decision to guide candidates in their selection of some artifacts is based on a previous research study (McIntyre, C. and Dangel, J. R., 2009) that analyzed the outcomes of this portfolio process. Candidates also include an unofficial copy of their transcripts and the results of their Illinois Content Test, which they are required to pass before advancing to student teaching.

When the Gateway Portfolio is complete, candidates write a second reflection paper in response to a set of guiding questions about their beliefs about teaching. Since these candidates have completed their program coursework, these guiding questions require more in depth reflections than those at the Initial Benchmark. The Gateway Portfolios and the Reflection Paper are assessed by the individual program coordinators or by a designee from that program. In order to successfully complete the Gateway Benchmark, teacher candidates must maintain a

minimum of 2.75 in all courses in their major, complete an FBI criminal background check, meet the TEP's dispositions as assessed by their cooperating teacher and clinical supervisor, and attain approval by the program faculty.

During the third and final benchmark, the Capstone Benchmark, candidates complete a Capstone Portfolio. This portfolio is organized around the core belief statements that have guided their previous reflection papers. Candidates respond to the following prompts:

1. I believe the goal of education…
2. I believe the role of the teacher…
3. I believe the role of the students…
4. I believe learning and instruction…
5. I believe assessment…
6. I believe parents, community members, and other professionals…

Teacher candidates collect artifacts from their experiences during student teaching to support their belief statements. They must independently decide how their beliefs and practices align with the Illinois Professional Teaching Standards and national content standards. At the end of student teaching, candidates come to campus over a three-day period in order to orally discuss and defend their Capstone Portfolios to a team of program faculty and field supervisors. This team evaluates the candidates' individual presentations and determines whether or not the candidate is ready to be certified in their field. At this point, candidates are expected to be able to reflect upon these belief statements at the synthesis and evaluation levels of Bloom's Taxonomy (1956). Candidates who are unable to "pass" their Capstone Portfolio presentation must meet with our Assessment Coordinator in order to remediate and address the weaknesses of their portfolio and/or presentation and must present their remediated portfolio at a later date.

Furthermore, student teachers must also complete the Student Learning Assessment Module (SLAM) as a means of assessing their impact on pupil learning. During one of their teaching units, student teachers assess their pupils' learning using assessments or evaluations appropriate for the content they taught and for the developmental ability of their pupils. The student teachers then must analyze the data and reflect upon how their instruction influenced the results, how individual pupils responded to the instruction and how they would teach the unit differently if given the opportunity. All teacher candidates must address the results of their SLAM during their Capstone Portfolio Presentations.

In addition to the oral defense of the Capstone Portfolios, candidates are assessed during student teaching by their clinical supervisors and cooperating teachers, and they must pass the Illinois State Board of Education's Assessment of Professional Teaching test, as well as meet the expected TEP's dispositions. The field evaluation of the candidates' performances and the APT tests are both based on the Illinois Professional Teaching Standards, which we believe our candidates must have an intimate knowledge of prior to graduation.

During the final week of each semester, candidates come to campus for a "Week of Transition" that allows candidates to attend special workshops on topics such as mock interviews, cyber bullying, job searches, handling disruptive students, legal issues, etc. It is during the Week of Transition that candidates defend their Capstone Portfolio as well as complete the Teacher Education Survey. This survey provides valuable data for the programs and unit as it reveals candidates' opinions and perceptions of the various courses and clinical experiences taken during their teacher education program. Finally, during this week many of the programs invite their candidates to participate in exit interviews in order to dialogue with them regarding their perceptions of the strengths and weaknesses of their programs.

Making Sense of the Data

This three-tiered benchmark approach to assessing our teacher candidates and programs has resulted in the collection of valuable data that spans their teacher education program. As a result, the state and national requirements for accreditation and our assessments of candidate learning have influenced the focus of monthly faculty meetings within the programs and within the UACC. Faculty members have reflected on their programs collectively to discuss and determine which key assessments best represent the knowledge, skills, and dispositions of their candidates. While some of the key assessments are pre-determined by the state and national accrediting organizations, the program faculty or the UACC determines other key assessments.

The data collected from the key assessments are disaggregated to inform programs of their candidates' progress towards meeting state and national standards. All data collected throughout the Benchmark process is warehoused in LiveText (an electronic, online assessment tool). While aggregate data reflect unit assessments, this data is also disaggregated within LiveText by our Assessment Coordinator to inform programs of the performance of their candidates. These disaggregated data include performance evaluations completed by clinical supervisors, disposition forms completed by field supervisors, cooperating teachers and program faculty members, and the Student Learning Assessment Module (SLAM). After a faculty member has assessed the candidates in their courses, a descriptive, statistical report can be generated that depicts the progress of the candidates' performance as it relates to the specified standards (see figure 2). The faculty member is then asked to submit a written reflection to the program coordinator that answers the following questions:

1. What does the report tell you about what the candidates' learned in relation to the program standards?
2. What does the report tell you about your instruction?
3. Does the rubric measure what it is intended to measure? If not, what should be changed?

Figure 2: Example of Assessment Report Generated by LiveText
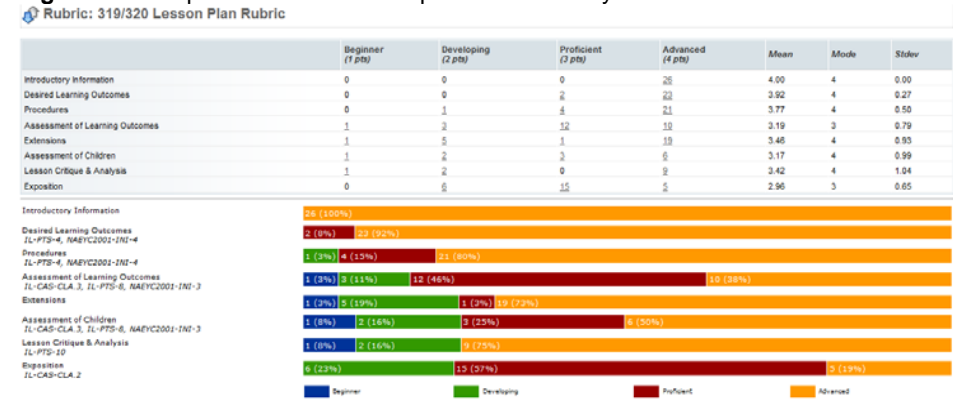
Data Driven Decision-Making

The data gathered through any assessment system is only effective when faculty reflect on the trends they find in the learning of their teacher candidates and on outcomes related to the curriculum or his/her teaching. In our case, program

faculty members come together annually to review all of the data reports and to discuss potential changes for the program. Program coordinators then submit their program reports to the NCATE Coordinator. In the spring, the NCATE Coordinator invites a few programs to share their program reports and the subsequent changes they made based on the collected data to the UACC.

Since the UACC's inception, nearly all of our programs leading to licensure have made modifications based on the data collected through the assessment system. For example, the early childhood faculty have gathered valuable data from their teacher candidates through the exit interviews. One of the major changes made by the early childhood education program based on student feedback has been to provide teacher candidates with the choice to student teach in the public school classroom for sixteen weeks. In the past, early childhood teacher candidates spent eight weeks in an elementary school classroom and eight weeks in SIUC's Child Development Laboratory.

The faculty in mathematics education discovered that data from the teacher candidates' regular lesson plans and technology lesson plans revealed that candidates need additional help understanding how to build extensions into their lessons, as well as how to question students in a manner that engages all minds and promotes learning. As a result, the secondary education mathematics methods course was revised to incorporate these teaching strategies.

In 2010, the English Education faculty noticed that the data revealed that over time their teacher candidates seemed to be scoring lower in the "constructed response" section of the Illinois' Assessment of Professional Teaching exam. The faculty questioned whether candidates lacked proper grammar or organizational skills in order to construct appropriate responses. They decided to conduct a more in-depth analysis of this problem in order to determine if course work needed to be bolstered in those areas.

Data from candidate performance on the SLAM has provided valuable assessment information for the Social Studies/History Education program. After analyzing candidate performance on the SLAM and Capstone presentations, the faculty implemented the assessment of historical thinking as a more significant topic in the social studies methods course in order to help candidates evaluate skills necessary in the social sciences. They now practice assessing historical thinking by scoring high school students' answers to essential questions with a scoring guide adapted from VanSledright et al. (2004). The Social Studies/History Education program now assist candidates to structure instruction and assessment around a recognizable curriculum built on concepts, generalizations, big ideas, or essential questions. With a purposeful curriculum in place, their candidates can assist their pupils to make connections across places and events and even see the relevance of what they are learning.

The UACC also reviews the effectiveness of unit assessments to determine what changes need to be made in the future. For example, UACC members are reviewing our Student Learning Assessment Module as programs have expressed concern that the current format does not match how their candidates are taught to assess student learning in the classroom, which became evident to program faculty during the Capstone Portfolio presentations. Programs such as early childhood education, special education, art education, physical education, and music are discussing alternative means to collect data that better reflect how professionals in those content areas assess student learning. These programs believe traditional paper and pencil tests are not sufficient for measuring the skills required to be effective in these fields.

In addition, data gathered from the candidates' performance on the SLAM indicated that there was a general unawareness of the concepts of formative and summative assessment as well as a lack of understanding of various models of assessment. Teacher candidates predominately used pre-test and test results to measure student learning. As a result, the general assessment course required of all teacher candidates moved from a focus on measurement to an assessment focus. In other words, candidates learn how to use assessments to inform learning and instruction rather than how to design valid items for a multiple-choice test. Teacher candidates' knowledge and understanding of this focus on formative and summative assessments is now evaluated in their Capstone presentation.

The assessment system designed and implemented by Southern Illinois University Carbondale's Teacher Education Program is fluid in the sense that members of the UACC are consistently examining and providing feedback regarding its strengths and weaknesses. As a result, nearly all programs have made some revisions to specific instruments, rubrics, data points and even courses in order to respond to the abundance of data collected during the three-tiered benchmark process. This process has allowed us to build a more effective and efficient assessment system that continues to strengthen our ability to make data-driven decisions about our teacher education programs and candidates.

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"WHAT WAS I THINKING?!"
USING A METACOGNITIVE TOOL TO IMPROVE TEACHER LEARNING
by
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Abstract
This paper describes an elementary education program's efforts to improve teacher candidates' learning through video reviews of their teaching. Faculty collaborated in the design of the Frozen Moment Video Protocol (FMVP) to prompt teacher candidates to critically analyze salient moments in teaching. Research indicates that teachers benefit from review, discussion, and analysis of videos of their teaching (Darling-Hammond, Wise, & Klein, 1999; Sherin & Han, 2004). The Frozen Moment approach differs from traditional video reflection tools by directing candidates to think about their thinking in self identified moments of classroom teaching. In prompting teachers to "freeze a teaching moment in time" in order to examine their thinking, the FMVP stimulates metacognition and thus contrasts with other video review approaches that prompt reflection on action. Promoting this metacognitive dimension in a video review creates a valuable mechanism for teachers to learn from practice (Hiebert, Morris, Berk, & Jansen, 2007; Sherin, 2002).

Teaching is a complex activity that entails an array of decisions that are not always easy to observe. When classroom learning activities are in full swing, teachers must attend to multiple sources of information as well as their own knowledge base in order to decide what to do. Thus, teaching involves managing a heavy cognitive load that can result in missed opportunities to learn from practice and/or lead to unexamined automatic decisions (Feldon, 2007; Feldon & Bordiujevici, 2004; Lin, Schwartz, & Hatano, 2005; Author, 2008). These cognitive load issues are at the root of the early career problems of enactment (i.e., fluidly executing common teaching practices) and complexity (i.e., resolving multi-dimensional ill-structured problems) that teachers often experience (Hammerness, Darling-Hammond, Bransford, & others, 2005). Concepts, tools, and practices that acknowledge these challenges and strive to help teachers negotiate them are important in the design of teacher learning and evaluation systems.

Stimulating Teacher Metacognition to Learn from Teaching
Fostering metacognition can be an effective way to help teachers address these challenges that arise from the cognitive load issues cited above (Bransford, Brown, & Cocking, 2000; Lin, Schwartz, & Hatano, 2005). Metacognition refers to thinking about one's thinking in order to monitor and evaluate progress in problem solving and/or learning situations (Brown, 1987; Schraw, 2001). Due to the ill-structured nature of teaching problems, Lin, Schwartz, and Hatano, (2005) argue that teachers need to develop adaptive metacognition which entails monitoring their own thinking in relation to changing environmental circumstances. Indeed, a metacognitive stance is typical of adaptive experts (Hatano & Inagaki, 1986; Lin, Schwartz, Bransford, 2007). In contrast to routine experts, adaptive experts monitor their understanding of events and act flexibly. Sensing the limits of their own knowledge, they develop questions to guide their exploration. Additionally, adaptive experts distinguish themselves by seeking opportunities to learn by actively looking

for tensions in their work. With this type of orientation, they are more prepared to learn from novel situations and avoid erroneously applying well-learned strategies to situations in which they do not apply.

Methods of video review and analysis have great potential to help teachers learn from their practice and acquire an adaptive orientation (Darling-Hammond, Wise, & Klein, 1999; Sherin, 2002; Sherin & Han, 2004). Video reviews typically focus teacher candidate attention on observable actions, such as the mechanics of instructional delivery and the dynamics of student behavior. While this focus is important, it can be augmented by the inclusion of a metacognitive component that can better facilitate teacher self-regulated learning (Lin, Schwartz, & Hatano, 2005). The approach we describe, the *Frozen Moment Video Protocol* (FMVP), directs teacher candidates to think about their thinking in critical teaching moments. Prompting teachers to "freeze a teaching moment in time" in order to examine their thinking creates a valuable mechanism for teachers to learn from practice. In this regard, a metacognitive approach to use of video review functions like a stimulated recall tool prompting teachers to remember what they were thinking about during a significant moment of teaching.

In making these thoughts and considerations explicit for examination and critique, the FMVP provides a forum for an analysis of the possible instructional decisions that there was not time or opportunity for in the midst of teaching. By focusing on thinking and decision-making, rather than simply actions and behavior, the FMVP creates an opportunity for teachers to question and expand their knowledge about particular teaching and learning contexts. Repeated practice with this type of review may help teachers form the metacognitive habits of mind characteristic of adaptive experts.

In addition to the theoretical value of a metacognitive approach to video reflections, this research was also driven by a practical matter, a general dissatisfaction with the way in which video was currently being used in our own teacher education program. Historically, candidates in our elementary education program videotaped a lesson and were then required to complete a form that emphasized reflection on actions. The resulting candidates' reflections seemed superficial in nature. Over time, the use of video in field experiences eroded to become a routine requirement to be fulfilled. The process became undervalued by faculty and teacher candidates alike, and the real potential of video and video analysis in support of candidate learning was not fully realized.

Consequently, we drew from the research on cognitive learning to improve the program's use of video reflection as a learning tool for teacher candidates. We designed the structured protocol (the FMVP) with the aim of focusing teacher candidates on their own thinking in critical moments of teaching. The intention was for this protocol to function as a stimulated recall of key decision-making moments in teaching, helping teacher candidates to elaborate the knowledge they drew upon in that moment, and ultimately, on the decisions they make. We expected that by prompting teacher candidates to think about their own thinking during these critical teaching moments, what we came to call "Frozen Moments," they would be able to move beyond superficial descriptions or judgments of action to more complex and potentially useful analyses that can better support meaningful professional growth and development.

Over the last several years, the Frozen Moment Video Protocol has been used by teacher candidates as they completed their practicum and student teaching field experiences. As part of our design based research project, a comprehensive review process was developed to examine the protocols and our team met throughout the research period to analyze candidate responses to the various

prompts that are embedded in the FMVP. Qualitative data from these protocols revealed a variety of insights, patterns, and themes which can inform teacher educators' understanding of the variations in candidate thinking and the ways in which a metacognitive approach to video review can support teacher learning and improvement of practice.

Theory Embedded in the FMVP Design

While the FMVP draws from current research on the role of metacognition in learning, it also builds upon enduring historical perspectives on the nature of thinking (Dewey, 1910). Figure 1 depicts a concept map of the thinking process cultivated by the FMVP as it aligns with Dewey's reflective thought cycle.

Figure 1: Metacognitive Thinking Stimulated by the Frozen Moment Protocol
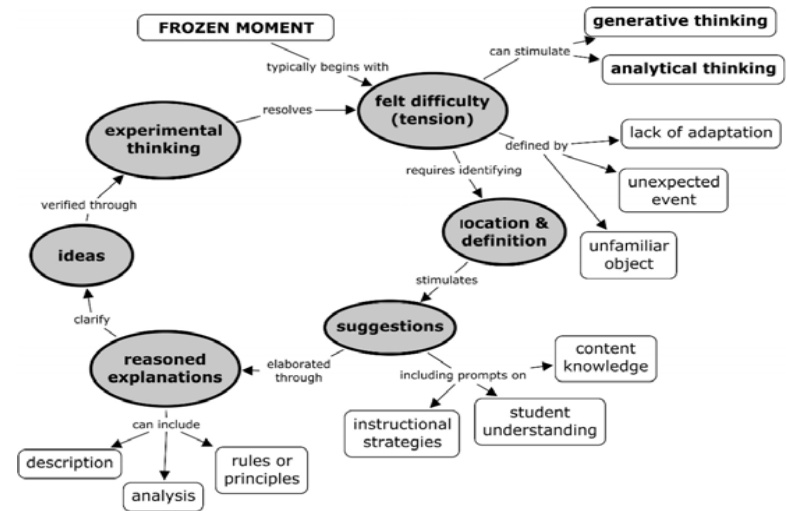
In Dewey's description, reflective thinking begins with a "felt difficulty," indicating that the planned course of action did not work as expected. The FMVP thinking process begins in the same fashion. Using a videotape of their lesson to stimulate recall, teachers identify a single moment that occurred during that lesson that they would like to freeze in time (i.e., a frozen moment) in order to unpack and examine more deeply. We encourage teachers to select moments that surprised or puzzled them, an examination of which may reveal challenges to effective decision-making. In identifying frozen moments in teaching, the FMVP prompts teachers to look for tensions in their work, a characteristic of adaptive expertise. For example, one candidate described her frozen moment like this:

"I had one moment after reading the story when I thought that my students might find the lesson too easy. The students seemed engaged in the story (they love being read to), but I was not sure they were buying into the ensuing discussion. I was trying to lead them in the direction I was hoping to go, but I suddenly felt a little bit off-balance. In that moment I wasn't sure if the discussion wasn't gaining momentum because the students already knew the information well or if the problem was something else….but I felt that I may have underestimated their prior knowledge."

Rather than describing the full range of activity in the classroom, the Frozen Moment prompts took this teacher candidate more deeply into a single moment of interest, and created space for her to examine why she felt "off-balance." As a result, this teacher candidate began an examination of her students' prior knowledge related to the lesson material, an important practice found to be much less developed in beginning teaching and a meaningful opportunity for real teacher learning.

Next, according to Dewey, reflection on a felt difficulty expands one's understanding of that moment through the mental associations onr makes to it. In making these moments explicit, individuals can more deeply identify and critique their knowledge, assumptions, and biases. Likewise, as candidates define their frozen moments, they are stimulated to recall what they were thinking and experiencing at the time of the specific event. The FMVP provides specific prompts that ask teacher candidates to consider how much they drew upon three knowledge bases critical to teaching; knowledge of subject matter, of students, and of instructional strategies. In elaborating their thinking in these particular ways, candidates can potentially arrive at a fuller explanation of their frozen moment as well as begin to expand and integrate their pedagogical content knowledge with regard to this particular teaching situation (Darling-Hammond & Bransford, 2005; Shulman, 1986).

Finally, in Dewey's model, the mental exploration of a felt difficulty can stimulate new ideas and experimental thinking that can help individuals to imagine how they might more effectively handle similar events in the future. Similarly, the FMVP guides teacher candidates to anticipate future events by asking them to pose two questions for further inquiry related to their frozen moment scenario. Asking candidates to pose these forward thinking questions encourages a productive learning orientation to further guide learning from practice. Additionally, the FMVP invites teacher candidates to apply what they learned from the reflective process to future lessons by asking them to critique and revise their lesson plan used during the recorded episode in light of the frozen moment analysis (A full version of the Frozen Moment Video Review protocol can be obtained by contacting the authors.).

Emerging Variations in Teacher Metacognition

Over the last several years, we have reviewed many FMVPs from teacher candidates and have identified three variations in the quality of metacognitive thinking revealed through the protocols. We conceptualize these variations along a continuum that functions as a rubric for providing feedback and support. At a basic level, teacher candidates used the protocol to simply *describe* the events that occurred during their frozen moment. In this, they stayed close to the moment and simply conveyed their experience in the classroom. These protocols contained few inferences, did not make connections to knowledge or information from course content, nor did they consider alternative perspectives. Candidates with these kinds of descriptive FMVPs exhibited limited metacognition and merely responded to the prompts by describing their actions.

In more sophisticated FMVPs, teacher candidates *analyzed* their frozen moment. In these cases, teacher candidates identified a tension that went beyond the surface details of events and began to explore that tension by considering additional knowledge or points of view. A variety of different tensions have surfaced in our review of FMVPs. For example, some teacher candidates identified a tension between their need to maintain control of events and their simultaneous desire to distribute responsibility to students. Another common tension reported by candidates involves decision making for a particular student versus decision making for the class as a whole. In making such tensions explicit, candidates deconstructed elements of the complexity they encountered in the classroom in ways that made

sense to them. The FMVP prompts encouraged them to access their knowledge and/or experience related to students, instruction, and/ or curricular content in order to examine their thinking in the moment and consider alternative decisions. As they did so, they elaborated their schema for those particular situations and created a "local fix" that resolved the tension in the context from which it arose.

In the third and less frequent variation of metacognitive thinking, teacher candidates used the FMVP process to *generate* more abstract visions for future decision-making. In these protocols, teacher candidates went beyond the specific event and generated abstract rules or principles that could help them when they encounter similar moments in the future. Teacher candidates responding in this way seemed to be using the FMVP to build their own personal theory of practice that could guide them in similar moments and in future efforts to learn from practice.

A Potential Learning Progression in Teacher Metacognitive Thinking

The three variations in metacognition captured by the FMVP can be conceptualized as a learning progression. Learning progressions are anticipated pathways learners take in developing increasingly complex thinking in a domain, in this case teaching (Heritage, 2008). They indicate a novice to expert trajectory and provide the conceptual underpinnings for formative assessment, informing the nature of feedback needed to support continual teacher learning (Heritage, 2010; Popham, 2011). Figure 2 represents an emerging learning progression for candidates' metacognition based on FMVP responses. Variations in the metacognitive thinking along this learning progression reflect how candidates refer to three important teaching knowledge bases alluded to earlier; curriculum content, student knowledge, and instructional approaches. These knowledge bases are considered essential aspects of pedagogical content knowledge (Shulman, 1986). Well developed pedagogical content knowledge can be described as a tight integration of these knowledge bases for particular teaching situations and is increasingly apparent as candidates move along the learning progression (Salmon, Rossman, Kemeny, & Winter, 2008).

Figure 2: Potential Progression Framework for Frozen Moment Video Reviews

Descriptive   Analytical   Generative
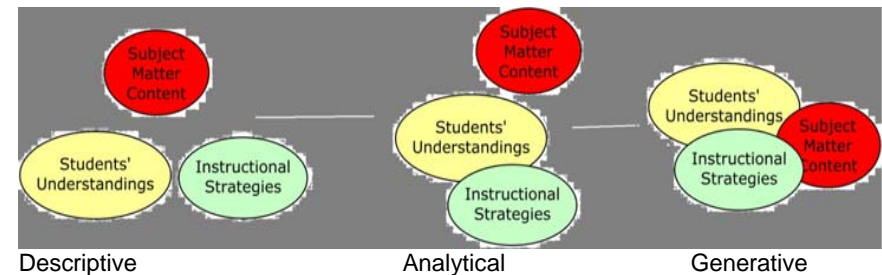
For example, FMVP responses at the descriptive end of the learning progression tend to focus on one knowledge base at a time, displaying no integration between these knowledge bases and very little metacognition. In fact, some teacher candidates struggled to identify a felt difficulty at all. These teachers failed to adopt a metacognitive orientation to their teaching.

In responses falling further along the progression (i.e., analytical thinking), teachers display more metacognition by identifying a decision-making tension involving two or more knowledge bases. In resolving the tension, teachers typically further integrated this knowledge. For example, teacher candidates often identified

frozen moments in which they became aware that they had misjudged their students' prior knowledge, either by overestimating or underestimating what her students could do. They saw this tension as a mismatch between their instructional approaches and their students' understandings. In analyzing this mismatch they began to integrate their knowledge of their students and their knowledge of instruction in this particular teaching context. At this level of metacognitive thinking, candidates begin to connect these knowledge bases in order to analyze and interpret their frozen moments.

Other FMVPs contained responses that seemed to fall further along the progression (i.e., generative thinking). In these instances, candidates showed a level of metacognition that made explicit multiple knowledge bases, attempting to coordinate their knowledge of instructional strategies, their knowledge of their students, and their knowledge of the content to form a framework for future decision-making. In this regard, the FMVP created the opportunity to examine and to forge new connections between these three knowledge bases. Such explicit conceptual connections made in the context of an actual teaching experience enable candidates to think beyond their frozen moment and begin to construct a framework for their practice. It is precisely these kinds of important conceptual connections that can emerge from a metacognitive approach to one's practice, like that cultivated by the FMVP.

Teacher development along this learning progression will require an investment time beyond initial teacher preparation. With the right tools and tailored approaches to mentoring and coaching, the complexity of the classroom can become a natural learning environment. The FMVP can serve as a formative assessment tool in such a learning context. While further design research on this learning progression is needed, this model does provide a useful framework for the formative assessment of teachers and can guide the selection and use of tools within a larger teacher evaluation system (Heritage, 2008).

Variations in teacher metacognitive thinking along the learning progression imply different levels of support and feedback for meaningful teacher learning. It seems clear that candidates who simply describe events would benefit from feedback that helps them identify and examine critical moments (or missed moments) of decision-making. With the Frozen Moment approach, mentors can help candidates identify decisions and their knowledge base related to those decisions, a first step in becoming metacognitive. Such coaching ought to sharpen beginning teachers' awareness of their own knowledge and skill in relation to particular teaching-learning events and other perspectives, decisions, and actions they may want to cultivate and apply.

Further, candidates who already display analytical thinking may need less intensive coaching regarding the selection of robust frozen moments. However, these candidates may need more support in deeply analyzing their moment using multiple perspectives, generating alternatives, abstracting principles, and seeing the future implications for practice. Teachers who reveal generative thinking in their FMVPs would seem well prepared to benefit from scaffolded opportunities to test out those emerging principles and rules of practice in new contexts and evaluate their effectiveness in supporting student learning.

More research is needed to develop these tailored approaches to coaching and test their efficacy in facilitating teacher and student learning. In any case, we maintain that a candidate's ability to identify a critical moment embedded in a classroom learning episode that has the potential for deep thinking suggests an important readiness to learn from practice that is worth documenting. Indeed, discerning the presence or absence of a candidate's ability to identify personally

critical frozen moments may signal a readiness to learn from teaching, a potential benchmark on the road to adaptive expertise (Bransford & Schwartz, 1999; Schwartz & Martin, 2004; Darling-Hammond & Bransford, 2005).

Conclusions

The Frozen Moment Video Protocol is intended to foster candidates' adaptive metacognition in critical decision-making moments in teaching. This approach differs from other video review methods in that it focuses on thinking as opposed to action. It reminds us that teaching is more than performance and that analysis of teacher thinking is an important complement to an analysis of action (Danielson, 2007). It also highlights the value that a single classroom moment can have when examined from multiple vantage points for the purpose of deep understanding of teaching effectiveness. Embedding this metacognitive exercise in formative evaluations of teaching provides an opportunity for teachers to step back from the complexity of teaching, analyze their thinking and decision-making, and make conceptual linkages unavailable to them in the moment. Use of FMVP structures a learning environment in which candidates deliberately learn from teaching in a way that is well aligned with recent calls for a practice-base theory of teacher preparation (Ball & Forzani, 2010; Grossman, Hammerness, & McDonald, 2009).

We believe that the Frozen Moment Video Protocol holds promise as a vital component in teacher learning and evaluation systems. Designed around the selection of personally salient teaching moments, the FMVP leverages the complexity of classrooms to enable teachers to learn from practice. As FMVP responses can be classified along a progression of metacognitive thinking, they can guide formative feedback in the evaluation of teacher candidates and provide a useful benchmark for tailored approaches to instructional coaching and support. In this way, the FMVP provides a context for nurturing teacher adaptive metacognition with potential to enhance teacher decision-making, positively impact classroom practice, and ultimately, improve student learning.

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AN ANALYSIS OF THE IMPACT OF TEACHER QUESTIONING ON THE LEARNING ENVIRONMENT
by
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Abstract
This study of fifty second, fourth, sixth, and eighth grade teachers along with their students was completed to determine the impact of the type and frequency of instructional questions on the learning environment. Analyses of the data revealed that teachers asked many more lower than higher level questions, teacher modeling and inquiry were methods associated with higher levels of questioning, and as teachers asked more questions students' time on task increased and rebellion decreased. The authors developed the concept that a teacher's use of questions is an important factor in developing a positive teaching-learning environment. Implications for teacher educators are included.

Questioning has long been recognized as a vital, important strategy most teachers use to conduct instruction. Over 100 years ago, Stevens (1912) reported that teachers spent 80 percent of their day asking questions. More recent research suggests that teachers spend anywhere from 35 percent to 50 percent of their instructional time conducting questioning sessions (Cotton, 1988). The sheer number of questions teachers ask, ranging from 300 to 400 per day, emphasizes the fact that questioning students has remained a primary way that teachers conduct instruction (Leven & Long, 1981). Burden and Byrd (2010) suggested that teachers may rely on questioning to such a high degree simply because it feels comfortable and familiar to them.

Historically, research has been completed on a number of variables related to questioning: 1) the frequency that teachers ask questions; 2) the kinds of questions teachers ask; 3) the impact of those questions on student learning and other outcomes; 4) the real purpose of questions; and 5) teachers' and students' perceptions of the questions they ask. Fewer studies, however, have examined the relationship of teacher questions to the broader context of classroom interaction (Wilen, 1991). The present study addresses this concern and focuses on how the use of teacher questioning affects teacher-student interactions in the classroom.

Classifying Questions
What is a question exactly? Cotton (1988) defines a question as a sentence that has an interrogative form or function; in classrooms, questions are used as instructional cues or stimuli that carry forth messages to students about the content or the teacher's directions. Questions can be further categorized by their type and purpose. For example, classic research by Gallagher and Aschner (1963) is often cited when discussing levels of questioning. Using the original concepts of cognitive levels developed by Bloom, Engelhart, Furst, Hill, and Krathwohl (1956), Gallagher and Aschner described four cognitive levels of questioning: cognitive-memory, convergent, divergent, and evaluative; they also noted that a fifth type of question existed that was essentially non-instructional: routine questions. Of the instructional

questions, cognitive-memory and convergent have only one possible correct answer and are referred to as low-level questions. Divergent and evaluative questions, that are considered high-level, have more than one possible correct answer.

In a fashion similar to Gallagher and Aschner, Martin (2003) suggested there are both open and closed questions. The former refers to queries that elicit more elaborate, fully-formed answers; closed questions garner quicker, one-word responses, usually made by a single student.

Brualdi (1998) also categorized questions in a way very similar to Gallagher and Aschner's method. Brualdi focused on the intellectual skill required of students when answering the questions. For example, in defining what makes a good question, Brualdi contrasts low-level to high-level questions. Low-level questions are those based on facts or information that can be easily memorized. High-level questions, on the other hand, require students to think in more complex ways and use reasoning to solve problems, analyze, or evaluate.

Burden and Byrd (2010), like Gallagher and Aschner, categorized questions according to the learning domains identified by Bloom, Engelhart, Furst, Hill, and Krathwohl (1956). Furthermore, Burden and Byrd identified three types of instructional purposes for questioning: focusing, prompting, and probing. Focusing questions draw students' attention to the day's lesson or on the material being learned. Teachers use prompting questions to assist students during discussions; they are usually a reworded version of the original question and may include clues or hints that can help students who get stuck. Finally, probing questions encourage students to elaborate and provide an explanation or rationale for why they answered a question in a particular way. "Could you explain that more fully?" could be asked to elicit clarification and guidance about students' knowledge of the content.

Ainley (1987) describes three types of questions, each in terms of what the teacher is trying to accomplish: Test Questions, Genuine Questions, and Provoking Questions. Teachers already know the answers to Test Questions, such as "What is a metaphor?", but they direct these questions to students as a type of formative assessment. Building upon the basic facts determined by Test Questions, Genuine Questions are those that the teacher asks to determine if students understand the concept by locating or using the information. "What metaphors did you find in this passage?" is one example of a Genuine Question. "What would you do in that situation?" is an example of a Provoking Question that teachers might ask to encourage students to investigate, make judgments, or evaluate.

A number of researchers have followed up on this earlier work focusing on types and levels of questions; a major interest has been the relationship between the types and levels of teacher questions and student achievement. Contrary to what one would intuitively believe, teachers' higher-level questions do not necessarily yield higher levels of student achievement (Cotton, 1988). For example, Wilen (1991) and Arends (1994) found no difference between high level and low level questions relative to student achievement. In their summary of research on classroom questioning, Brophy and Good (1986) concluded that higher-level questions were not significantly better than lower-level ones; however, they did note that teachers ask more divergent questions when teaching complex, difficult material. Bedwell (1975) found there were no significant differences between the essay-test scores of 4th and 5th grade students whose teachers purposely included application, analysis, synthesis, and evaluation level questions in their teaching and those students whose teachers only used knowledge and comprehension-level questions. In fact, only the students' grade level appeared to have any effect; that is, the 5th grade students outperformed the 4th grade students on each of the three types of tests used in the study.

However, some studies have suggested that teachers' questions do have some impact on student achievement (Brophy & Good, 1986; Ellis, 1993; Wilen & Clegg, 1986). For example, in his classic research, Rosenshine (1978) found a positive relationship between questioning and student achievement. Buggey (1971) conducted a study to determine what impact the level of teachers' questions has on second-grade students' test performance. On a 30-item multiple choice test, the group receiving 70 percent higher cognitive questions outscored the other two groups, and the group receiving 30 percent higher cognitive questions outperformed the control (non-scripted lessons) group. In a more recent investigation, that did not use test scores as a measure, Matsumura, Slater, and Crosson (2008) found that the degree that teachers pressed their 6th and 7th grade students to explain their thinking by asking more thought-provoking, higher-level questions was indicative of more challenging, rigorous discussion; hence, this kind of instruction was positively related to student participation in class. These authors further suggested that the quality of students' participation can be predicted by the degree that teachers pressed students to explain their thinking.

Even with the mixed results surrounding teacher questions, there is evidence that questioning students is a valuable instructional strategy both for helping them learn factual information (Cotton, 1998) and for helping lower-achieving students make proportionately similar gains to their higher-achieving peers (Zohar & Dori, 2003). Teacher questions also appear to be particularly beneficial to non-native students. Hill and Flynn (2008) found that using high level questions when teaching English Language Learners will more fully engage these students in learning both the language and the content.

Questioning and the Learning Environment

Several researchers have attempted to better explain the teachers' role in asking questions, and then responding to their students' answers. Because questioning is a direct instructional strategy, teachers can deliberately modulate the course of instruction simply by the questions they ask. Moreover, since questions have implications for how students react, respond, and behave toward their peers and the teacher, they may also have implications for how well that teacher carries out instruction, and ultimately, how his or her teaching is assessed. Since the current study examines teachers' questions through the lens of classroom climate, a brief look at the research surrounding teachers' use of questions to redirect, probe, or reinforce students' responses seems particularly relevant.

Webb, Nemer, and Ing (2006) found that student questioning behavior mirrored teacher questioning behavior. In this study, teachers tended to use mainly low level questions, and students tended to copy their teachers' use of questions when directing questions to one another. The research of Gillies (2011), who also examined communication in small groups, supports the findings of Webb, Nemer, and Ing (2006). Savage (1998) suggested that if teachers want students to engage in higher level thinking and talking, they need to guide and scaffold high level questions in their communications with students.

Students' responses to their teachers' questions are typically indicative of the type of question itself; for example, lower-level cognitive questions tend to encourage lower-level responses while higher-level questions induce more complex, thoughtful ones. For example, in their study of twenty elementary teachers who used a self-instructional training module to improve their questioning techniques, Sitko and Slemon (1982), found a strong correlation {$r(18) = +.95$ ($p < .001$)} existed between the percentage of high-level questions teachers ask and the percentage of high-level responses given by the students. Thus, as Sitko and Slemon hypothesized, the

teachers managed (through their questioning) to increase significantly the students' performance, in this case, the percentage of high-level answers they provided.

Mangano and Benton (1984) also explored how teachers' questions influenced students' responses. These researchers found that teachers whose students had higher mean test scores asked fewer questions than the teachers whose students had lower mean test scores. However, the teachers of the higher performing students used a far greater percentage of probing questions with their students (.33 vs. .08). Also, it was found that the teachers of the higher scoring students followed their students' responses with acceptance 40 percent of the time and with praise 2 percent of the time. In contrast, only 18 percent of the students' responses in the low-mean group were followed by acceptance; 4 percent were followed by praise. Therefore, the researchers concluded that not just the number and type of question was seen as significant. In addition, the way that the teachers responded to their students' answers was also a critical component of the learning environment.

Method

The design and implementation of this study was a collaborative effort between university researchers and school district personnel. As noted in the Standards for Teacher Educators, developed by the Association of Teacher Educators, such collaboration is vital in the improvement and teaching, research, and student learning (Houston & Fisher, 2008). The aim of this study was to analyze the use of questioning techniques employed by a sample of second, fourth, sixth, and eighth grade teachers. Special attention was given to: 1) the relationship between teacher questioning and types of instructional strategies used, 2) the relationship between teacher questioning and student and teacher interactions, and 3) the impact of teacher questioning on teacher and student task behaviors. The following research questions guided the inquiry.

1. What are the types and frequencies of questions being asked?
2. Do significant relationships exist between teacher questioning and the instructional strategies employed?
3. Do significant relationships exist between teacher questioning and teacher-student interactions?
4. Do significant relationships exist between teacher questioning and the frequency of student on-task behaviors?

Participants

To be included in the study, a teacher must have taught a minimum of three years, completed a traditional college preparation program, and met No Child Left Behind Act of 2001 (NCLB, 2002) standards for being highly qualified. All teachers in this study taught in the same rural school district located in the southeastern United States. In the elementary schools, of the 17 teachers assigned to the second grade, 14 teachers were White, and three were Black while 16 were female and one was male (White). Of the 17 fourth grade, 12 teachers were White, and five were Black while all 17 were female. In the middle level schools, eight teachers were assigned to sixth grade and eight were assigned to eighth grade classrooms. In the sixth grade settings, seven teachers were female and one was male; in the eighth grade settings, six teachers were female, and two were male. There were only two Black middle level teachers, both of whom were male; one taught sixth grade and the other taught eighth grade.

There were 588 elementary students assigned to the 34 second and fourth grade teachers with an average class size of 17.3 students. Sixth and eighth grades were departmentalized and each teacher taught four sections of their specific content. A total of 628 middle level students took part in the study because each teacher was observed at least once in each section (some students were observed in more than one teacher's classroom). In the middle level settings, class sizes varied from 14 to 23 across schools. All second-, fourth-, and sixth- grade classes were heterogeneously grouped. The eighth- grade students were grouped homogenously in mathematics and English, but they were grouped heterogeneously in science and social studies. The students in this study lived in a rural school district characterized by high poverty and high drop-out rates. Of the students in the total sample, 37 percent were White, 58 percent were Black, and 5 percent were other ethnicities.

Procedures

Data for use in this study were collected during 40 minute observational segments. Six observations took place in each of the 42 classrooms for a total of 240 minutes, or four hours, per classroom. The observations were unannounced and scheduled throughout the day.

The frequency and cognitive levels of teacher questions were coded using the previously discussed Gallagher & Aschner's (1963) classification system: cognitive memory, convergent thinking, divergent thinking, and evaluative thinking. A cognitive memory question requires the recall of previously learned and memorized knowledge with only one acceptable, correct answer. A convergent thinking question requires the respondent to put facts or concepts together in order to obtain the single correct answer. A divergent thinking question requires higher levels of thought by organizing elements into new patterns that allow for more than one possible correct answer. An evaluative thinking question refers to a two-part intellectual procedure that requires one to make an intellectual value judgment and provide reasons to support the judgment; more than one correct answer is possible.

The frequency and types of instruction were coded as direct instruction or indirect instruction. Direct instruction includes lecture, drill, modeling, brainstorming, and teacher-led instruction. Indirect instruction includes learning centers, cooperative learning, inquiry, and laboratory (Hunt, Wiseman, & Touzel, 2009).

Specific classroom interactions between teachers and students were observed to determine if the amount and types of questions asked had an impact on these interactions: *teacher task, student task, student rebellion, and teacher retreating*. Teacher task behavior occurs any time the teacher provides verbal information concerning a topic under study, asks students content related questions, or answers content related student questions. Student task behavior, like teacher task behavior, occurs any time a student provides verbal information concerning the topic under study, asks a content related question, or answers content related questions. Student rebellion is a behavior that occurs any time a student fails to follow written or verbal rules from the teacher regarding correct behavior in the classroom (i.e., the student misbehaves). Teacher retreating takes place when the teacher fails to interact with a student who is exhibiting student rebellion in order to correct unwanted behavior taking place in the learning environment.

Five time-on-task scans were completed every eight minutes starting on minute eight and ending on minute 40. The observer scanned the classroom from right to left noting the number of students obviously off-task as a fractional part of the total number of students present in the classroom when the scan was conducted.

All data were collected by four college faculty members who are former classroom teachers and have been teaching and/or supervising field experiences in teacher education programs for a minimum of 3 years. Data collectors were trained during a half day workshop during which they carefully reviewed and discussed

operational definitions and codes and recorded observations of a classroom videotape. Inter-rater reliability was determined to be 97.1 percent during a pilot observation in one second grade classroom before beginning data collection.

Results

Data analyses were completed to investigate the relationship between questioning and classroom climate. Several components of classroom climate were examined to better understand how questioning relates to specific aspects of the teaching-learning environment.

Types and Frequency of Questions Asked

As seen in the Table 1 and Table 2, teachers asked considerably more lower level questions (cognitive memory and convergent) than upper level questions (divergent and evaluative). It is important to note that lower level questions were asked approximately three times more often than divergent questions and more than six times as often when compared to evaluative questions.

Table 1: Observed frequency of cognitive memory and convergent questions

Number of questions per visit	Percentage of teachers asking that number of questions	Percentage of teachers asking that number of questions
	Cognitive Memory	Convergent
0 – 25	12	6
26 - 50	24	18
51 - 75	26	30
76 - 100	16	16
101 - 125	10	14
126 – 150	8	8
More than 151	4	8

Table 2: Observed frequency of divergent and evaluative questions

Number of questions	Percentage of teachers asking that number of questions	Percentage of teachers asking that number of questions
	Divergent	Evaluative
0 – 10	14	72
11 – 20	30	22
21 – 30	24	4
31 – 40	14	2
41 – 70	18	0

Questioning and Instructional Strategies

An examination of Table 3 indicates a significant correlation exists between the number of questions asked and the use of drill, modeling, and inquiry. As drill was employed, the amount of higher level (divergent and evaluative) questions significantly decreased. The use of inquiry was related to a significant increase in the amount of evaluative questions asked while the use of modeling was related to significant increases in both convergent and divergent questions.

Table 3: Correlation between teacher questions and instructional strategies

	Cognitive memory questions	Convergent questions	Divergent questions	Evaluative questions
Drill			-.283*	-.319*
Modeling		.484**	.338*	
Inquiry				.489**

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

Questioning and Teacher-Student Interactions

Both social and instructional behavior was found to be correlated to the use of questions. Instructionally, as indicated in Table 4, the number of convergent, divergent, and evaluative questions asked was significantly and positively correlated with the number of student task interactions. That is, as teachers asked more convergent, divergent, and evaluative questions, students were engaged in asking and answering questions and discussing content more frequently. Finally, Table 4 illustrates that social behavior was also correlated to questioning; the amount of student rebellion is significantly and negatively correlated with the number of evaluative questions.

Certain teacher behaviors were also correlated with questioning. For example, the number of teacher task interactions is significantly and positively related to the number of convergent questions. Also, teacher retreatism is significantly and negatively correlated with all types of questions.

Table 4: Correlation between questioning and classroom behaviors

	Cognitive memory questions	Convergent questions	Divergent questions	Evaluative questions
Total number of student task interactions		.359*	.400**	.325*
Total number of student rebellion interactions				-.291*
Total teacher task interactions		.394**		
Total teacher retreatism interaction	-.326*	-.296*	-.294*	-.333**

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

Questioning and student time-on-task

An examination of Table 5 clearly illustrates that there is a significant, negative correlation between the number of students who are off task and the number of all types of questions asked. That is, as the number of any type of question decreased, the amount of student off-task behaviors increased.

Table 5: Correlation between teacher questioning and student time-on-task

	Cognitive memory questions	Convergent questions	Divergent questions	Evaluative questions
Percentage of students off task	-.401**	-.506**	-.445**	-.491**

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

Discussion

The research questions guiding this study focused on the impact questioning has on the climate of the teaching-learning environment. Analyses of these data suggested that questioning is strongly related to teaching strategies, classroom behavior, and student time on-task. The fact that teachers can mediate their students' participation in academic work through questioning is significant because, as was found in this study, the more time students devote to academic tasks, the less likely off-task student behavior will characterize the learning environment.

The findings of this study support the research of Mangano and Benton (1984) who reported that teachers who asked more questions asked a higher percentage of lower level questions; that is, as the number of questions increased, the level of questions tended to decrease. Teachers in this study were observed asking many more cognitive memory and convergent questions than divergent and evaluative questions. The fact that many more low level questions were asked should not necessarily be interpreted as a negative outcome (Arends, 1994; Brophy & Good, 1986; Wilen, 1991). Lower level questions can provide evidence that students know specific facts needed to construct more in-depth understandings of the concepts under study. Therefore, these types of questions should still be a part of a teacher's repertoire. However, teacher educators need to continue to stress the importance of using higher level teacher questions as an instructional strategy. For example, Sitko and Slemon (1982) noted that lower level questions tended to elicit lower level student responses and high level questions resulted in higher level student responses.

An examination of Table 3 shows the current study provides evidence that certain instructional strategies can elicit particular student responses; this finding supports the previously discussed work of Sitko and Slemon (1982). For example, drill was found to be the one teaching strategy that was negatively correlated to both divergent and evaluative questions; as the use of drill increased, teachers asked fewer high level questions. To the contrary, modeling and inquiry were the only instructional strategies that were positively correlated to any type of questioning at a significant level. More convergent and divergent questions were asked when teachers employed modeling while more evaluative questions were asked when teachers employed inquiry.

A review of the data in Table 4 indicates that significant relationships exist between the use of teacher questions and both instructional and behavioral classroom interactions. As the number of convergent, divergent, and evaluative questions increase the number of student task behaviors also increased significantly. This suggests that as teachers asked convergent, divergent, and evaluative questions students were more engaged in ongoing instruction. When examining social behaviors, it was found that teacher retreatism was negatively correlated to all four types of teacher questions at a significant level. Since retreating only takes place following student rebellion, this would indicate that teachers who frequently ask questions discourage student misbehavior. Additionally, it should be noted that student rebellion is negatively correlated to evaluative questions at a significant level. Moreover, the findings shown in Table 5 indicate that as the amount of any type of question decreases the frequency of student off task behavior increases. This powerful negative correlation is significant at the p < .01 level.

Conclusions and Implications

Questioning skills are powerful techniques for teachers to develop. As seen in this study, all questions, regardless of level, can be used to keep students engaged in on-going instruction. That is, teachers can use questions to keep students involved in an active teaching-learning environment; since students are more engaged and on-task, they are much less likely to be involved in any type of unwanted, rebellious behavior. Sitko and Slemon (1982) found that asking high level teacher questions tended to result in high level student responses. If high level student thinking is a desired outcome of instruction, teachers should focus on using methodologies that stimulate this type of thought. Based on findings of the current study, teachers would do well to rely more on modeling and inquiry and less on drill to elicit higher level student responses. Teacher candidates should be provided numerous opportunities to create lesson plans that emphasize the use of these strategies along with carefully prepared questions that will encourage higher levels of student thinking. Teacher candidates also need the opportunity to implement and reflect on the effectiveness of these plans in concert with feedback from cooperating teachers and university supervisors.

Regardless of level, the use of teacher questioning is clearly related to student behavior in the learning environment. The finding that teacher retreatism was negatively correlated to all four types of teacher questions is highly significant. In earlier studies (Ratcliff, Jones, Costner, Savage-Davis, Sheehan, & Hunt, 2010; Savage-Davis, Costner, Ratcliff, Jones, Sheehan, Scott, & Hunt, 2011), it was found that when teachers retreat an increase in the amount of student off-task behavior can be predicted. The fact that the amount of teacher retreating was negatively correlated to all four types of teacher questions indicates that as teachers ask more questions student behavior problems decrease while student engagement increases. The authors are not suggesting that the primary purpose of questioning should be to control student behavior; however, questioning appears to keep students engaged and focused on the learning task that, in turn, may prevent behavior problems. Therefore, emphasizing the importance of preparing a number and variety of questions for each lesson should be an integral part of all methods courses.

The use of questioning appears to be an important factor in the development of a positive teaching-learning environment. The degree that teachers use questions spontaneously as opposed to planning questions before instruction is unclear. Further research is needed to determine the degree that planning effects the number and types of questions being asked in the typical teaching-learning environment.

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AN IMMERSIVE EXPERIENCE IN EXCEPTIONAL STUDENT EDUCATION: EXPLORING SECONDARY PRESERVICE TEACHERS' DISPOSITIONS AND CULTURAL CONSCIOUSNESS
by
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Abstract
With the enactment of IDEA, general education classrooms became the least restrictive environments for students with exceptionalities. While secondary education teachers have expertise in content areas, they have a narrower understanding of disabilities and of the role accommodations and modifications play in maximizing the learning for students with exceptionalities. Preservice teachers need to develop a cultural critical consciousness in order to connect their beliefs and attitudes to the realities of their students' lives. This qualitative study explores the implications of an immersive experience in secondary special education classrooms on the teaching efficacy of preservice teachers. The participants, preservice teachers enrolled in a general methods course, wrote reflection papers about this experience. Results indicated that the participants developed a more critically conscious understanding of the needs of students with exceptionalities. Moreover, they started to view student differences as strengths rather than challenges, that ultimately lead to an increased teaching efficacy for students with exceptionalities.

Colleges of education have long recognized the importance of engaging preservice teachers in multiple field experiences to prepare them to teach all children. Not only does the ethnic and racial diversity of educators remain relatively unchanged as the public school student minority population continues to increase (National Center for Education Statistics (NCES), 2009), but with the enactment of the Individuals with Disabilities Education Act, general education classrooms became the least restrictive environments for students with exceptionalities. Swanson (2008) reported that 79 percent of high school students with disabilities were in general education classes most of the day, with 55 percent of them spending more than 80 percent of their school day in inclusive classrooms. While secondary education teachers have expertise in content areas, they are typically limited in providing accommodations and modifications in learning strategies, study and social skills, remediation, and behavioral issues for students with exceptionalities. The concerns of these general educators have been well documented, including the difficulties they encounter in meeting the behavioral challenges of students with disabilities and receiving sufficient administrative support, in-service training, and time to collaborate with others (Weiss & Lloyd, 2002). It is important that all educators recognize how such decisions impact the daily lives of students, including access to the curriculum used to teach them (Obiakor, Harris, Mutua, Rotatori, & Algozzinne, 2012). Consequently, teacher education programs must adequately equip both special education and general education teacher candidates with the knowledge, skills, and dispositions to teach students with exceptionalities in the least restrictive environments.

The attitudes of general education teachers toward teaching students with exceptionalities are significant factors for the successful implementation of inclusion programs (Cook, 2002). Findings (Freytag, 2001; Kim, 2011; Lambert, Curran, Prigge, & Schorr, 2005; Shippen, Crites, Houchins, Ramsey, & Simon, 2005)

indicated that general education preservice teachers' attitudes and dispositions about teaching students with exceptionalities are positively affected by special or inclusion education courses and/or fieldwork. In contrast, Jobling and Moni (2004) found that secondary general education preservice teachers felt unprepared to teach students with special disabilities following coursework and/or a special education practicum. Such attitudes influence preservice teachers' self-efficacy and classroom management (Kim, 2011).

Foundational courses and immersive field experiences can provide opportunities for preservice teachers to examine the strengths and limitations of their own personal experiences and their subsequent beliefs and attitudes toward culturally different students. Researchers have suggested that preservice teachers be consistently guided through a critical self-examination of their personal beliefs, biases, assumptions, and preconceptions that impact their thinking about teaching (Kyles & Olafson, 2008; Genor & Goodwin, 2005; Ryan, 2006; Villegas & Lucas, 2002). By examining the development of preservice teachers' cultural consciousness and their dispositions towards teaching diverse learners during field experiences, teacher educators are able to understand crucial elements of foundational experiences that impact preservice teachers' reflective practice as they prepare to teach all students.

It is, therefore, important that teacher educators understand the attitudes and perceptions of preparedness of their secondary candidates about teaching students with exceptionalities. This study focused on exploring the dispositions and teaching self-efficacy of secondary education preservice teachers during an immersive field experience in special education classrooms.

Literature Review
Teacher attitudes represent their tendencies to respond positively or negatively to individuals or events. Teacher candidates develop different attitudes about inclusive practices as a result of their experiences in the teacher education program. Practical field experiences, especially in the case of general education preservice teachers with no prior experience with students with exceptionalities, have been connected with positive attitudes (Richards & Clough, 2004). Similarly, general education preservice teachers enrolled in special education courses generally fostered positive attitudes towards inclusion and in turn, increased their levels of confidence (Lancaster & Bain, 2007; Shade & Stewart, 2001; Shippen et al., 2005). The impact of experiential contexts on the teaching efficacy of preservice teachers, however, remains inconclusive. Regardless, colleges of education are committed to preparing teachers who are culturally competent and who hold affirming views and beliefs about all learners, including students with exceptionalities.

Teaching Efficacy towards Students with Exceptionalities
Studies have compared both general education and special education preservice teachers' attitudes and self-efficacy towards teaching students with exceptionalities after exposure to coursework in special education. Results from Shade and Stewart's (2001) study revealed significant positive changes in the attitudes and self-efficacy of participants in both groups. On the other hand, a study conducted by Shippen et al. (2005) revealed that special education preservice teachers were slightly more receptive and calm to the idea of inclusion, whereas general education preservice teachers displayed considerable resistance and anxiety following a survey of exceptionalities course. Consequently, researchers (Kim, 2011; Shippen et al., 2005) suggested coupling coursework with field

experiences in special education to enhance the calming effect on preservice teachers.

Particularly relevant to this study, research studies examining general education secondary preservice teachers' teaching efficacy towards students with exceptionalities have focused on special education coursework and not field-based experiences. McHatton and McCray (2007) examined the perceptions of secondary preservice teachers towards teaching in an inclusive setting while enrolled in a special education course. Results indicated that secondary preservice teachers were unsure about their ability to manage an inclusive classroom. However, most troubling were their negative feelings towards inclusion as a practice and their beliefs that most students with exceptionalities cannot be properly educated in a general education setting. These findings indicate the tenuous nature of secondary general education preservice teachers' belief structures regarding their responsibilities as inclusive educators. Therefore, it is important that preservice teachers "critically examine how their culture and life experiences mediate their way of knowing the world" (Genor & Goodwin, 2005, p. 312) as they learn strategies for making instruction relevant for their students.

Cultural Critical Consciousness

Foundational courses and structured field experiences can provide opportunities for preservice teachers to examine the strengths and limitations of their own personal experiences and their subsequent beliefs and attitudes toward culturally different students. Gay and Kirkland (2003) stressed that preservice teachers should be guided through a process of developing a "personal and professional cultural critical conscious framework" (p. 181). The process of developing one's cultural consciousness involves connecting preservice teachers' beliefs and attitudes to the realities of their students' lives. Four attributes define a critical cultural conscious perspective: a) reflection on social and cultural construction of one's own identities and those of one's students (Ryan, 2006); b) analytical examination of one's own teaching, beliefs, and behaviors (Gay & Kirkland, 2003); c) shift from viewing differences as "roadblocks" to "strengths"; and d) recognition that disparities in achievement are linked to systemic inequities rather than cultural differences (Sleeter, 1992).

First, preservice teachers must reflect on the social and cultural construction of their own identities and those of their students (Ryan, 2006). Genor and Goodwin (2005) agreed that teacher educators should guide their students to "explore their own positions and histories by making their unspoken values and cultural knowledge explicit" (p. 312). This is especially necessary in light of the mismatch in cultural diversity between diverse learners and preservice teachers. Challenging and questioning one's beliefs is particularly crucial because of the relationship among teacher beliefs, their expectations, and sense of efficacy for teaching diverse learners (Kyles & Olafson, 2008). Engaging preservice teachers in a critical self-reflection of their cultural identities is not easy. Preservice teachers may not understand how to critically reflect or have had structured opportunities for quality, guided reflective activities during their teacher education program (Gay & Kirkland, 2003).

Second, preservice teachers must also analyze how their beliefs will influence their teaching practice. These beliefs impact teachers' expectations of their students' academic potential. Therefore, beginning early in their preparation, teacher candidates must be encouraged to examine their sense of efficacy when teaching diverse learners. As Ryan (2006) emphasized, "Teachers need to demonstrate that they believe all students are capable of learning and that they believe they are capable of making a difference in the educational lives of children" (p. 12).

Gay and Kirkland (2003) noted that when culturally responsive teachers engage in critical examinations of their own teaching practices and beliefs they begin to recognize that they are accountable to their students.

Third, preservice teachers should develop an "affirming attitude toward students from culturally diverse backgrounds" (Villegas & Lucas, 2002, p. 23). Shifting their view of differences as academic roadblocks to academic strengths emphasizes the strengths of cultural differences instead of the challenges or limitations of their students. When differences are no longer viewed as deficits, preservice teachers can develop an affirming attitude toward students from culturally diverse backgrounds (Villegas & Lucas, 2002). Teacher educators must understand how and when prospective teachers begin to alter and shift their perspectives about those who are culturally different than they are.

Fourth, foundational courses are crucial in ensuring that preservice teachers acknowledge tendencies of "blaming the victim" rather than recognizing that disparities in achievement are linked to systematic inequities not cultural differences (Sleeter, 1992; Villegas & Lucas, 2002). As a result, preservice teachers are less likely to ignore other probable explanations. In an early study, Florio-Ruane (2001) reported that student teachers' narratives indicated emotional concern about students' behavior and motivation and framed them in personal terms: hurt, disappointed, frustrated. These prospective teachers did not view their dilemmas as a "complex problem of practice" but instead reverted to judging their students and families limiting possible options for inquiry and action (Florio-Ruane, 2001, p. 36). Foundational courses and initial field experiences can establish a framework for guiding preservice teachers through this developmental process thereby limiting tendencies to blame the victim.

Coursework and guided field experiences in culturally diverse classrooms, including special education, may set the foundation for increased efficacy, positive attitudes, and a critical cultural conscious perspective for general education preservice teachers regarding students with exceptionalities. In order to foster positive attitudes and increased efficacy, teacher candidates must have a working knowledge base about inclusion and exceptional students (Fender & Fielder, 1990). Whether coursework in special education and field exposure benefits preservice teachers is still debated (Lancaster & Bain, 2007), and it warrants further investigation. In fact, Lancaster and Bain (2007) noted the scarcity of research studies that examined the efficacy of preservice teachers when engaged in field experiences involving students with special needs. It is also critical that during foundational courses and through field experiences preservice teachers are challenged to recognize the implications of their own cultural identities and belief systems on their expectations of students from backgrounds culturally different than their own.

In an attempt to fill this gap in the literature, this qualitative study investigated general education preservice teachers' cultural critical consciousness while immersed in self-contained secondary special education classes. This experience was coupled with lectures on the nature and role of accommodations when teaching students with exceptionalities. Secondary preservice teachers do not take a course in exceptional student education (ESE); rather, content and strategies are infused across their teacher education program.

The following research questions guided this study:
1. What are preservice secondary education teachers' dispositions when working with students with exceptionalities and in what ways do they find this experience valuable?

2. From a Culturally Critical Conscious perspective, what attributes do preservice secondary education teachers exhibit during this immersive experience?

Methodology

In an attempt to address the above mentioned limitation in the secondary teacher education program, the researchers designed an immersive field experience for secondary preservice teachers enrolled in a general methods course. This experience enabled the participants to observe and interact with students with exceptionalities at a local high school. The participants completed three one-hour field sessions in exceptional student education classes at a large comprehensive high school. Over the course of two semesters, the preservice teachers were assigned to 14 self-contained ESE classes of students with varying exceptionalities (i.e. Learning Strategies course, Supportive Learning Academics, and ESE Core Academics). In these environments, the participants observed the ESE teacher and interacted with the students.

The data for this study originated from two different sources: a demographic questionnaire and written reflections. The demographic questionnaire gathered information about the participants' gender, ethnicity, and academic major/minor status. Furthermore, data were collected on the participants' previous contact with people with exceptionalities and their experiences working with students with exceptionalities. The participants self-disclosed whether or not they had a personal disability. Table 1 shows the demographic characteristics of all participants. A research assistant administered the demographic questionnaire to the participants before instruction about students with exceptionalities and participation in the field experience.

Table 1: Participant Demographic Information

Number of participants	37
Age	19-24: 31 25-30: 5 over 31: 1
Ethnicity	European-American: 28 African-American: 5 Asian-American: 1 Hispanic: 3
Secondary Education majors	20
Education minor	17
Indentified disability	2
Prior contact with people with disabilities	21
Prior experience with students with exceptionalities	18

The three reflective papers consisted of five open-ended questions. The preservice teachers recorded informal notes describing the context of the field experience (number of students, types of exceptionalities, number of teachers and paraprofessionals, attributes of the physical environment), the accommodations and modifications they observed, and the quality of teacher-student interactions. They also reflected on aspects of the experience that were contrary to their preconceived expectations. These reflective papers were collected the week following each immersive field experience. In addition, the participants discussed the value of the immersive experience in a cumulative essay submitted at the end of the semester.

The researchers conducted a content analysis of all reflective papers and cumulative essays to identify preservice teachers' beliefs and dispositions about teaching students with exceptionalities using a framework grounded in cultural critical consciousness theories (Gay & Kirkland, 2003; Ryan, 2006; Sleeter, 1992; Villegas & Lucas, 2002). Content analysis describes and quantifies data in a systematic way (Downe-Wamboldt, 1992; Krippendorff, 1980; Sandelowski, 1995). The researchers used inductive content analysis to classify words that had similar meanings into categories (Cavanagh, 1997) with the aim "to attain a condensed Land broad description of the phenomenon" (Elo & Kyngäs, 2008, p. 108). Interpreting the data, the researchers decided that statements belonged to the same category (Dey, 1993), and they named the categories using content-characteristic words (Elo & Kyngäs, 2008). Furthermore, subcategories containing similar perspectives were grouped together (Robson, 1993).

Preliminary dispositional attributes were identified through manual coding of a random sampling of the reflective papers. The researchers used the N-VIVO software (9th edition), a computer-assisted qualitative data analysis program, to identify and code the written reflections based on the specified dispositional attributes. This analysis generated broad data sets that were further refined into main categories or N-VIVO tree nodes based on their relevance to the research questions. To discover connections among the nodes, the researchers analyzed the refined data sets and identified categories reflecting participants' dispositions.

Using the Cultural Critical Consciousness framework, the researchers recoded the identified data sets based on these four categories: a) reflection on social and cultural construction of one's own identities and those of one's students (Ryan, 2006); b) analytical examination of one's own teaching, beliefs, and behaviors (Gay & Kirkland, 2003); c) shift from viewing differences as roadblocks to strengths; and d) recognition that disparities in achievement are linked to systemic inequities rather than cultural differences (Sleeter, 1992; Villegas & Lucas, 2002).

Results and Discussion

Data analysis indicated that the general education preservice teachers began to exhibit attributes of a culturally conscious perspective. A discussion of the results of this study analyzed through a cultural critical conscious lens follows.
Reflection on the Social and Cultural Construction of One's Identity

The participants noted the relevance of new knowledge constructs and the opportunity to learn from the instructional dynamics of an ESE classroom. Exemplifying a culturally critical perspective, PT21 stated: "I feel as though these visits increased my knowledge tremendously. I had actually never had very close proximities with people with disabilities. This has opened my eyes." Preservice teachers also recognized the limitations of their prior knowledge and understanding of students with exceptionalities as well as the value of this immersive experience. For example, PT6 noted: "I understand the ESE setting and how it works a lot more than when I started." Additional comments included: "…it was important to get an experience, even if small, in an ESE classroom along with students with varying disabilities" (PT8), and "Going into Sandalwood was definitely beneficial as I was finally able to see exactly what goes on in an Exceptional Learning classroom"

(PT1). Similarly, PT25 shared:

> It is important for educators to enter classrooms and observe, because doing such provides them with experiences that cannot come from reading a textbook alone. This experience was enriching to me because I had never been inside of a special education classroom before. Being able to interact with a student with disabilities surpasses accounts in textbook or case studies.

Having had the opportunity to interact with students with exceptionalities, some of the participants reflected on how their beliefs changed. PT7 wrote, "I was surprised at how easy it was to work with them compared to some mainstream students…I felt very accomplished when I left the classroom and all of the students were a joy to work with." Another participant commented on the positive impact of this experience on their dispositions:

> My initial beliefs were that I would not have the patience or skills to teach in inclusive classrooms. I doubted my skills and myself, but after observing a classroom I think I could really make a difference in these students. I would absolutely have the patience because they were the kindest students I have ever met. After observing the experience in the classroom and meeting these students my beliefs changed drastically. (PT32)

On the other hand, some preservice teachers experienced dissonance because of the unfamiliar learning environment and the incongruence with their expectations and the behaviors they observed during this immersive experience. For example, PT12 was initially overwhelmed by the unfamiliar context:

> …it was an extreme eye opener. Some of the students struggled with their speech and some even struggled with simple tasks as spelling their names correctly. The first ten minutes…I felt extremely uncomfortable because I had never been put in that situation before and did not know how to react. Eventually I sat down at a table with a few of the students and began helping them with a Valentine's assignment… I began to have a blast.

This immersive experience, however, did reinforce some preservice teachers' existing beliefs about the appropriateness of inclusive educational settings for all students with disabilities. "I initially felt," wrote PT27, "that in an age of where teachers are judged by students' test scores, having severely disabled students in the mainstream classroom could damage a teacher's (perceived) performance. I do not think these beliefs have changed." PT26 expressed strong concerns after observing the special education teachers:

> I thought inclusion was an OK idea. However, after this experience I feel as though inclusion is not the way to go. I don't feel that the majority of general education teachers are prepared for a special needs students…I also don't believe that the special education student will feel comfortable in a general education class…After witnessing how qualified most of the teachers were and comparing them to general education teachers, the general education teachers simply aren't prepared.

Besides reflecting on their own cultural understanding of students with exceptionalities, one participant (PT17) acknowledged their students' cultural identities and realities; "My eyes were definitely opened to how difficult it is for these students to learn and adapt to the real world. It also makes me wonder how difficult it is for the students who are put in the 'normal' classrooms…"

This experience in secondary self-contained classrooms enabled preservice teachers to examine their existing beliefs and preconceptions about students with exceptionalities. In some cases these beliefs shifted and were redefined, where as in other instances, existing dispositions were reinforced based on interactions with students and their teachers. Regardless, this immersive field experience prompted participants to acknowledge and challenge their existing cultural frame of references for understanding and interacting with students with exceptionalities.

Examination of One's Own Teaching Beliefs and Behaviors

The preservice teachers reflected on some qualities that would make them better teachers of students with exceptionalities, such as having patience and providing students with individualized attention. For example, PT15 addressed the need to be patient:

> If there was anything I learned from my first day at SHS, it would be to be patient with   these students, as they require much attention…Similarly, I will be able to take the same   methods and apply them to my students with exceptionalities when I become a teacher. These beliefs were reflected in other similar entries: "I was surprised to learn how much more time, effort, and patience goes into being an ESE teacher, compared to a 'regular' teacher" (PT13) and "I learned that it probably takes a lot of patience to work with these children but I think it would be very rewarding in the end" (PT6).

Other participants focused their reflections on implementing the strategies they observed in the field into their future classrooms. For example, PT39 discussed how she would set up her science classroom: "As a science teacher creating an environment that allows students to feel welcome and want to learn is essential. This can be as easy as having tables that were the right height for the students, or as complicated as creating different tests for specific students." When discussing teaching strategies, PT32 noted:

> During this experience I picked up on a lot of teaching strategies the teacher used that will be helpful for me when I get into the field. The teachers filled their classrooms with educational posters, and did several different activities…the teachers took their time, and were sure to explain thoroughly everything they were asking the students.

Coded reflections also indicated that preservice teachers recognized the role of accommodations and modifications when teaching students with exceptionalities. PT16 reflected: "This opportunity gave me a chance to observe how to react and make accommodations for a student that may have disabilities in my future classroom." Likewise, PT2 agreed: "I learned so much about how students are taught life skills and how a teacher modifies instruction." Similarly, PT23 shared:

> An inclusion classroom can and will have students working at much different levels than the others so a teacher must be prepared for this...The teacher can write out the key words of the lesson on the board so that students who are having problems with the English language or even trouble hearing have a chance to see what she is saying. Having pictures and real world examples can help all students make concrete connections to the lesson.

Interacting with students and supporting them, enabled the participants to assume the stance of a teacher: "The one-on-one time with the students is what I looked forward to the most. I feel like I benefited greatly from being able to talk to the students and work with them individually" (PT6). Another preservice teacher stated, "the one-on-one time with the students is one of the best ways to increase learning and improve the student's education" (PT2). Overall, the value of this experience was reflected by PT13: "I will definitely use everything I have learned here to increase my knowledge, awareness, and helpfulness when it comes to ESE students mainstreamed into my classes." PT26 also discussed the increased knowledge coupled with the hands-on approach: "I am always grateful for getting to spend time

in the classroom and gaining hands-on experience. I also appreciated the knowledge I gained, getting to learn from the teacher's perspective."

As reflected in the above data, this immersive experience prompted general education secondary preservice teachers to examine their beliefs about teaching students with exceptionalities and the implications for instructional practice in inclusive settings. This included an acknowledgement of their beliefs, shifts in prior knowledge about teaching students with exceptionalities, and a vision of accountability for relevant instruction, thus demonstrating a component of culturally critical consciousness.

Shift in Viewing Differences as Roadblocks to Acknowledging Strengths

Some participants reflected on how this experience helped them gain a more in- depth understanding of disabilities in general and specifically, the academic potential of students with disabilities. This culturally immersive experience challenged the general education preservice teachers to acknowledge deficit frameworks and to recognize the strengths that students with exceptionalities possess. PT38 stated:

My beliefs definitely changed once I got into the classrooms…I was shocked to see that the children were very respectful. It was such an inviting atmosphere and you could tell that their teachers truly cared for the students and the students loved their teachers. My beliefs on teaching in this type of classroom are now along the lines of something I know I could do.

Similarly, another preservice teacher reflected on the dramatic shift in her expectations after spending time in the ESE classrooms. PT42 expected "that the ESE students would be unruly… and hanging from the walls as the teacher would be yelling and screaming...trying to keep order." Instead, focusing on the positive attributes of the students, he admitted: "My beliefs totally changed after seeing how well the students acted and how structured each classroom was set up. Each student was respectful and very obedient." Another participant was also surprised that the students responded positively to the learning environment: "What surprised me the most about my visit to her class was the amount of respect that was shown from teacher to student. The students were well-behaved and class ran smoothly with no issues at all" (PT8). One preservice teacher (PT36) explicitly shifted from having limited expectations of students with exceptionalities to recognizing the diversity in students' abilities:

…my disposition on working with students with disabilities was all wrong…I believed that all students with exceptionalities were the same in their abilities…No two students learn the same so differentiation is needed in the lessons…Working with Teacher X changed my attitude from being scared to excited.

Coding analysis of preservice teachers' reflections revealed culturally critical perspectives in their view of the students' potential. As indicated above, some preservice teachers shifted from preconceived negative expectations to more positive traits after their interactions and observations in the ESE classrooms. Other participants compared the behaviors of the students with exceptionalities to those of other general education students they had observed in prior field experiences. "I saw what I would expect to see in a mainstream classroom. In fact, having begun my Field 1 experience in an Honors Math class, the Honors Math was much more active concerning undesirable behaviors and distractibility," noted PT3. Similarly, PT11 did not expect to find a student-centered approach in the ESE context: "I was positively surprised in today's experience in that I was able to learn that even ESE students can learn in a constructivist learning style." PT17 reflected:

…the students (with exceptionalities) worked by themselves. They didn't complain about their work and didn't get distracted and start messing with other students. In my Field 1 assignment, the sixth graders are very easily distracted. Even during a quiz they distract one another and sometimes throw things. I hope that society will not look down upon those with special needs because they all have a lot of potential.

Likewise, another preservice teacher reflected: "I was thrilled to be able to work with three students hands-on and help them get through their task and grasp the concepts that they were trying to attain…it never ceases to amaze me the talents that exceptional learners possess" (PT5).

As reflected in the above quotes, this immersive experience resulted in a better understanding of students with disabilities in general. More significantly, some of the participants started to view these differences as strengths rather than deficits. According to Villegas and Lucas (2007), "teachers who see students from an affirming perspective and truly respect cultural differences are more apt to believe that students from non-dominant groups are capable learners" (p. 5). Such teachers hold their students accountable to high standards, use rigorous academic curriculum, and expose their students to constructivist environments, building on the individual and cultural resources that students bring to school (Villegas & Lucas, 2007).

Recognition of the Link between Systemic Inequities and Disparities in Achievement

This final aspect of cultural critical consciousness did not emerge as prominent a construct across participant reflections as did the previous three. Two reflections focused on the limited preparation that general secondary education preservice teachers receive that impacts their readiness to teach students with exceptionalities. In spite of the value of this immersive experience, one preservice teacher believed that general education teachers are not adequately prepared for the demands of the inclusive classroom. PT26 reflected:

I personally do not feel any more comfortable about teaching in inclusive classroom…Through a general education degree, college students are not required to be specialized or even certified in special education, yet they want to place special education students in general education classrooms…It's not that I don't…like teaching/working with special education students. It is that I don't know if I could do it. I don't feel as though I am prepared or qualified…

Another preservice teacher echoed similar concerns about being comfortable and prepared to teach in an inclusive classroom and emphasized the value of a required class "considering the direction schools are taking concerning this issue…" (PT27). Both of these indicated an awareness of institutional constraints that impact teacher preparation and subsequently teacher candidates' readiness to accommodate and modify instruction in inclusive classrooms.

Although most preservice teachers failed to recognize a connection between the academic achievement of students with exceptionalities and intervening institutional barriers or inequities, PT35 stressed the importance of ensuring equitable treatment of all students:

I have always been an advocate for what works best for the student…I think all teachers should be ready and willing to prepare themselves for any situation that brings a student with exceptionalities into their classroom. In my opinion all students are exceptional; they have their differences that need to be considered and worked with…my goal will be to make sure that each of my students receives the education he or she deserves.

Recognizing a responsibility to teach *all* students, PT32 noted, "I also learned that these students with exceptionalities all have the capability of learning the material. As a teacher, I will be responsible for holding these students to their potential."

As a result of engagement in this immersive experience, general education secondary preservice teachers became more conscious of their beliefs and expectations of students with exceptionalities and of the implications of deficit thinking. An analysis of their reflective writings indicated a culturally critical examination of teaching practices in secondary ESE classrooms and an enhanced awareness of their responsibilities as inclusive teachers.

Limitations

This study has several limitations. The most significant one is the length of the field experience. The participants spent three hours observing and interacting with special education teachers and students with diverse exceptionalities. This limited exposure in secondary ESE classrooms was designed to enhance general education preservice teachers' understanding of the needs of students with exceptionalities and increase their self-efficacy.

In addition, the type of the ESE setting may constitute another limitation of this study. This study sought to explore the general education secondary preservice teachers' beliefs and dispositions when teaching students with exceptionalities. The researchers recognize that immersing the participants in self-contained classrooms could limit their understanding of teaching in inclusive environments. However, all exposure to students with exceptionalities, regardless of the setting, has the potential to increase the levels of comfort and confidence. Implications and Future Research

Critical cultural consciousness is a relevant construct for structuring foundational experiences that can begin to "scaffold teacher candidates from their own experiences and beliefs to complex understandings of educational access and equity" (Ryan, 2006, p. 12) and the implications for their teaching and student learning. This quality is particularly crucial for teachers of diverse learners, including those students with exceptionalities in inclusive classrooms. The rich data sets collected from general education preservice teachers while immersed in secondary ESE classrooms indicated that most recognized the connection between their beliefs and their dispositions and their perceived readiness and willingness to teach students with exceptionalities. However, fewer participants indicated an understanding of the institutional and systemic factors that impact the quality of educational experiences for students with exceptionalities. It is recommended that teacher educators critically assess the type and quality of field experiences in special education settings for secondary general education students.

An examination of general education preservice teachers' dispositions is particularly relevant because of the expectations of inclusion policies in today's public schools (Swanson, 2008). Qualitative results from this study exposed the various dispositions of preservice teachers as they interacted with ESE teachers and their students. Teacher education programs are encouraged to consider such dispositional data as they structure course work and field experiences in inclusive education for secondary education preservice teachers. The establishment of collaborative teams of educators working together to ensure that all students are supported is the foundation for effective inclusive classrooms (Shippen et al., 2005).

Teacher education programs should provide multiple field experiences and courses in special education (Freytag, 2001) that realistically reflect the complexities of teaching and learning in exceptional student education. This is particularly important for secondary preservice teachers who have had limited contact with students with exceptionalities. The researchers believe that the preservice teachers

in this study appreciated the safety of negotiating their limited knowledge and preconceptions of students with varying exceptionalities in an early pre-professional field context rather than as an intern or a practicing secondary teacher. This unique examination of the beliefs and dispositions of secondary preservice teachers about teaching students with exceptionalities is particularly relevant as they prepare for the highly inclusive classrooms in which they will teach.

Additional studies should continue to explore the influence of ESE field experiences on general education preservice teachers' efficacy and dispositions about teaching students with exceptionalities because of the discrepancies in previous research findings. Subsequent research could use a case study design to analyze the dispositions and instructional practice of secondary preservice teachers while engaged in extensive practicum work in inclusive classrooms. In addition, longitudinal research could also investigate the development of preservice teachers' self-efficacy towards inclusive practices as they complete the teacher education program and transition into the teaching profession.

Successful inclusive educational settings require that general education secondary teachers are comfortable and confident about modifying instruction for students with exceptionalities. The preservice teachers in this study acknowledged the value of shadowing experienced exceptional education teachers. This experience enabled them to recognize and begin to understand the intricacies of and rationales for instructional planning and decision-making. Perhaps, the "apprenticeship of observation" (Lortie, 1975) theory is particularly relevant for providing structured, purposeful, immersive field experiences that could serve as a model for secondary general education preservice teachers' inclusive classrooms.

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OUT OF BALANCE: THE PROBLEM WITH DEVELOPING WIKI RESOURCES TO INCREASE TEACHER CANDIDATES' TECHNOLOGICAL EFFICACY
by
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Abstract

The Internet provides tools for educators to collaborate with colleagues to research, assemble, critique, and organize materials for classroom use. Given adequate knowledge and skills, teachers may utilize online communication resources, such as wikis and blogs, for professional communication, collaboration, and construction of informational resources. Structures represent important elements of planning such classroom experiences (Lucey, O'Malley, & Jansem, 2009). The instructor's possession of technological expertise to create optimal environments for students (teacher candidates) to communicate in manners conducive to efficacious task completion represents a premise associated with use of these online tools. Creation of these environments requires relating the users' background knowledge with regard to similar forms of technology, not just the nature of the tool. It also necessitates consideration of the users' willingness and ability to actively seek solutions to problems that may arise. This paper describes a project intended to increase teacher candidates' technological efficacy through development of online social studies teaching resources. The instructors designed the project to provide participants with the opportunity to use their initiative to discover an online technology tool (the Wiki) through practice and to learn about economics through research and collaboration. The results of this project provide information about structuring technology-based student collaborations and developing teacher candidates' content knowledge.

Literature

Structuring technology-based learning necessitates consideration of whether or how user confidence in technological ability relates to patterns of instruction. The extent to which one thinks that he or she can master technological skills relates to his or her willingness to develop them, as these beliefs about teaching and learning also work to influence a preservice teacher's decisions utilizing technology (Abbitt, 2011; Ertmer & Ottenbreit-Leftwich, 2010). While there is not a direct relationship between computer self-efficacy and classroom technology use (Wang, Ertmer, & Newby, 2004), efficacy has been found to be a significant predictor of both the employment of and the intention to use technology (Teo, 2009).

Providing preservice teachers with opportunities to work with the technology can help to increase the comfort level of using technology for instructional purposes and enhance their self-efficacy (Magliaro & Ezeife, 2007; Wang et al., 2004). Teachers' confidence in their technological skills may influence concerns about technology-based learning outcomes (Dunn, Rakes, & Rakes, 2010).

Teacher training. Swan and Hofer (2008) observe that "Despite calls for attention to technology integration throughout teacher education programs and particularly in teaching methods courses…there is little evidence to suggest that this approach has been widely accepted." (p. 314). Teacher candidates tend to experience a technology course as part of their program sequence in which they learn and develop the functional skills along with the pedagogical considerations necessary to effectively utilize technology tools for instructional purposes (Lambert & Gong, 2010). A focus on technology as an instructional tool, as promoted through Morrison and Lowther's (2009) *Integrating Technology for Inquiry (NTEQ)* model, offers an approach for preparing teachers to emphasize the method of technology integration that is easily adaptable. Schneckenberg, Ehlers, & Adelsberger (2011) suggest that competence, knowledge, skills and attitudes, must be developed through direct experiences and cannot be transferred from expert to novice.

Constructivist modeling of technology use by methods instructors has potential to influence student perceptions of technology use, but not necessarily effectively employ it in practice (Diem, 2002; Molebash, 2002, 2004). Nevertheless, teachers persist in implementing one of two instructional approaches, traditional or inquiry, with regard to social studies education with technology supporting either method (Beck & Eno, 2012).

While comfort with instructional technology use represents a factor in its classroom application, Swan and Hoefer's (2008) review of literature finds that "teacher practice is not notably altered by the integration of technology, but rather that technology is most frequently used to enhance or extend existing instructional approaches" (p. 310). Teachers adapt technology to fit within their particular method of teaching. Those who hold a belief that promotes higher order thinking skills and student autonomy for teaching and learning facilitate a student-centered approach essential in powerful social studies instruction (Beck & Eno, 2012). It is important to note that other factors, such as pressure to cover an expected amount of material in preparation for a scheduled exam, can prevent teachers from practicing their pedagogical beliefs (Lim & Chai, 2008).

According to the National Center for Education Statistics (2000), elementary teachers use the computer for daily professional responsibilities; however, small percentages employ it for research-related purposes. Teacher decisions concerning classroom computer use may not represent matters of pure autonomy. Studies (e.g., Bennett & Pye, 2003; Gibson & Hart, 1997; Kieper, Harwood, & Lawson, 2000, Lim & Chai, 2008) repeatedly indicate that social studies teachers appreciate the use of computers for learning, but lack the time and resources to create authentic technology-based lessons.

Scholars have recognized the risks and benefits of using technology to foster children's economic learning for some time (e.g., Molnar, 1995; Peracchio, 1992). While much literature concerns the teaching of economics and personal finance and related preparations in K-9 settings (e.g., Johnson & Sherraden, 2007; Schug & Lopus, 2008), there is scant literature that concerns the use of technology to foster economics learning in elementary and middle level classrooms.

It is possible that weak subject knowledge may affect patterns of instructional application if the teacher does not realize or appreciate the value of creating inquiry-rich learning tools for its exploration. Economics represents the least covered social studies area (Kruger, Gandy, Murley, & McConnell, 2009). Yet teachers need reasonably sophisticated knowledge of the content to engage students in these conversations. Elementary teachers possess weak understandings of economics and lack the confidence to teach it (e.g., Grimes, Millea, & Thomas, 2007; McKenzie, 1971; McKinney, McKinney, Larkins, Gilmore, & Ford, 1990; Schug, 1985; Way & Holden, 2009). This lack of knowledge may explain why economics represented only 10percent of the social studies teaching observed (Kruger, et al., 2009).

Wikis are often touted for their facilitation of collaboration (Goodwin-Jones, 2003) and may be used by teacher educators for more than this purpose. For example, Lin (2008) used wikis as showcases for student work. Students in Lin's

course selected a technology innovation and explored its potential uses for teaching and learning. While student groups appreciated the ability to work at their own pace and post information to the wiki at their leisure, they reported dissatisfaction with the inequality of work completed and the issue of building trust and communication among team members.

Solvie (2008) viewed wiki use as an opportunity for students in her reading methods course to authentically collaborate and construct knowledge pertaining to literacy. While students found wikis to be an effective means of collaboration, they focused on the wiki's effect on personal writing and on perception of writing by other group members. In addition, students' perceptions of their writing ability influenced the number of their postings made. Students posted less often if they believed another group member wrote more expressively. Perceptions of writing also affected students' willingness to edit the others' work. There was also a resistance to edit the work of others, as this might be perceived as offensive. Some students indicated that they sought permission from the group member who generated the content before making any changes. Solvie felt this opposition to editing the work of others directly impacted the premise for using a wiki for this assignment. The expectation for editing should be considered part of the collaborative process.

To combat the lag between the publication of a textbook and inclusion of current and relevant information, O'Shea, Baker, Allan, Curry-Cocoran, and Allen (2007) used a wiki to house a student-created textbook for their course in educational foundations. A large majority of the students overcame high anxiety and felt that they were more actively engaged in learning the course material. Students also felt that creating the textbook helped to increase their higher order thinking skills; the ability to apply, analyze, synthesize, and evaluate information. The students found that their wiki textbooks were more current than traditional textbooks, and that their created content was of equal, if not higher, quality and credibility.

As collaboration mediums, wikis provide opportunities for professional interactions, which may provide benefits for local or global education communities. Building a wiki as a collaborative venture served as an ideal opportunity to develop the desired competence (Schneckenberg et al., 2011). If authentic use of instructional tools represents a mechanism for broadening student content knowledge, then genuine use of technology resources could also broaden in-service and teacher candidates' content understandings.

Experiences with technology may cause teachers to be more technologically efficacious; however, the limited content knowledge and limited professional planning time may prevent the use of technology for fostering engaging learning that builds deep social studies knowledge. The herein described project employed wikis to facilitate teacher candidates' development of social studies teaching resources. The purpose of the assignment was to interpret the content of online wiki social studies resources developed by the teacher candidates.

Methodology

A semester-long project included teacher candidates enrolled in one of three elementary social studies methods course sections. It intended to build from their technological efficacy to create a social studies technology resource that they could supplement and draw from in practice.

The teacher candidates were enrolled in three sections of a spring semester elementary social studies methods course at a public Midwestern teacher education institution in a mid-sized community. The researchers deliberately structured the assignment process to provide for heterogeneous groupings, with regard to their course sections. The project aimed to use the collaborative features of the wiki to facilitate cooperation between different sections of the course. Candidates would not physically see each other during the semester. Prior to the course, the researchers/instructors randomly assigned enrollees to one of five wiki groups (10 or 11 in each group) and instructed to the teacher candidates to organize themselves into pairs, with each pair responsible for a wiki chapter. Groups that had 11 members decided whether the unpaired person would serve as a chapter contributor or a wiki rover, who could edit any chapter that needed support.

Knowing that experiencing success is an important influence on self-efficacy (Bandura, 1977), the researchers chose wikis as the instructional tool. The researchers incorporated a wiki-based assignment to provide candidates with opportunities to explore wikis as a classroom teaching resource. Wikis have a low learning curve with many online support sites and networks. Since they are free web-based tools and used at all educational levels, their affordability and accessibility provided the opportunity to experience wikis' potential for educational use, increasing the possibility that candidates would understand how to integrate it into social studies content (Butler, 2012).

The project facilitated candidates' collaboration in the development wiki resources with a minimal amount of instructor guidance. The instructors expected candidates to locate the host wiki website, set-up their own wiki, invite their members, design the pages, and develop the content. Candidates received guidelines for content and a series of deadlines by which to post their information. There were not any specific content requirements associated with each deadline; candidates were expected to discipline themselves to make postings to fulfill the established expectations for the final product.

The instructors structured the assignment in anticipation that candidates would develop and demonstrate the ability to become self-regulated learners of web-based tools. Instead of receiving direct instruction on a particular tool, candidates were to explore, investigate, and utilize online help support resources along with their other group members. This project employed two sources of data for analysis: (1) the wiki chapters developed by the candidates and (2) surveys about candidate views that concerned technology use and social studies teaching.

Instrument. At the end of the course, students were surveyed about their use of technology and their confidence teaching various social studies areas. The authors constructed the 20 item survey, which phrased items positively and negatively to prevent spurious response patterns. The instrument formatted these items using a Likert-style response scale that contained four levels ranging from Strongly Disagree to Strongly Agree. It contained two other items that invited respondents to indicate the social studies areas that they had the most and least confidence teaching. The survey also included four open-response items that concerned the nature of social studies, social studies instruction, citizen development, and technology in social studies teaching.

Of the five pairs of students who developed economics chapters, four (80 percent) consented to the analysis of their work. To discern students' understandings of economics and its teaching, the authors reviewed the chapters' content in relation to the assignment guidelines. For purposes of this paper, statistical analysis is limited to descriptive analysis of relevant items. The presentation also includes responses to open items, which were coded for apparent themes by the first author.

Results

This section organizes findings into two parts. The first concerns analysis of content contained in the wiki chapters. The second relates findings of candidates' survey responses.

Findings from the analysis of the chapters by the four consenting groups (Rowdy Renegades, Eleven Again, Disturbing Damsels, and Spunky Sparkers) are presented below. These findings are organized by the required topics (1) What is the nature of your social studies area? (2) Why your topic is important for students to learn? (3) What has happened to the teaching of your subject? (4) Why do you think your topic is left out of teaching? (5) How do you remember learning about your topic in elementary school?

Nature and importance of economics. None of the chapters truly described the nature of economics. The group Rowdy Renegades provided a definition before they discussed the relevance of economics to children's learning, and the group Disturbing Damsels simply provided a quotation from their text. The group Eleven Again considered economics an essential element of knowledge; however, identified it as all-encompassing, without clarifying its substance.

Three of the four wikis construed the importance of economics as involving consumerist foundations. The group Rowdy Renegades considered economics as relevant to daily living. The group Eleven Again viewed the importance as related to consumer behaviors. The group Spunky Sparkers employed economic terminology (i.e., economy, money, inflation) to support its explanations of importance. The fourth wiki provided quotations from sources; however offered no actual explanation of the subject's importance.

Teaching Approaches. Of the four wikis, three (Rowdy Renegades, Eleven Again, Spunky Sparkers) considered how economics had been taught in the past. The group Rowdy Renegades disclosed that economics education should begin early. The group Eleven Again reported that economics education had received increasing emphasis in younger grades as children became more independent. Spunky Sparkers observed that technological advances had affected patterns of financial practice and extended these observations to technology use in instruction. A fourth group, Disturbing Damsels took a child development perspective and disclosed that economics begins with the concept of scarcity in early grades and grows to political economics in later grades.

All four wikis contained content that interpreted recent trends in the teaching of economics. None of the four provided the same explanation. One reported that it was marginalized and is not being taught. Another disclosed that economics is becoming evident in lower grades as it is becoming *more than financial jargon*. A third erroneously reported that it has not been taught before and now represented a topic of interest that involved various professional groups and resources. The fourth identified changes in economic education as associated with increased sophistication with technology.

Despite these differences in interpreting the changes in economics education, three of the four wikis contained similar explanations for why it has been marginalized, attributing its de-emphasis to insufficient planning resources and standardized assessment requirements. The group Disturbing Damsels provided some consideration to economics' curricular absence; however, did not explore the reasons for its disappearance.

Memories of economic learning were blasé, with three of the four wikis providing comments. Two wiki groups, Rowdy Renegades and Eleven Again, had no memories of economic learning in their experiences. The group Disturbing Damsels did not address the topic. Spunky Sparkers associated economics learning with mathematics worksheets. Table 1 provides a clarification of the aforementioned findings.

Table 1: Summary of Economic Chapters' Content

	Rowdy Renegades	Eleven Again	Disturbing Damsels	Spunky Sparkers
Nature of Economics	Not truly considered.			
Importance of Economics	Daily living	Consumer Behavior	Quotations. No articulation	Money, Business, Inflation, Globalization
History of Economics Teaching	Should begin early in life	Increasing emphasis as children become independent	Begins with scarcity and becomes more complex	Increasing technological use.
Why Marginalized	Not enough time for sufficient coverage	Not part of testing	Explains that it is marginalized, but does not explain.	Test scores
Memories of Economics Learning	None	None	None	Math Worksheets

Student technology confidence. One survey item prompted enrollees to convey their agreement with the statement, "I am not confident in my abilities to teach about how people organize for the production, distribution, and consumption of goods and services." All 48 enrollees who completed the survey responded to this item, with 12 (25.00 percent) either strongly disagreeing or disagreeing with the statement. To put it another way, only one-fourth of the students responded that they agreed they had confidence teaching about economics.

Of the 48 participants who completed the survey, 46 indicated the social studies area in which they had the most and least amount of confidence. Only three (6.52 percent) respondents chose economics as being the area that they had most confidence teaching. Conversely, 27 (58.70 percent) respondents selected it as being the subject of which they had least confidence. These results are consistent with findings that economics may not be the social studies area of choice among elementary teachers (Kruger, et al., 2009).

Open response. The survey contained one open response item that concerned technology use for social studies teaching. Of the 48 students who completed the survey, 38 (79.17 percent) wrote a response to the prompt, *How (In what ways) can technology facilitate and/or enhance student learning of the social sciences?*

Coding revealed five candidate comment themes. These themes were (1) use of technology to increase student learning or knowledge; (2) use of technology for conceptual enhancement, (3) use of technology tools, (4) use of technology for activities, and (5) use of technology purposes of engagement, management, or connecting with learners. There were four responses that did not fit into any of these categories.

The most prevalent theme (11 of 38 or 28.94 percent of respondents) concerned technology use as a vehicle for increasing student learning or knowledge. Candidates that articulated these ideas recognized the importance of technology use, but did not expressly state how it would be used. For example, one student

commented "Technology allows a classroom to explore (social studies) in such a unique way." Another wrote "Technology use enhances learning and deepens students' understanding." Finally, another remarked, "Broaden learning and teaching experiences for students." These comments indicated recognition of the potential for technology's enhancement of social studies learning; however, they lacked the effort to interpret how such betterments occurred. They simply stated that technology or its use improved knowledge.

The second most comment theme (9 of 38 or 23.68 percent of respondents) concerned technology as a mechanism for conceptual enhancement. These comments went beyond the learning or knowledge comments such that they provided specific explanations for how the technology improved the content presentation. Technology's ability to enhance students' visualization of content represented a recurring observation among these respondents. For example, one student commented that technology "takes learning further by creating a visual of the content." Another wrote that technology "Helps display information in a new way." Finally, one other student wrote that technology "enhances content by making it more appealing and available." All of these comments relate to the visual appeal that technology offers for presentation of social studies content.

The remaining responses excepting four, which were uncategorized, fell within three themes, use of technology tools (5 respondents), use of technology for activities (5 respondents) and use of technology purposes of engagement, management, or connecting with learners (4 respondents). Comments within the first two above themes identified particular technology tools or processes for classroom use. For example, Google Earth, web quests and virtual field trips were tools or devices identified. Concerning processes, candidates employed nonspecific jargon, such as hands-on and interactive activities to describe instructional approaches for technology implementation. Comments, which concerned classroom processes, repeatedly referred to student engagement as a technological benefit.

Discussion

The analysis determined that the economic chapters portrayed the nature of economics differently from each other, and presented the teaching of economics similarly. All stated that standardization processes marginalized economics teaching. The following discussion is organized by interpretation of the wiki content and their construction process.

None of the chapters interpreted the nature of economics absolutely or completely, and none of the chapter authors truly used their own ideas to address the topic. Grossman and Schoenfeld with Lee (2005) point out that classroom content knowledge involves different elements than broadly understood. The information is shaped or modified by teachers for students' comprehension. The findings of this study indicate that chapter content reflected participants' difficulties articulating sophisticated content understandings.

This assignment presented a challenge for enrollees because it required them to shape the researched information in ways that would be professionally meaningful. Participants could not simply compose as they wrote. Rather than reflect and post information that enrollees would process and publish spontaneously, they were expected to process information from outside sources into a more formal context and to decide upon the visual representations of that information. Participants experienced challenges processing the information for their resources' development.

Because of enrollees' weak content knowledge and their difficulties thinking at higher levels, they incurred difficulties visualizing development of chapter information. They lacked a visual goal to pursue. The assignment guidelines were conceptual. There was not an example to follow. Students were expected to collaborate and develop a project to the mutual agreement of the group rather than individually copy an instructor's model.

Economics chapter content depended largely on quotations or definitions. Anecdotal evidence indicates that students recognized the efforts to prompt their higher level thinking; however, they excused these challenges by claiming to be unfit. These attitudes indicate elements of learned helplessness or deficit thinking which hindered their willingness to try and develop deep content awareness.

This situation may relate to shallow content knowledge among participants. James's (2008) description of the protectivist attitudes towards history content, which are harbored by preservice elementary teachers, may relate to the aforementioned dispositional challenge. If, as described by James, candidates view teaching of social studies as a process for perpetuating convenient history myths of the dominant culture, it is possible that the same tendencies occur in economics teaching. Such habits of thought may resist critical views of choice-based economic principles and merit-based rationalizations of resource control. They lacked the knowledge and skill to critically interpret the economic content that they researched.

Participants may have been comfortable with the employment of publicly accessible collaboration tools for social purposes; however, the forced socialization for purposes of developing a professional resource disturbed them. The assignment required enrollees' communication with offline strangers, their exploration of new technology, and their negotiation of unfamiliar media to process researched information. This trio of unfamiliarities may have prevented the necessary outreach for successful online community development and task accomplishment. Facilitating opportunities participants with groups to meet and become acquainted prior to their online immersions may have alleviated some of the obstacles to meaningfully completing their assignments.

Process

Literature (e.g., Lucey, et al., 2009; Waltonen-Moore et al., 2006) describes the patterns of community that may occur through the use of online tools. Online community did not emerge from the current project. This situation may relate to the online tools employed, the expectations for students, and the provided instructor direction.

Online tools. Lucey et al. (2009) disclose the importance of structuring community-based technology-based assignments in ways that ensure the development of student familiarity with technology tools. Though their recommendations addressed various aspects of the lesson structure; they did not relate the process to the nature of the online instructional tool. While Lucey et al. and the present study employ online collaboration tools, the nature of the assignments required different types of online collaboration tools, and thus prompted different patterns of thinking and interaction among participants. Lucey et al.'s analysis concerned reflection-based communications of graduate students within a blog. The patterns of communication were open and personal. The participants were not required to post particular reflection content and medium did not allow for participants to edit each other's work.

In contrast, the current study required participants to construct wiki chapters, seek information, format pages, and structure content. Communications among participants within the wiki required use of separate wiki tools such as the discussion feature, in addition to resource posts and edits. Related communications may have also occurred through outside mediums such as Instant Messenger or through face to face meetings. While the processes that required students to

complete an assignment was designed for the appropriate online tool, the number of processes and the challenges that they presented to students impaired the content development. Students wanted easy processes, and did not avail themselves of the tools that wikis offer, such as discussion boards and revision tracking. Blogs are direct communication outlets in which it is easy to write and post, require no collaboration, and produce an individual product. Wikis have more features that require more user time and attention but accommodate collaboration. The students were not comfortable with the new technology and resisted the opportunity to use it to its fullest potential. While this situation represents an initial aversion to a new social medium, it may also indicate a passive disposition toward learning. Expectations for traditional instruction, which could have detailed how to manage the online tool, may have hampered their willingness to become proactive learners. The challenge of researching economic content of which the participants likely possessed tentative knowledge presented additional planning difficulty.

Expectations for candidates. The instructors structured the assignment to allow for student autonomy and flexibility in scheduling their processes and to encourage student-initiative. The assignment provided dates by which students were expected to post content; however, did not require posting of specific information for each due date.

Students expressed feelings of dependency, seeking precise guidance and direction. This situation may have resulted from their lack of familiarity with the online tool and from their inability to recognize its value in their professional practices. While the current study did not collect information about students' attitudes concerning the use of wiki resources before the assignment, data were collected about students' perceptions of wikis immediately after the course. While it cannot be attributed specifically to the use of a wiki as the tool, 79.17 percent agreed or strongly agreed that they are confident using technology as a tutor and 77.08 percent agreed or strongly agreed that they are confident in their abilities to empower students' technology use. This high level of computer efficacy was achieved despite the fact that 68.08 percent felt overwhelmed at the prospect of teaching social studies using 21st century technology.

The researchers administered an online survey to candidates at the completion of candidates' student teaching (one semester after completing the course assignment). Of 43 students asked to complete the online survey, 12 (27.91 percent) responded. With one exception, none of the students used the resource during their student teaching and none recognized the professional value of the wiki. It is possible that the effort to learn the tool may have dampened candidates' enthusiasm for researching and editing the content. The benefit of traditional instruction, in this situation, relates to the teaching the skills to negotiate the wiki, thus allowing more focus on the research and development of chapter content.

Instructor direction. The assignment was largely void of instructor feedback until the end of the term. The instructor of one section did provide a check off sheet for the required elements of each chapter. No feedback was provided on the quality of the submissions, just the presence or absence of information. Grading was based on the final content contained in the chapters and balance of participation. The candidates possessed responsibility for regulating the resource construction. This situation presented a challenge for candidates who expected regular guidance and feedback about the direction of their pursuits; however, posed less stress for the independent.

It was expected that the online communities would provide the support and positive reinforcement needed to bolster development efforts. Elements of frustration are evident within the content described above (e.g., efforts to define economics

rather than explain its nature). Future project efforts should provide a model for the students to refer to as they develop their products. Though the assignment provided students with the latitude to be creative in developing the final chapters, it did not give them the direction needed to interpret what instructors expected. Regular instructor feedback about the content could have alleviated this situation somewhat. For example, encouraging efforts to look deeper into content, reminding candidates to paraphrase sources and devise their own views, and prodding candidates to address the specified prompts, rather than using common sentence stems could have generated more favorable content from which candidates would draw.

Conclusion

While the researcher initially perceived candidates as being technologically efficacious, social and content challenges within the project hampered candidates' resource development. The chapters portrayed the nature of economics differently from each other, and affirmed that marginalized economics teaching resulted from standardization processes. This work indicates that while technology-based constructivist learning may represent a tool for fostering learning about economics and personal finance, its facilitation of student-centered cooperative processes for technology learning require student comfort with content and social considerations to affect productive processes. The results of this project indicate that the nature of the technology tool, the degrees of student expertise, and nature and amount of teacher involvement all contribute to learning outcomes. Additional research needs to examine the interactions among these components and their relationships to technology-based economic learning.

The paper described a method for both increasing teacher candidates' understandings of economics, and comfort with various technology tools. Despite the frustration of students in their creation of the wikis, through the process, students did develop familiarity with online wiki tool and considered economic content and teaching. Refinement of the resource assignment to provide more instructor guidance through ongoing content analysis and feedback may motivate student resourcefulness.

The work offers a basis for conversation about structuring online collaborations that optimize learning for all participants. The contrived nature of the assignment, combined with student learning of the online tool, lent to an assignment structure that guided students through the process. Yet either students' limited background knowledge and/or their technological inefficacy limited their initiative. For online collaborations that develop resources to be successful, instructors should consider an appropriate mixture of instructional guidance and student autonomy.

Finally, the project offers an opportunity to review student work products and share ideas about their views of economic content. While the construction process met with a number of difficulties, the chapter content presents similarities and differences in the participants' interpretations of economics and related teaching and learning. The comparatively small amount of instructor guidance allowed for student interpretation of chapter content consistently with their personal contexts. Thus, it provides a benchmark for interpreting the economic knowledge and research resourcefulness of elementary teacher candidates while providing an opportunity for future revisions by future classes.

In a standardized education environment, which emphasizes factually based learning, little tolerance for alternative social interpretations occurs. This paper conveys how the use of an online learning tool may represent a vehicle for developing different interpretations of economics and related teaching and learning processes. In a capitalist environment, which rationalizes a crisis of global warming

and national resource depletion, different interpretations of economics and related theory offer hope for the future. Teacher educators face the problem of how to prepare candidates to (1) appreciate broad social studies conceptions, (2) articulate these understandings, and (3) integrate them into authentic learning opportunities.

Preservice teacher development of wiki resources provides promise for developing teachers' technological efficacy. While it is recognized that the content of wikis in this project involved substantial disappointments, additional instructor direction may have addressed this situation. Striking a balance between complete autonomy and overbearing supervision may provide the common ground to harness the creativity needed in preservice and in-service teachers' development of resources to support their development of critically thinking global citizens.

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