THE EFFECTS OF GUIDED VIDEO ANALYSIS ON TEACHER CANDIDATES' REFLECTIVE ABILITY AND INSTRUCTIONAL SKILLS DURING FIELD EXPERIENCES INCLUDING STUDENTS WITH DISABILITIES

by

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Abstract

Preparing teachers to educate students with disabilities is a complex undertaking. Teacher preparation programs include field experiences where teacher candidates apply theory to practical settings. Field experiences frequently are considered the most important component within teacher preparation programs, but there is limited understanding of effective field experience activities because the vast majority of the research on this topic is descriptive in nature. Two commonly described field experience activities are reflection and videotaping. The two activities are combined during video analysis to promote critical thinking and improved instructional skills. Without guidance during video analysis, teacher candidates often remain technical rather than transformative in their reflective abilities. Research on video analysis as a way to target reflective abilities and instructional skills during field experiences is extremely limited, likely due to the many challenges involved in studying authentic teaching contexts. The purpose of this quasi-experimental study was to understand the effects of guided video analysis on teacher candidates' reflective ability and instructional skills during teacher preparation field experiences that included students with disabilities. Thirty-six teacher candidates were split into two comparable groups with similar prior experience. Teacher candidates in both groups participated in semester long field experiences where they videotaped their own instruction four times and wrote four reflections using a rubric. Teacher candidates in the treatment group (n = 17) also received guidance and support. Both groups felt they made significant improvements in their teaching ability, but only the treatment group demonstrated significant growth in reflective ability and instructional skills overtime. Limitations and implications of the findings are discussed.

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INTRODUCTION

Preparing teachers to educate students with disabilities is a complex undertaking. Special education teacher preparation programs are intended to equip teacher candidates with essential skills necessary for educating students with a wide range of learning and behavioral needs across various settings. Teacher educators are challenged to prepare special education teacher candidates (SETC) to teach in settings ranging from self-contained, inclusive, or co-teaching classrooms, resource rooms, or as consultants, interventionists, or support facilitators. Preparing SETC to educate students with disabilities across various educational contexts requires more than simply teaching about evidence-based practices or directing SETC to watch other effective teachers (Leko & Brownell, 2011).

Effective teacher preparation programs include a focus on meeting the needs of diverse learners through carefully crafted field experiences with opportunities for reflection (Brownell, Ross, Colon, & McCallum, 2005). Field experiences promote learning and development because knowledge of effective teaching is applied in real classroom settings (Cook & Schirmer, 2006). Field experiences allow SETC to apply theory to practical settings with a high degree of structure as they learn to focus on student needs (Leko & Brownell, 2011). In addition to linking knowledge gained from coursework to practical situations, SETC learn real-time problem solving skills, and gain competencies that will apply to their future careers during field experiences (Ludlow, Gaylon-Keramidas, &Landers, 2007). Field experiences frequently are considered the most important component within teacher preparation programs (Buck, Morsink, Griffin, Hines, & Lenk, 1992; Conderman, Morin, & Stephens, 2005; Connelly & Graham, 2009;

Dymond, Renzaglia, Halle, Chadsey, & Bentz, 2008; Recchia & Puig, 2011; Sayeski & Paulsen, 2012).

Most research on teacher preparation field experiences suggests field experiences are beneficial to SETC, but the vast majority of the research is descriptive in nature only (see Table 1). Descriptive and qualitative research methods detail field experiences activities, generate theoretical models, and support scientific inferences but they do not quantitatively measure the effects of the field experience on SETC performances or on student outcome variables. Previous field experience research describes the transfer of knowledge to application only in part (McCall et al., 2014). While the importance of field experiences in the context of special education teacher preparation is undisputed, quantitative research on the effects of specific components of or activities within field experiences can add much more understanding.

<Insert Table 1 here>

This chapter introduces the aim and scope of the present investigation including (a) the importance of reflection during field experiences, (b) the need to guide SETCs' reflective process using a rubric, (c) the need to guide SETC's reflective process through videotaping of his or her instructional activities, and (d) the need to measure SETC's instructional behaviors using video evidence. This chapter also includes definitions of key terms including the independent variable (guided video analysis) and the dependent variables (reflective abilities and instructional skills). The chapter ends with an overview of the field experience activities specific to the present investigation.

The Importance of Reflection

One field experience activity often required as part of teacher preparation programs is reflection (Conderman et al., 2005; Tripp & Rich, 2012a). Both the Council of Chief State

School Officers (CCSSO), through its Interstate Teacher Assessment and Support Consortium (InTASC) and the Council for Exceptional Children (CEC) include professional teaching standards that focus on lifelong learning through reflection on one's own teaching practices (CCSSO, 2011; CEC, 2012). Reflection activities require SETC to identify teaching strategies used throughout a lesson and then analyze the strategies in three steps: (a) examine the objective or goal of the strategy selected, (b) provide rationale and justification for selecting the strategy, and (c) compare how the outcomes of using the strategy aligned to the anticipated outcomes during lesson planning (Beck, King, & Marshall, 2002). Reflective abilities are especially important for SETC who will likely be required to review and rethink strategies to determine best methods for meeting the needs of students who are not succeeding in general education programs.

Reflection activities are common practices within field experiences (Conderman et al., 2005) because reflective abilities are more likely to translate to professional routines when teacher candidates reflect on real teaching experiences in actual classrooms (Etscheift, Curran, & Sawyer, 2012; Moore, 2003). Developing reflective abilities during teacher preparation field experiences may promote growth in SETCs' teaching ability when considering, similar research with in-service teachers showed those who reflect on their teaching are more likely to make changes to improve instruction when compared to teachers who do not reflect (Harford & MacRuairc, 2008; Osipova, Prichard, Boardman, Kiely, & Carroll, 2011). Calandra, Gurvitch, and Lund (2008) conducted an exploratory study to understand if SETC transitioned from noticing to improving instructional skills including classroom management, modeling for students, managing student behaviors, student engagement techniques, and verbal instruction after participating in reflection activities during field experiences. The authors concluded SETC

better recognized diverse and challenging teaching situations through reflection, but without guidance during the reflective process, SETC did not transition from noticing to improving instructional skills (Calandra et al., 2008). Teacher candidates may need more guidance in learning to reflect on their teaching.

Guiding the Reflective Process through Reflection Rubrics

The first step often suggested in guiding teacher candidates through the reflective process is to provide a model for reflection activities. Otherwise, SETC more likely focus on just awareness of the experience using descriptions and feelings rather than transformative learning procedures such as analysis, judgment, and planning for the future (Kalk, Luik, Taimalu, & That, 2014). Gibbs' (1988) Model of Reflection and Pfeiffer and Ballew's (1988) Experiential Process are two widely used reflection models that stem from Dewey's (1933) earliest conception of the reflective process. These widely used reflection models, like others, provide a crosswalk from describing past events to action planning for future events. Reflection models can become tangible for SETC using rubrics. Rubrics can serve as both a framework for reflection activities and a method for systematically measuring reflective abilities (e.g., Crawford et al., 2012; Robinson & Kelley, 2007; Stockero, 2008).

Reflection rubrics can guide SETC to think critically about specific components of a lesson or teaching behaviors through various lenses or dimensions of reflection (see Table 2). For example, a SETC can focus on questioning techniques used during a lesson. The SETC might first describe what questions they asked students during the lesson. Then, the SETC can think about why they asked those specific questions, how they felt about the choices they made, what students gained through the questioning techniques chosen, and if they were happy with the outcome of such questions when considering the overall objective of the lesson. Lastly, the

SETC can decide if and how they might change or improve their questioning techniques given another opportunity. While different studies have used slight variations of this reflection model (e.g., Crawford et al., 2012; Robinson & Kelley, 2007; Stockero, 2008), most reflection rubrics include a progression that ranges from recalling the past to planning for the future based on analysis of the lesson. Without guidance from a reflection rubric grounded in a model of reflection, SETC often remain self-centered and technical in their reflective abilities and as a result may be less likely to change preexisting teaching perceptions or abilities (Calandra et al., 2008). Using video may assist preservice teachers in reviewing their instruction in order to reflect.

<Insert Table 2 here>

Guiding the Reflective Process through Videotaping Field Experiences

In addition to reflection rubrics, the SETCs' reflective process can be guided using videotaped lessons. Guiding the reflective process using videotaped lessons leads to reflection activities that are more robust when compared to traditional reflection activities found to be superficial at times (Calandra et al., 2008). Special education teacher candidates who are developing foundational reflective abilities can benefit from supplementing reflection activities with video evidence when learning "how to notice" (Ostrosky, Mouzourou, Danner, & Zaghlawan, 2012) and becoming more "with-it" as an educator (Snoeyink, 2010). Reviewing videotapes of lessons from teacher preparation field experiences is particularly important for teacher candidates who are just beginning to develop the ability to identify effective instruction during real-time classroom situations (Sherin & van Es, 2005).

Special education teacher candidates can videotape their own teaching during field experiences to then review the video, receive feedback, and examine their own abilities in a

reflective process referred to as video analysis (Nagro & Cornelius, 2013). Video analysis allows SETC the flexibility to elicit feedback from others who may not have directly observed the lesson (Haefner-Berg & Smith, 1996) as well as the means to reflect on their own teaching anytime from anywhere without having to simultaneously teach (Martin & Ertzberger, 2013; Wang & Hartley, 2003). The flexibility of video technology, combined with familiarity of watching one's own video, supports both a means for reflection and a method for assessing evolving teaching abilities during field experience.

Measuring SETC Growth Using Video Evidence

Advances in computer-based and mobile technologies have made videotaping teaching experiences in authentic classroom settings a reality. The use of computer-based and mobile technology has increased dramatically since 1995 as most teachers now use these technologies daily (Martin & Ertzberger, 2013; Russell, Bebell, O'Dwyer, & O'Conner, 2003). Such advances have made capturing evidence of teaching on video using laptops, smart phones, tablets, and flip-cams feasible for SETC during field experiences. Special education teacher candidates can use computer-based and mobile technology to videotape their own teaching during field experiences without assistance from others. Using such video evidence together with a reflection rubric can guide reflection activities and the same video evidence can be used to measure SETC behavior.

Video evidence is now widely used in teacher credentialing since the American Association of Colleges for Teacher Education (AACTE, 2013) developed edTPA in 2012 which requires teacher candidates in several states to demonstrate target skills and knowledge specific to their credentialing area, in classrooms with real students, while being videotaped. Most recently, the edTPA has become exclusively linked to Stanford University's Center for Assessment, Learning, and Equity and teacher candidates now use the Pearson ePortfolio system

for uploading video evidence with their written reflections. Twelve states have officially adopted edTPA as a viable teacher licensure option or requirement. Unofficially, more than 160 universities across 34 states are currently using edTPA activities to evaluate teacher candidates using video evidence (Pearson Education, 2014).

Beyond credentialing practices, video evidence can be used to measure reflective abilities and instructional skills by tracking changes from one videotaped lesson to the next. Methods for measuring SETC growth include the use of rubrics, likert-scales, frequencies, checklists, or criterion levels that can be reliably measured by viewing video evidence (Cantrell & Kane, 2013). Special education teacher candidates can also use the same measurement tool, be it a rubric or checklist, to guide their analysis of the videotaped lesson. Providing SETC with guidance while reviewing a video can offer support since making sense of important aspects of a videotaped lesson can be difficult given the hustle and bustle of a classroom (van Es, Tunney, Goldsmith, & Seago, 2014). Encouraging both SETC to watch their own videotaped lessons and teacher educators to use the video evidence to measure teacher growth using the same instrument, be it a rubric or checklist, can further streamline the video analysis, reflection, and feedback processes.

The Purpose of the Current Investigation

Despite the popularity of including video analysis in both teacher preparation and teacher credentialing, there is a paucity of scientific research on the effects of video analysis during teacher preparation field experiences on SETCs' reflective abilities and instructional skills. No published experimental or quasi-experimental group design research on the effects of video analysis in real classrooms, specific to special education teacher preparation were found. Few if any experimental or quasi-experimental group designed research investigations studying the

effects of video analysis on teacher candidates in real classrooms with real children across any educational contexts have been published since NCLB established scientifically based research standards in 2002. This paucity of such research illustrates the need for an empirical investigation to understand the impact of guided video analysis on SETCs' reflective abilities and instructional skills during their field experiences.

Therefore, to add to the literature on teacher preparation field experiences and address the need for scientific research investigating the effects of video analysis on teacher candidates' reflective abilities and instructional skills, the purpose of the current investigation was to determine the effects of guided video analysis on teacher candidates' reflective abilities and instructional skills. Specifically, the following research questions (also outlined in Table 3) were posed to investigate the effects of guided video analysis on teacher candidates' reflective abilities across four dimensions of reflection (describe, analyze, judge, and apply) as well as their ability to communicate with students and use effective questioning techniques during semester long field experiences.

1. Is there a difference in teacher candidates' perceived professional ability in relation to reflective abilities and instructional skills after participating in a field experience supported by guided video analysis using rubrics and feedback compared to teacher candidates in a field experience supported by video self-reflection alone?
2. Is there a difference in reflective abilities, as measured by four dimensions of reflection (describe, analyze, judge, apply), of teacher candidates in a field experience supported by guided video analysis using rubrics and feedback compared to teacher candidates in a field experience supported by video self-reflection alone?

3. Is there a difference in instructional skills, as measured by proficiency in communicating with students and questioning techniques, of teacher candidates in a field experience supported by guided video analysis using rubrics and feedback compared to teacher candidates in a field experience supported by video self-reflection alone?

<Insert Table 3 here>

Definition of Terms

Special Education Teacher Candidate (SETC). For the purpose of this investigation, SETC refers to students enrolled in a teacher preparation program where upon program completion they can earn special education teaching licensure.

Teacher Candidate (TC). For the purpose of this investigation, TC refers to students enrolled in a teacher preparation program where upon program completion they can earn teaching licensure allowing them to teach in inclusive settings.

Video Self-Reflection. Teacher candidates videotaped their own teaching, watched the video back to reflect on their teaching by analyzing strengths and weaknesses, and then decided what changes needed to be made in future lessons.

Guided Video Analysis. Guiding teacher candidates through the video analysis process included providing a reflection rubric and a self-evaluation rubric directly aligned to "The Framework for Teaching" by Danielson (2013) referred to from this point forward as the Danielson Framework. Specific and timely written feedback was also sent to teacher candidates in response to their written reflections and video analysis further guiding reflection activities.

Reflective Abilities. For the purpose of this investigation, seminal reflective models and previous research on teacher reflection were referenced to create a measure of reflective ability. Teacher

candidates were measured on the ability to reflect across four dimensions of reflection including *describing* past teaching choices, *analyzing* why choices were made, *judging* the success of those choices, and *applying* these conclusions to plans for future lessons. Omitting any one of the four dimensions of reflection equates to a lower level of reflective ability. While one dimension of reflection was not a prerequisite of the next, for the purpose of this investigation *description* was closest to technical reflective ability and *application* was closest to a reflective practitioner.

Instructional Skills. For the purpose of this investigation, instructional skills included teacher candidates' ability to communicate with students and use of questioning techniques as measured by four levels of proficiency (unsatisfactory, basic, proficient, distinguished) on six elements (expectations for learning, directions for activities, explaining content, using oral and written language, quality of questions and prompts, and discussion techniques) directly align to the Danielson Framework (2013).

Organization of the Study

Experimental group design research leads to the best estimates of effect through random assignment between treatment and control groups. Quasi-experimental group design research is not equivalent to randomized experiments, but experimental conditions are not always feasible in education research (Feuer, Towne, & Shavelson, 2002). The complexities of educational settings do not lend to random assignment of participants to condition (Borman, 2002; Burtless, 2002; Falaye, 2009). Quasi-experiments approach similar standards of causality by comparing effects between a treatment and comparable group. For these reasons, a quasi-experimental group designed study that included SETC and TC completing a field experience within their teacher preparation was selected. Specifically, SETC enrolled in an early intervention/early childhood, mild/moderate disabilities, or severe disabilities special education master's teacher preparation

program or TC enrolled in an elementary general education master's teacher preparation program and participating in a field experience during the time of this investigation were assigned to either the treatment condition, guided video analysis, or a comparison condition video self-reflection. Interns were nested within internship course sections and therefore all interns within each course section received the same condition. Internship course sections were assigned to condition so that both conditions included both SETC and TC allowing for investigation of the effects of guided video analysis on SETCs' and TCs' reflective ability and instructional skills. Due to the nature of special education teacher preparation, including participants across programs was one way to increase the sample size and allow for an investigation between groups. Steps were taken to assure groups were comparable.

CHAPTER 2

LITERATURE REVIEW

Preparing special education teachers requires an understanding of program features necessary for facilitating learning. Typically, preparation programs are designed to blend knowledge with application. Special education teacher candidates (SETC) gain knowledge of evidence-based practices and effective instructional skills during theory and methods courses. Then, SETC are asked to apply the knowledge they gained and demonstrate their ability to educate students with disabilities during field experiences. More specifically, effective teacher preparation program features include a coherent program vision, blended theory and pedagogy coursework, standards for quality teaching, a focus on collaboration and meeting the needs of diverse learners, opportunities for teacher reflection, and carefully crafted field experiences (Brownell et al., 2005).

Most teacher educators would agree that learning to be an effective teacher requires more than simply watching other effective teachers (Leko & Brownell, 2011). Incorporating field experiences into preparation programs allows teacher candidates to apply theory to practice, exhibit quality teaching as measured by professional standards, reflect on their knowledge and abilities, actively meet the needs of diverse learners, and collaborate with other professionals before they are working independently in their own classrooms (Darling-Hammond & Sykes, 2003). Field experiences have the potential to encompass all the features of effective teacher preparation as outlined by many teacher educators (see Brownell et al., 2005). During field experiences, teacher candidates are engaging in the profession and begin to view themselves as educators (Hixon & So, 2009), which encourages the transformation from technician to reflective practitioner (Dieker & Monda-Amaya, 1997).

While many consider field experiences the most important aspect of teacher preparation (Buck et al., 1992; Conderman et al., 2005; Connelly & Graham, 2009; Dymond et al., 2008; Recchia & Puig, 2011; Sayeski & Paulsen, 2012), the teacher preparation field still lacks a clear understanding of which activities within field experiences best prepare teacher candidates for classroom realities (Sindelar, Brownell, & Billingsley, 2010). Over the years, research on teacher preparation including field experiences has been described as *incoherent* (Cochran-Smith & Fries, 2005), *lacking coordination* (McCall, Alvarez McHatton, & Williams-Shealey, 2014), and *thin* (Sindelar et al., 2010). Most would agree that previous field experience research inadequately described the transfer of knowledge to application partly because of the lack of or scattered methods used to measure teacher candidate growth (McCall et al., 2014). There is a need for systematic documentation of teacher candidate growth during field experiences to inform the field and explain specifically how special education teacher preparation programs benefit prospective teachers (Leko & Brownell, 2011).

Previous field experience research may not adequately explain how to measure SETCs' growth or what activities within field experiences make an impact in teacher ability, yet reviewing this body of research can help inform future efforts to answer such questions. This chapter includes an overview of research on special education field experiences to highlight the most common field experience components. Next, there is a synthesis of the research on two common field experience components, reflection and video analysis, across both general and special education contexts. The body of literature specific to reflection activities includes examples of how such activities can be guided using rubrics as well as videotaping activities. The body of literature specific to video analysis includes examples of how such activities can be used for teacher candidate self-evaluation and to facilitate feedback. Next, challenges and lessons

learned from previous video analysis research are organized in four main sections: (a) challenges with experimental research designs, (b) authentic education settings, (c) introducing a video camera, and (d) using video evidence to measure reflective ability and instructional skills. Challenges of using video evidence to measure reflective ability and instructional skills is further broken down into six specific aspects of video analysis and six conclusions for future video analysis investigations are summarized. Last, given what is known from these bodies of research, the purpose of the current investigation is outlined.

Special Education Field Experience Components

Effective teacher preparation programs include carefully crafted field experiences (Brownell et al., 2005). Reviewing specific components of and activities within field experiences considered beneficial for SETC helps to define what *carefully crafted field experience* means. Within the following section, the body of literature on field experiences for SETC is summarized. Common components including components and activities are described to understand the effects of field experiences on SETC. Thirty-three peer-reviewed publications (summarized in Table 1), including information about the field experiences of 880 teacher candidates, of which 368 were SETC, from 104 preparation programs, resulted in a summary of seven common components of field experience:

- special education teacher preparation programs include at least one field experience;
- field experience placements mainly occur in school settings, often elementary classrooms, for one semester lasting between 10 and 14 weeks;
- field experience placements include students with disabilities so SETC can practice special education instructional strategies;

- field experiences include teaching and in some cases professional activities similar to those of in-service teachers;
- field experiences include assessments to measure SETC growth and assessments are tied to coursework within a preparation program;
- field experiences include guidance in the form of feedback or opportunities for reflection;
- SETC are observed by university supervisors, cooperating teachers, mentors, or coaches typically three or four times over the course of one field experience (Nagro, 2014).

As shown in Table 1, most researchers concluded field experiences were beneficial to special education teacher preparation. Frequently after completing field experiences, SETC expressed deeper passion for and commitment to the profession (Adams, Bondy, & Kuhel, 2005), formed expectations for a career in special education (Kamens, 2007), felt more confident to take on all the responsibilities of a classroom teacher (Knapczyk, Hew, Frey, & Wall-Marencik, 2005; Ludlow et al., 2007), and became more comfortable working with students with disabilities (Recchia & Puig,2011; Voss & Bufkin, 2011) (see Table 1).

Past research investigations have discussed field experiences but have not measured SETC growth because such investigations were more descriptive in nature (e.g., Conderman et al., 2005; Hanline, 2010; Kamens, 2007; Leko & Brownell, 2011; Ludlow et al., 2007; Morewood & Condo, 2012; Recchia & Puig, 2011; Roberson, Woolsey, Seabrooks, & Williams, 2004a, 2004b). In fact, over the past three decades, there is a paucity of research in which experimental or quasi-experimental group-designed studies were used to investigate the effects of field experience activities during special education teacher preparation. While the importance of field experiences in special education teacher preparation is undisputed, empirical research on the effects of field experience activities is still needed (Leko & Brownell, 2011).

Reflection as a Component of Field Experiences

One field experience component described commonly across teacher preparation programs is teaching candidates to become reflective practitioners (Conderman et al., 2005; Tripp & Rich, 2012a). Essential professional practices, such as reflection, are embedded within teacher preparation field experiences because reflective abilities are more likely to translate to professional routines when learned in authentic settings (Etscheift et al., 2012; Moore, 2003). Reflective practitioners knowingly select strategies in the classroom to best meet the needs of their students, and think back on what occurred to critique and evaluate the outcomes of the lesson (Harford & MacRuairc, 2008). Therefore, it is not surprising both general and special education teacher preparation programs often emphasize the importance of teacher candidate learning and development through reflection (Brownell et al., 2005).

Teacher candidates need to learn how to reflect and examine their own teaching experiences. Reflection activities can include writing in journals, discussing an experience with peers or mentors, logging a list of teaching activities, collecting and writing about teaching artifacts such as lesson plans or student work, or developing a portfolio to capture areas of growth. Teaching candidates how to reflect helps them "learn to notice" (van Es & Sherin, 2002) especially when field experiences can be a fast paced and overwhelming (O'Brian, Stoner, Appel, & House, 2007; Shefelbine & Hollingsworth, 1987). Additionally, SETC can learn to evaluate their personal beliefs to explore new ways of improving their teaching through reflection (Calandra et al., 2008; Calandra et al., 2009; Kong, 2010). This is especially important for SETC who will be challenged to select and implement effective instructional strategies for students with a wide variety of academic and behavioral needs across educational contexts (Griffin, Winn, Otis-Wilborn, & Kilgore, 2003).

Credited as one of the earliest conceptualizations of reflection, Dewey's (1933) theory, requires teachers to identify teaching strategies used throughout a lesson and then analyze the choices using the following three steps: (a) examine the objective or goal of the strategy selected, (b) provide rationale and justification for selecting the strategy, and (c) compare how the outcomes of using the strategy aligned to the anticipated outcomes during lesson planning (Beck et al., 2002). By reflecting in this manner, teacher candidates can learn to recognize their own strengths and limits so they can develop instructional decision-making (Calandra, Brantley-Dias, & Dias, 2006; CEC, 2012; Crawford, O'Reilly, & Luttrell, 2012; Gun, 2011). Despite the importance of reflective abilities, without receiving any guidance on "how to reflect," SETC may not be able to demonstrate they have the ability to apply necessary changes identified through critical reflection activities (Calandra et al., 2008).

Guiding reflection through rubrics. Guiding teacher candidates towards what they should reflect on is a straightforward way to guide the reflective process. Guiding the focus of reflection activities may be as simple as providing a framework such as writing prompts, checklists, questionnaires, or a rubric to frame what teacher candidates recall from their teaching experiences. Rubrics are commonly provided as a method for guiding the focus of written reflections (see Crawford, O'Reilly, & Luttrell, 2012; Calandra et al., 2008; Robinson & Kelley, 2007; Stockero, 2008; Sandmel & Nagro, 2013), but rubrics can also guide teacher candidates to reflect across different dimensions by including a model for reflection.

Simply put, reflection models are cyclical in nature. Table 2 shows several reflections models that are intended to be repeated each time reflection activities occur. For example, Gibbs' (1988) model of reflection that has been used in nursing (e.g., Burrows, 1994), dietetics, (e.g., Burton, 2000) and coaching (e.g., Knowlesa, Tylera, Gilbournea, & Eubanka 2006) used six

phases: describing what happened, expressing what was felt and thought, evaluating positives and negatives about the experience, analyzing to make sense of the situation, drawing conclusions about what else could have been done, and then developing an action plan in case something similar happens again. Similarly, Pfeiffer and Ballew's (1988) model of reflection, referred to as The Experiential Process, has been used in professional fields such as distance education (e.g., Koszalkaa & Ganesana, 2004), psychiatry (e.g., Bryson & Asher, 2008), and childcare (e.g., National Child Care Information Center [NCCIC], 2009). Pfeiffer and Ballew's (1988) model included five phases: *Experiencing*; referred to as the activity phase, *Publishing*; sharing reactions and observations, *Processing*; discussing patterns and dynamics, *Generalizing*; developing real world principles, and *Applying*; planning effective usage of learning. Rubrics can include such models for reflection to guide teacher candidates across several dimensions of reflection in a reoccurring manner to make such activities regular practice.

Taken together, rubrics can guide teacher candidates to focus their reflection activities on specific events within a lesson as well as guide teacher candidates to engage is several dimensions of reflection. Providing a rubric with a narrowed approach by limiting the number of instructional skills focused on as well as carefully distinguishing dimensions for reflection may allow teacher candidates the autonomy to engage authentically in reflection activities (Sandmel & Nagro, 2013). Guiding a teacher candidate in this capacity is necessary; otherwise, teacher candidates tend to focus on descriptions and feelings rather than transformative learning procedures such as analysis, judgment, and planning for the future (Kalk, Luik, Taimalu, & That, 2014).

Guiding reflection with videotaping activities. In addition to guiding reflection activities using a rubric to frame reflection through a specific model, SETC can also use

videotaping activities to further support the reflective process. The use of computer-based and mobile technology has increased dramatically since 1995 as most educators now use these technologies on a daily basis (Martin & Ertzberger, 2013; Russell, Bebell, O'Dwyer, & O'Conner, 2003). Such advances have made capturing evidence of field experiences on video using laptops, smart phones, tablets, and flip-cams feasible for SETC who can then use the video evidence in a variety of ways to supplement the reflective process. For example, SETC can edit a videotaped lesson to highlight strengths and weaknesses (e.g., Calandra et al., 2008), watch and discuss a peer teaching video in a group setting (e.g., Sherin & van Es, 2005, 2009; van Es, 2010), or watch video evidence of their own teaching to then reflect through a process known as video analysis (Tripp & Rich, 2012a).

Video analysis is fundamentally different than other forms of reflection guided by videotaping activities. During video analysis, SETC watch video evidence of their own teaching rather than videotaped lessons of other teacher candidates or in-service teachers. Reflection through video analysis has been shown as a more effective method for developing reflective abilities when compared to traditional forms of reflection from memory or alternative forms of reflection including watching videos of other teachers (Borko et al., 2008; Robinson & Kelley, 2007; Seidel, Sturmer, Blomberg, Kobarg, & Schwindt, 2011). Analyzing one's own teaching experiences using video evidence is another way to guide the emergent reflective abilities of SETC.

Calandra and colleagues (2008) conducted an exploratory study to understand how teacher candidates could supplement written reflective activities by editing video clips of their teaching. Seven teacher candidates each videotaped three, 45-minute lessons and then edited their teaching videos to highlight relevant happenings throughout the lesson. The teacher

candidates wrote about the edited video clips and mainly focused on classroom management, verbal instruction, general student behaviors, specific student engagement, and modeling for students (Calandra et al., 2008). The authors concluded video editing with written reflection had the potential to help teacher candidates recognize diverse and challenging situations, but without guidance during the reflective process, through use of a rubric for example, teacher candidates did not transition from noticing to improving instructional skills (Calandra et al., 2008). This would suggest video analysis activities should be used in conjunction with a reflection rubric to best guide teacher candidates.

Video Analysis as a Component of Field Experience

One way to ensure SETC reflect on video of their own teaching is to embed video analysis within teacher preparation field experiences. During field experiences, SETC can videotape their own teaching to analyze concrete video evidence rather than responding to feelings, memories, or retellings of the lesson using memory alone (Robinson & Kelley, 2007). When making it through the school day is challenging enough for SETC who are balancing classroom management, individual student needs, and rigorous curriculum, video analysis allows SETC the flexibility to reflect on their own teaching anytime from anywhere without having to simultaneously teach (Martin & Ertzberger, 2013; Wang & Hartley, 2003). Those who engaged in video analysis had a greater sense of ownership over their teaching choices (Wright, 2008), felt the process was authentic (Beck et al., 2002), gained new perspectives (Tripp & Rich, 2012a), and had a better understanding of their students' needs (Borko et al., 2008).

The use of video analysis during teacher candidates' field experiences has been researched for almost fifty years. Over 100 articles have been published pertaining to video and teacher development dating as far back as 1969 (see Borg, Kallenbach, Morris, & Friebel, 1969)

and as recent as 2014 (see Konig et al., 2014). Video analysis has been referred to as microteaching, video feedback, video self-confrontation, peer-video process, web-mediated professional development, Video Interaction Guidance (VIG), video self-reflection, visual performance feedback, and video-based teacher self-evaluation (see Nagro & Cornelius, 2013 for the history of video analysis from 1973 to 2013). The one defining feature of video analysis is that teacher candidates watch video of themselves teaching rather than watching video of someone else. Video analysis has resulted in positive professional growth in areas such as teacher-student interactions (Fukkink & Tavecchio, 2010; Pianta et al., 2008) and implementation of desired teacher behaviors (Peterson, 1973; Sharpe et al., 1996). Wang and Hartley (2003) best summarized the uses of video analysis as an activity that can be used to both transform existing beliefs and practices of teacher candidates as well as support the acquisition of new teaching knowledge and skills.

Video analysis used for self-evaluation. Video analysis can be used as a self-evaluation tool where SETC assess their effectiveness in the classroom. Teacher candidates can be taught to investigate their own teaching by viewing one video several times, allowing for insight through different lenses leading to higher level thinking (Beck et al., 2002; Sherin & van Es, 2005; van Es & Sherin, 2010). Sharpe and colleagues (1996) conducted a single-subject study alternating treatment using an A-B-A-C design and including counterbalance methods across six participants to determine if video analysis impacted self-evaluation accuracy. The results suggested reviewing daily practices on video in addition to receiving feedback led to far greater self-evaluation accuracy when compared to receiving verbal feedback alone.

Video analysis used for feedback. Video analysis, unlike traditional classroom observation, is flexible and not based on memory alone. Rather than responding to feelings,

memories, or retellings, video is used to evaluate concrete data (Robinson & Kelley, 2007). As a result, teacher educators can use video analysis to better guide teacher candidate growth. Teacher educators including course instructors, university supervisors, and mentor teachers can focus feedback and instruction on specific themes or techniques captured on video. Teacher candidates can then use focused feedback as an additional development tool while learning how to review and analyze their own teaching captured on video.

Alexander, Williams, and Nelson (2012) conducted one of the few studies of video analysis specific to special education teacher candidates during their field experiences. This is an important study because it outlines how video analysis can be used for both transforming existing beliefs and practices as well as supporting the acquisition of new knowledge and skills through self-evaluation and university supervisor feedback. Not many studies on video analysis have been designed to highlight multiple uses of video analysis in this way. Unfortunately, Alexander and colleagues (2012) had no control or comparison group and randomly selected only two teacher candidates into the sample. Given the design, it is impossible to attribute any changes or growth that occurred for these two teacher candidates to the use of video analysis or to generalize the findings to a larger population of special education teacher candidates.

Actually, despite the consistent positive findings over time specific to video analysis, only two studies, one related to general education (Saunders, Nielson, Gall, & Smith, 1975) and one related to music education (Moore, 1976), were published in peer-reviewed journals and employed experimental or quasi-experimental group designs where teacher candidates videotaped and reviewed their own videos of instruction in naturally occurring educational contexts with real children. No published experimental or quasi-experimental group design research on the effects of video analysis in real classrooms, specific to special education teacher

preparation were found. Even more broadly, no experimental or quasi-experimental group design research on the effects of video analysis on teacher candidates in real classrooms across educational contexts has been published since NCLB established scientifically based research standards in 2002.

The paucity of research illustrates the need for more empirical investigations to understand the impact of video analysis on special education teacher preparation. A reasonable first step, given the rate at which video analysis is becoming a common field experience component and teacher credentialing activity, is understanding why this area of research is underdeveloped. Reviewing published works that broadly focus on the use of video analysis for teacher preparation and development can provide insight into components of strong research designs for future attempts to investigate the effects of video analysis during field experiences despite the challenges.

Video Analysis Research Challenges and Lessons Learned

Experimental research designs. Random sampling and even random assignment to group condition are common challenges when researching the effects of video analysis because teacher candidates completing field experiences are nested in a specific teacher preparation program within a university and placed in a classroom within a given school. Add in the specificity of different teacher preparation programs, and it becomes very difficult to find large groups of teacher candidates with common teacher preparation experiences that can serve as a sample pool. Randomly selecting participants is often not feasible and even random assignment to group can be disrupted by scheduling conflicts as occurred for teacher candidates in Andrews and colleagues (2010) study or for multiple other reasons such as individual school or classroom policies restricting videotaping during field experiences (e.g., Pianta et al., 2008). These issues

with sampling and group assignment not only threaten internal validity, but as groups of teacher candidates become more homogeneous within a study, the less the findings generalize across heterogeneous teacher candidate populations in special education or even more broadly to general education.

One of the greatest efforts to demonstrate the generalizability of the effects of video analysis on teacher candidates dates back to 1969 with the work of Borg and colleagues who included teacher candidates from three different colleges. Teacher candidates from colleges one and two were randomly assigned to treatment and comparison groups and participants from college three were strictly a control group. The control group (n = 14) completed their student teaching internships without any additional activities. Treatment groups from college one (n = 17) and college two (n = 15) and the comparison groups from college one (n = 16) and college two (n = 17) all participated in seminar style discussions specific to the targeted teacher behaviors being measured, watched video models of the preferred teacher practices being implemented, and received handbooks on effective teaching. The two treatment groups also participated in an earlier form of video analysis called microteaching. Borg and colleagues (1969) defined microteaching as a five-step process, which is very similar to video analysis. During microteaching, teacher candidates teach a mini lesson in a laboratory style room to a small group, whereas video analysis ideally occurs in naturally occurring educational contexts including a real classroom with real children.

Borg and colleagues (1969) highlighted how video analysis could be used to transform existing beliefs and practices of teacher candidates who received immediate feedback while reviewing and analyzing their teaching videos. Even with the progression of video analysis research over the last 45 years, it is important to review the work of Borg and his colleagues

(1969). This attempt to scale up the implementation of video analysis during field experiences for teacher candidates has not been done since, and resulted in important lessons for future research. The larger sample size offered an opportunity to investigate within and between-group differences as well as to possibly report estimates of effect given the power of the study, but in order to have valid findings, the authors needed to select appropriate statistical analyses.

Borg and his colleagues (1969) did not present any descriptive characteristics of teacher candidates from the three colleges nor was there a description of the individual programs to justify comparing students from the three different colleges. The authors did report pretest scores on 11 targeted teacher behaviors, but failed to obtain homogeneity of variance between groups on the pretest, which would justify comparing groups on the posttest. Instead, Borg and colleagues (1969) reported the mean differences between pretest and posttest within groups using several paired sample t-tests. The statistical analyses chosen increased the chance for Type I error where the authors may have falsely rejected a null hypothesis in one or more of the 55 paired sample t-tests. Some between-group differences were reported within the narrative in a minor way, but not included in the results table making the findings appear vague which may have been due to the inconsistent findings.

Borg and colleagues (1969) did conclude a major challenge and likely one reason for inconsistent findings was differences between field experience activities including differences in field experience seminar discussions across the three colleges. Additionally, microteaching practice sessions were held daily, and teacher candidates in the treatment group reported this was unrealistic given the additional responsibilities required of them as part of the traditional student teaching process. Therefore, the authors noted many of the teacher candidates did not attend daily microteaching practice sessions. There was no record of the treatment group activities so

the frequency of practice sessions for each teacher candidate as well as the variance in the number of practice sessions between teacher candidates was unknown. The inconsistencies of field experience activities, seminar discussions, and frequency of practice sessions prevented the authors from truly understanding the differences between group conditions and particularly what actual intervention the treatment group received. Without knowing what actually occurred during the intervention it becomes harder to say measured outcomes were a direct effect of teacher candidates videotaping and reviewing their instruction.

Borg and colleagues (1969) made three recommendations for future researchers based on the lessons learned from their study. First, the authors advised future researchers limit the frequency of videotaping to twice or three times a week rather than daily to increase feasibility. Second, the authors suggested all teacher candidates be provided the timeline of video activities before beginning their field experiences so they are aware of the procedures. Last, the authors recommended teacher candidates log their process to track alignment between the intended and actual video activities. Activity logs help researchers clearly define the group conditions to assure treatment and control groups are discrete. These recommendations in addition to standardizing any whole group internship activities specific to the targeted teacher behaviors such as seminar discussions, serve to increase the feasibility and internal validity of studying video analysis embedded into field experiences in naturally occurring educational contexts.

Authentic education settings. A second major challenge for researchers investigating the effects of video analysis during field experiences is the ability to collect data in naturally occurring educational contexts in actual classrooms settings where teacher candidates are instructing real children. Referring back to the quasi-experimental study conducted by Andrews and colleagues (2010), the teacher candidates were taped during teaching sessions, but the

teacher candidates were instructing undergraduate college students enrolled in an introductory education course. Andrews and colleagues' (2010) did not address the likeliness that teaching abilities measured in simulated classroom experiences were an accurate proxy for teaching abilities in real-life teaching situations with real students in actual classrooms.

More recently, Chuanjun and Chunmei (2011) investigated the authenticity of changes that resulted from microteaching activities where teacher candidates are not teaching in naturally occurring educational settings and are instead in more laboratory type settings. The authors found this style of video analysis was artificial and limited teacher candidates' growth due to the lack of real-life classroom experience. Chuanjun and Chunmei (2011) stressed the need for authentic classroom experiences and practice in conjunction with teacher development techniques using video. These findings are similar to the earlier work of Copeland (1977) who investigated if changes in targeted teacher behaviors after participating in microteaching translated to actual classroom settings. Copeland (1977) found teachers made significant improvements to targeted behaviors in laboratory settings but the effects did not generalize to real-life classrooms. Taken together, studying teacher candidates in naturally occurring field experiences using an experimental group design seems to be the greatest challenge across the body of research on video analysis.

Introducing a video camera. A third challenge of video analysis research during teacher preparation field experiences includes controlling for unintended consequences of introducing a video camera into authentic classroom contexts. Andrews, Bobo, and Spurlock (2010) recognized that including a video camera in the classroom possibly introduced a specific type of anxiety for teacher candidates and therefore opted to use videotaping activities across three comparison conditions to control for the possible moderating effect of being videotaped

(Andrews et al., 2010). Videotaping across conditions within a group design may also control for other unintended consequences introduced when one condition has a third person observer in the room collecting observation data otherwise captured using a video camera. Cantrell and Kane (2013) showed teacher evaluations completed using video evidence were equivalent to those conducted through in-person observation, and by using video evidence across conditions possible differences to the classroom environment when introducing a video camera versus actual person do not have to be considered.

Pianta and colleagues (2008) noted several other challenges when introducing a video camera into a classroom including (a) inconsistent availability of video recording resources, (b) technological limitations of submitting video evidence, (c) fluctuating levels of teacher comfort with computer-based and mobile technology as well as internet use, and (d) differing parent consent rates for including children in the teaching videos. These challenges speak to the difficulty in capturing and measuring instructional skills on video as well as the limited feasibility of conducting large-scale randomized control trials to investigate the effects of video analysis on teacher candidates' reflective abilities and instructional skills.

Using video evidence to measure reflective abilities and instructional skills. Tripp and Rich (2012b) conducted a review of 63 studies to synthesize the literature on supplementing the reflective process using video evidence for both teacher candidates and in-service teachers. While many studies included in the review did not include teachers reviewing video evidence of their own teaching, Tripp and Rich (2012b) did identify six key aspects of video analysis that can help organize future attempts to measure reflective abilities and instructional skills using video evidence. Organizing the more detailed facets of using video evidence to measure reflective abilities and instructional skills into six aspects helps to understand specific challenges and

lessons learned. These six aspects include (a) reflective activities such as checklists and written self-reflections, (b) facilitation of the reflection process through frameworks, rubrics, or prompts, (c) individuals involved in the video analysis process such as the teacher alone or in collaboration with supervisors, researchers, or peers, (d) the length of the video evidence, (e) the number of video analysis sessions, and (f) how researchers measured the influence video had on reflective abilities and teaching pedagogy (Trip & Rich, 2012b).

Aspect one: Reflective activities. Rosaen, Lundeberg, Cooper, Fritzen, and Terpstra (2008) conducted a case study using qualitative open-coding methods to measure changes in three teacher candidates' reflective abilities when using video evidence to reflect compared to reflecting from memory alone. The researchers reported the total frequency and percentage of coded reflection segments that fell within each of four dichotomous categories: (a) general versus specific observations, (b) a focus on teacher management of the classroom versus student behaviors or attitudes, (c) a focus on teacher instructional decisions versus student responses to instruction, and (d) teacher listening versus teacher probing (Rosaen et al., 2008). There was no direct comparison between video reflection and memory reflection nor was there an analysis of how reflective abilities deepened, but the coding schema employed did highlight a method for measuring changes in the content of written reflections.

Aspect two: Reflection facilitation. One way to build upon measures of change using content focused coding is to include a rubric that can serve as both a framework for teacher candidates' learning to reflect as well as a method for systematically measuring reflective abilities. Robinson and Kelley (2007) used a written reflection rubric that included eight dimensions of reflection with a description of each dimension (Table 2). For example, dimension zero included statements about future activities with no actual observation requiring no reflective

thought while dimension six included written reflection that addressed the entire context of the observation and required critical reflective thought (Robinson & Kelley, 2007). Each sentence of the written reflections received a score between zero and seven, and then the average reflection score represented reflective ability. Robinson and Kelley (2007) used scoring procedures that created a hierarchy of reflective abilities by assigning more points to deeper dimensions of reflection. Based on these scoring procedures, teacher candidates who only *reflected on action* (dimension seven) by addressing ethical and moral implications of their actions demonstrated better reflective abilities than teacher candidates who used multiple forms of reflective thought throughout one written reflection to comprehensively review and analyze their experience. Measuring both dimensions of reflection and content focus of written reflections may allow for a more comprehensive determination of reflective abilities.

Aspect three: Individuals involved. Teacher candidates can self-monitor and self-evaluate their progress using video evidence from field experiences. Hager (2012) conducted a single subject multiple baseline study replicated across teacher behaviors to see if video analysis used to self-monitor would result in improved instructional skills. Hager (2012) reported the teacher candidate was able to meet criteria and maintain improvements in five of the seven self-selected practices: (a) the number and variation of praise statements given during a lesson, (b) the rate of opportunities for student response, (c) the rate of visual scanning of the room, (d) the ratio of praise to redirection statements, and (e) implementation fidelity of all steps outlined in the lesson. Hager (2012) demonstrated how improvements to specific instructional skills could be measured using video evidence, but the results may represent perceived growth of a teacher candidate still learning about the profession rather than actual improvements in instructional skill.

Cooperating teachers, university supervisors, mentors, and coaches can also provide feedback to teacher candidates using video evidence to offer an outsider's perspective of professional growth. One example of this type of video feedback comes from the seminal work of Pianta and colleagues (2008) who conducted a randomized control trial with 113 in-service teachers using a web-based video analysis system called My Teaching Partner (MTP) to determine if teachers' instructional skills as measured by the Classroom Assessment Scoring System (CLASS) improved. Teachers in the video analysis group received feedback about specific instructional skills caught on video through MTP and CLASS (Pianta et al., 2008). While Pianta and colleagues' (2008) concluded video analysis and feedback processes posed many challenges, these researchers also demonstrated a model for exchanging video evidence and feedback between teacher candidates and teacher educators.

Aspect four: Length of video clips. Pianta and colleagues' (2008) seminal work offered additional insight into the variability of video evidence and the impact inconsistency can have on measuring teacher improvements. Specifically, the teaching videos scored using CLASS varied in duration, content focus, and type of instructional activity. The authors recognized such variability influenced teacher ratings and explained for example how longer videos equated to higher quality instructional interactions as rated by concept development, quality of feedback, and language modeling (Pianta et al., 2008). For this reason, videotaping a complete lesson with a beginning, middle, and end each time is more consistent for scoring purposes when compared to directing teacher candidates to videotape segments of a lesson.

Aspect five: Number of videotaped lessons. The lack of research on video analysis during teacher preparation field experiences limits what is known about the appropriate number of videotaped lessons within one field experience. As previously mentioned, Borg and colleagues

(1969) reported concerns in regards to the feasibility of researching video analysis during teacher preparation in a scaled-up manner. Borg and colleagues (1969) expressed the need for greater control over the methods for measuring teacher improvements including limiting the frequency of videotaping to ensure all teacher candidates engage in the same number of video analysis sessions.

Aspect six: Other measurement methods. Researchers who did not use rubrics or validated scales such as CLASS (Pianta et al., 2008) to measure reflective abilities and instructional skills reported changes in teacher candidate practices using likert-scale scoring (e.g., Fukkink & Tavecchio, 2010) or frequency counts (e.g., Sharpe et al., 1996). In another example Borg and colleagues (1969) report changes in both teacher and student behaviors using 11observable variables: (a) teacher pauses, (b) teacher redirections, (c) words per pupil response, (d) one word remarks, (e) higher cognitive questions, (f) teacher prompts, (g) teacher sought clarification, (h) teacher repeated a question, (i) teacher answered their own question, (j) teacher repeated a student's answer, and (k) teacher talk. Borg and colleagues (1969) recommended future attempts to capture, measure, and connect improvements in instructional skills to video analysis be narrowed to increase the accuracy of a systematic investigation.

In summary, six conclusions can be drawn from challenges and lessons learned from past investigations when planning this current investigation. First, written reflections can result in a measurable representation of the reflective ability. Second, teacher candidates' reflective abilities can be guided and measured using rubrics that encompass both content focus and dimensions of reflection. Scoring procedures to promote comprehensive and critical thinking across multiple dimensions of reflection may also lend to measuring actual changes in instructional skills. Third, teacher candidates can self-monitor their own improvements, and feedback from others may

further guide teacher candidates toward more accurate self-assessments. Fourth, when considering technological limitations and possible differences in videotaping protocols at the classroom level, feasibility and practicality of videotaping should be considered when designing a systematic video analysis schedule. Fifth, conducting video sessions frequently enough to allow teacher candidates to familiarize themselves with the video analysis process, but not so frequently that teacher candidates cannot practically complete all the video analysis sessions, may help increase feasibility of the process. Sixth, changes in instructional skills can be measured using video evidence to track observable teacher behaviors, but a narrow focus may increase the accuracy of capturing the same observable teacher behaviors across several video analysis sessions.

As computer-based and mobile technologies make video capabilities and the video analysis process easier to embed in teacher preparation field experience, scientific research on video analysis becomes critical for fully understanding the effects this training technique has on teacher candidates' reflective abilities and instructional skills. The research on video analysis from both special and general education in both teacher preparation and teacher development fields was reviewed to provide insight into existing and potential methods for measuring professional growth of SETC during field experiences. Large scale randomized control trials may not be the best method for systematically measuring changes that occur because of video analysis given the complexities of field experiences combined with technological limitations. A narrow scientific investigation that successfully addresses the six aspects of video analysis (Tripp & Rich, 2012b) in order to document teacher candidate changes in both reflective abilities and instructional skills between groups over time has the potential to extend the current literature base.

Purpose of the Current Investigation

Therefore, to add to the literature on teacher preparation field experiences and address the need for scientific research investigating the effects of guided video analysis on teacher candidates' reflective abilities and instructional skills, the purpose of the current investigation was to determine the effects guided video analysis on teacher candidates' reflective abilities and instructional skills. The quasi-experimental group design study was designed to address limitations and suggestions of previous video analysis research while balancing realities and complexities of real classrooms. Teacher candidates in both conditions videotaped themselves in authentic classroom settings with real students during teacher preparation field experiences. Teacher candidates, including SETC, assigned to the treatment condition participated in guided video analysis to support their reflection activities during their field experience where the focus of feedback and self-evaluation was narrow. Three research questions (also outlined in Table 3) were posed to investigate the effects of guided video analysis on teacher candidates' reflective abilities across four dimensions of reflections (describe, analyze, judge, and apply) as well as instructional skills as measured by their ability to communicate with students and use effective questioning techniques during a semester long field experience.

1. Is there a difference in teacher candidates' perceived professional ability in relation to reflective abilities and instructional skills after participating in a field experience supported by guided video analysis using rubrics and feedback compared to teacher candidates in a field experience supported by video self-reflection alone?
2. Is there a difference in reflective abilities, as measured by four dimensions of reflection (describe, analyze, judge, apply), of teacher candidates in a field experience supported by guided video analysis using rubrics and feedback compared to teacher candidates in a field experience supported by video self-reflection alone?

3. Is there a difference in instructional skills, as measured by proficiency in communicating with students and questioning techniques, of teacher candidates in a field experience supported by guided video analysis using rubrics and feedback compared to teacher candidates in a field experience supported by video self-reflection alone?

CHAPTER 3

METHODOLOGY

Setting

Teacher candidates completing their formal field experience in one of five master's level teacher preparation programs offered at a private university in the mid-Atlantic participated in this study. The candidates were enrolled in the following preparation programs: three special education programs (including early childhood, mild/moderate, or severe disabilities) and two general education programs (elementary education). While each teacher candidate completed their internship independently, the seminar classes, internship activities, and course syllabi were similar for all teacher candidates within each program. Each of the internship groups met with their internship seminar instructor as a whole group at least four times over the course of the semester while the teacher candidates completed their field experiences. Teacher candidates from all five programs had a mentor teacher and university supervisor assigned to them. If a teacher candidate was also the teacher of record and did not have a mentor teacher it was noted, but this situation was the exception to the rule and not specific to any one preparation program.

While student populations differ between each classroom and internship experiences are unique to individual teacher candidates, most of the field experience activities were the same across all five programs. Field experience components and activities for each of the five preparation programs included in this investigation as reported by the teacher candidates enrolled in each program and verified by course instructors where necessary are listed in Table 4. Teacher candidates were required to do the following: (a) plan and teach lessons across content areas, (b) teach students with disabilities, (c) collect student data to make decisions, (d) modify student curriculum and assessments, (e) undergo formal in-person observations from both their mentor teacher and university supervisor, (f) receive written and verbal feedback on their teaching, (g)

participate in seminar discussions directly related to experiences in the classroom, (h) reflect on their own teaching, and (i) videotape four lessons. Additionally, all teacher candidates had to pass initial state licensure exams prior to beginning their field experience and were expected to demonstrate satisfactory teaching ability by the conclusion of their field experience as measured by formal university facilitated observations and completion of course activities, including both keeping a written reflection journal and videotaping lessons taught.

Due to the range of specific student populations within special education, two of the special education teacher preparation programs had additional assignments. Teacher candidates in the severe disabilities master's preparation program had additional assignments specific to serving students with more severe disabilities including completing a formal behavior assessment, developing an intervention, and collecting student data to monitor progress. Teacher candidates in the early childhood/early intervention preparation program made home or clinical visits in addition to working in school settings if their individual placement required such activities. The internship seminar instructor in this program met with each cooperating teacher and teacher candidate to individualize professional development goals.

<Insert Table 4 here>

Participants

This quasi-experimental group designed study included teacher candidates completing full-time field experience internships within their teacher preparation programs. The sample frame included all teacher candidates within one university who were enrolled in the internship courses for one semester. Recruitment included emails to faculty members associated with the field placement internships, follow-up emails, and face-to-face meetings to discuss how this investigation would align with the program vision and existing internship frameworks. While the

university actually has six preparation programs including a general education program focusing on secondary education, one university internship instructor opted out of the project so teacher candidates from the other five preparation programs became the sample for this investigation. IRB approval for including all the teacher candidates in the investigation without direct consent was obtained under the program improvement classification (see Appendix A).

Teacher candidates could not be assigned randomly to condition because all university internship instructors agreed it was important for their teacher candidates to have the same internship experience. Therefore, all teacher candidates within each preparation program were assigned to either treatment or comparison condition so that both general and special education teacher candidates were represented in each condition. Additional consideration was made for technological limitations of individual schools or classrooms where teacher candidates were placed. Teacher candidates distributed parent permission forms to all parents when the mentor teacher or school principal felt the scope of this project was outside previously obtained parent consent (see Appendix B). Some teacher candidates placed in special education settings serving students with more moderate or severe disabilities were not able to remove videotaped lessons from their school buildings. This did not exempt these individuals from the project because they were still able to videotape their lessons and watch the videotapes. They were required to complete this activity within the school walls. The videotaping restrictions did prevent data captured on the videotapes from being turned in, further limiting the sample size for video coding analyses. Therefore, it was important to divide these groups so the teacher candidates who could not share their videotapes were in different conditions.

Thirty-eight teacher candidates initially participated in this investigation. Two participants did not complete the investigation. One participant assigned to the comparison

condition left the country for personal reasons. She was excluded from all analyses. The second participant, assigned to the treatment group, decided to leave the teaching profession and did not complete the requirements of the internship course. She was excluded from all analyses. As a result, this investigation included 36 participants, 17 in the treatment condition and 19 in the comparison condition (see Table 5 for descriptive characteristics by group condition).

<Insert Table 5 here>

Measures

Teacher candidate questionnaire. The teacher candidate questionnaire was given before the first videotaped lesson and again after the last videotaped lesson to capture changes in self-efficacy including perceived ability in and attitudes towards reflection, video analysis activities, and communication, questioning, and discussion techniques. Additionally, the pre-questionnaire (see Appendix C) captured prior experiences such as teaching experience, field experience, videotaping activities, and reflection activities. The post-questionnaire (see Appendix D) also captured changes in attitude towards video analysis, and specifics about field experience activities teacher candidates participated in during the fall field experience.

Reflection rubric. Reflective ability was measured using a rubric. The reflection rubric (see Figure 1) included six elements for reflection focus and four dimensions of reflection. The six elements for reflection focus directly aligned with the Danielson Framework (2013). The six elements for reflection included expectations for learning, directions for activities, explaining content, using oral and written language, quality of questions and prompts, and discussion techniques, which were all components of communicating with students and using questioning techniques.

The four dimensions of reflection (defined in Figure 1), *describe, analyze, judge,* and *apply,* were constructed to represent a range of reflective ability similar to those of previous researchers outlined in Table 2. Teacher candidates were measured on their ability to reflect across four dimensions of reflection including *describing* past teaching choices, *analyzing* why choices were made, *judging* the success of those choices, and *applying* conclusions to plans for future lessons. Omitting any one of the four dimensions of reflection equated to a lower level of reflective ability. While one dimension of reflection was not a prerequisite of the next, for the purpose of this investigation *description* was closest to technical reflective ability and *application* was closest to a reflective practitioner.

<Insert Figure 1 here>

Instructional skills rubric. A rubric was created to measure instructional skills, specifically teacher candidates' ability to communicate with students and use questioning techniques. Communication with students and use of questioning techniques are two components within Domain 3 *Instruction* of the Danielson Framework (2013). The Danielson Framework is the latest of three iterations of the original Framework for Teaching published in 1996 as a definition of good teaching (The Danielson Group, 2013). The Danielson Framework aligns with INTASC standards and was adapted for the Common Core State Standards (CCSS). The Danielson Framework can be used for classroom observations (see Sartain, Stoelinga, & Brown, 2011) and has been adapted for use across several states including Arkansas, California, Colorado, Dallas, Delaware, Florida, Idaho, Illinois, Maryland, New Jersey, New York, North Carolina, Pennsylvania, South Dakota, Tennessee, and Washington (Cantrell & Kane, 2013; Elliot & Fawkes, 2011). In total, The Danielson Framework includes 22 components, comprised

of 76 elements clustered into four domains of teaching responsibility including *planning and preparation, classroom environment, instruction,* and *professional responsibilities*.

Teacher candidates are just learning to notice effective teaching during their field experience (Sherin & van Es, 2010; van Es & Sherin, 2005) and narrowing their focus had the potential to help guide teacher candidates towards more accurately noticing a few components of instruction rather than being acclimated with all components of the Danielson Framework. Therefore, the current investigation focused on two components (communicating with students and using questioning techniques) within Domain 3 *Instruction* because these two components are teacher behaviors observable through videotaped observation (Cantrell & Kane, 2013). Communicating with students included four elements: *expectations for learning, directions for activities, explanation of content,* and *use of oral and written language*. Using questioning techniques included three elements: *quality of questions/prompts, discussion techniques,* and *student participation*, but student participation was omitted because the focus of this investigation was on teacher behaviors (see Danielson Framework, 2013, pp 59-67).

<Insert Figure 2 here>

The Danielson Framework also includes a 4-point teacher rating scale where level one is unsatisfactory, level two is basic, level three is proficient, and level four is distinguished. This rating scale was used to create the instructional skill rubric for the current investigation (see Figure 2). Sartain and colleagues (2011) evaluated the validity of the Danielson Framework as part of the Consortium on Chicago School Research's longitudinal study to rethink teacher evaluation practices in Chicago schools. Across 795 reading observations and 653 math observations, there was a significant relationship between observation ratings and value-added measures where the value-added measure$_{ij}$ = β_{1j} (Unsatisfactory) + β_{2j} (Basic) + β_{3j} (Proficient) +

β_{4j} (Distinguished) + ε_{ij}. Table 6 shows the average value-added scores from teachers in Chicago public schools using the value-added measure developed at the University of Wisconsin (Sartain et al., 2011). These measures were reportedly based on student growth on the state test while making adjustments for daily attendance, student mobility, student demographics, and prior achievement (Sartain et al., 2011). While the value added scores were small, they were consistent across subject area and grade level. Higher teacher ratings consistently related to greatest growth in student achievement as lower teacher ratings consistently related to least growth in student achievement (Sartain et al., 2011).

<Insert Table 6 here>

While not in the original 4-point scale, "not observed" was included in the instructional skills rubric used for this investigation. "Not observable" was included because of the unpredictability of student teaching, and teaching students with disabilities in particular (see Figure 2). Specific reasons for not observing one element in the instructional skills rubric included situations where the video camera did not capture the entire lesson, the cooperating teacher felt the need to step in, or an individual child's needs superseded the lesson.

Scoring Procedures

Reflection rubric. Each of the six elements (expectations for learning, directions for activities, explaining content, using oral and written language, quality of questions and prompts, and discussion techniques) were scored for all four dimensions of reflection (describe, analyze, judge, and apply). Each dimension of reflection naturally builds on the one before, but for scoring purposes, one dimension was not a prerequisite of the next. Meaning, a teacher candidate might *describe* and *judge* their discussion techniques in a written reflection, without *analyzing* why discussion techniques were used or *applying* the newly gained insight to plans for future

discussion techniques, resulting in a score of two out of four for the element discussion techniques. Figure 2 shows the total possible score for one written reflection was 24 where a teacher candidate described, analyzed, judged, and applied each of the six elements. Two pilot studies were conducted using similar dimensions of reflection (Sandmel & Nagro, 2013; Nagro, 2014) and slight changes to the operational definitions and scoring procedures were made to emphasize the distinction between the dimensions of reflection. Seven scoring procedures, outlined in Table 7, were established through the piloting process.

<Insert Table 7 here>

The written reflections were collected throughout the teacher candidates' field experiences, but were not scored until the data collection period was over. Before scoring took place, all written reflections were de-identified and assigned a random number to prevent scorers from knowing if the reflections were written at the beginning or end of the field experience. While written reflections did include timestamps from the corresponding videotapes, the reflections were scored in isolation of the videotapes so the written reflection scores were based only on what was written not what was captured on video.

Instructional skills rubric. For the purpose of this investigation, instructional skills included teacher candidates' ability to communicate with students and use of questioning techniques as measured by four levels of proficiency (unsatisfactory, basic, proficient, distinguished) on six elements (expectations for learning, directions for activities, explaining content, using oral and written language, quality of questions and prompts, and discussion techniques) which were adapted from the Danielson Framework. Cantrell and Kane published findings from the three-year Measure of Effective Teaching Project (MET) completed in 2013 and funded by the Bill and Melinda Gates Foundation, which was intended in part to determine

reliable scoring procedures for the Danielson Framework. Cantrell and Kane (2013) found there were no significant differences in the way administrators scored videotapes of teaching (unless administrators were scoring their own teachers) suggesting different scorers saw the same things during videotaped lessons. Cantrell and Kane (2013) concluded scoring procedures that include two different scorers have the potential to be reliable above 0.65.

Videotaped lessons were all scored at the end of the data collection period. All of the video files were saved on password-protected external flash-drives and a password-protected cloud based storage. The video files were compiled into one large pool and assigned a random number so that names were not linked to videotape files and scorers did not know if the videotaped lesson was from the beginning or end of the field experience. This helped avoid potential changes in scorer expectations that might have occurred if the videotapes were scored sequentially throughout the field experiences.

In five instances where one element was unobservable during a videotaped lesson, the instructional skills rubric score was calculated by calculating the composite score out of five elements rather than six. Unobservable lesson elements were not the same as a teacher candidate who had the opportunity to exhibit all six elements, but based on teaching decisions chose not to, resulting in a lower score. For example, a teacher candidate was scored level one or unsatisfactory for *discussion techniques* if during the lesson the teacher candidate chose to use only close-ended questioning techniques and did not facilitate student discussion. A teacher candidate received "not observed" for *discussion techniques* if the lesson was taught to only one student and there was no opportunity for student-to-student dialogue.

Interrater reliability. Both the written reflections and videotaped lessons required a second scorer to assure reliable data coding. Two scorers were involved in scoring the written

reflections and six scorers participated in scoring the videotaped lessons. The rubrics used for coding both the written reflections and the videotaped lessons were the same rubrics provided to the participants in the treatment group. The interrater reliability procedures were slightly different for the written reflections and videotaped lessons.

All first and last written reflections ($N = 72$) were independently scored by the first author. The first author had experience scoring written reflections using a rubric from the first two pilot studies. Scorer two was a graduate student in her final semester of her master's program who completed IRB training before accessing any data. At no time did she ever see names or demographic information for any of the participants. Scorer two had no experience scoring written reflections. Scorer two coded 43% ($n = 31$) of the written reflections which were selected at random. Scorer two's codes were used only to determine interrater reliability and did not impact the final score for written reflections. Both scorers met to determine level of agreement on each individual element across all four dimensions of reflection using a point-by-point comparison method. Interrater reliability was calculated using total possible points minus disagreements divided by total possible points to determine the percentage of agreement overall and across domains and elements. Level of agreement during practice reflections was 90%. Overall, interrater reliability between both scorers for the written reflections included in this investigation was 81%. Most commonly, disagreements occurred when determining the difference between *analysis* and *judgement* statements.

Scoring procedures for the videotaped lessons were modeled from Cantrell and Kane (2013) to the degree feasible. The first scorer, who was also the first author, scored every first and last video ($N = 56$) for participants ($N = 28$) who were able to share their videotaped lessons. Five additional scorers coded videotaped lessons. The five scorers were all doctoral students with

a specific area of expertise within teacher education. All scorers had previous experience teaching and observing master's level teacher candidates. All scorers completed IRB training prior to accessing any data. Each additional coder focused on videotaped lessons that occurred in educational contexts within their area of expertise. At least one other scorer coded 46% (n = 26) of the videotaped lessons independently.

The videotaped lesson scores used for analysis were the average of both scorer one and scorer two's coding for all videos that were double scored. Six scorers were trained using the Danielson Framework and practice videotapes. All scorers were also given a cheat sheet that summarized critical attributes for the specific elements on the instructional skills worksheet (see Appendix E). The practice process repeated until all scorers achieved at least 80% agreement on the instructional skills rubric. Interrater reliability was calculated using total possible points minus disagreements divided by total possible points to determine the percentage of agreement. Overall inter-rater agreement for video coding was 81% where individual agreement between the first scorer and the other five scorers was 69%, 76%, 82%, 84%, and 96%.

Investigation Procedures

<Insert Figure 4 here>

Course instructors, mentor teachers, and university supervisors had limited to no interaction with teacher candidates about any activities related to the current investigation. Figure 4 shows the outline of activities over the course of the field experience. The first author met with groups of teacher candidates from each preparation program at the beginning of their field experience to explain the project, pass out materials, answer questions, and collect introductory data using the pre-questionnaire. Each teacher candidate received a supplies package including four 4GB password protected flash-drives, a wide angle clip on video lens, a

tripod for either a smartphone or tablet, a 258MB flash-drive with electronic copies of project resources, and a binder with hard copies of project resources. In the event a teacher candidate did not have a smartphone or tablet for recording videos, a flip-camera was provided.

Treatment group. Teacher candidates assigned to the treatment group followed a guided video analysis cycle (see Figure 3) that was repeated four times throughout the course of their field placement. While teacher candidates in both groups received the same reflection rubric and the Danielson Framework, only participants in the treatment group received the instructional skills rubric for self-evaluation and further guidance in reviewing their videos. Teacher candidates received a step-by-step checklist (see Appendix F) and steps for moving video files from their recording device to a flash-drive (see Appendix G).

The guided video analysis cycle had five main steps for treatment group participants. First, teacher candidates videotaped a lesson from start to finish. Second, teacher candidates watched a videotaped lesson back within 48 hours of recording and evaluated their own performance using the instructional skills rubric to guide their videotape review process. Third, during this same 48-hour period, teacher candidates wrote a reflection using the reflection rubric and timestamps from the videotaped lesson. The timestamps assured teacher candidates did actually watch the video back in order to write the reflection. Fourth, teacher candidates emailed both the self-evaluation and written reflection and then hand delivered a copy of the videotaped lesson using password-protected flash-drives and sealed labeled envelopes to the first author. Fifth, within 24 hours of sending documents via email, teacher candidates in the treatment group received written feedback about their reflections as a way to guide the video analysis process. The feedback guided reflection activities using probing questions and suggestions that aligned to

dimensions of reflection. The feedback did not evaluate or grade the teacher candidates. Course instructors facilitated all discussions pertaining to grades.

Comparison group. Teacher candidates assigned to the comparison group followed a video self-reflection cycle (see Figure 3) that repeated four times throughout the course of their field placement. Teacher candidates received a step-by-step checklist (see Appendix H) and guide on moving video files from their recording device to a flash-drive (see Appendix G). The video self-reflection cycle had four main steps for comparison group participants. First, teacher candidates videotaped a lesson from start to finish. Second, teacher candidates watched a videotaped lesson back within 48 hours of recording and wrote a reflection using the reflection rubric and timestamps from the videotaped lesson. Including timestamps assured the teacher candidates in the comparison group watched their video in order to write their reflection. Third, teacher candidates emailed the written reflection and then hand delivered a copy of the videotaped lesson using password-protected flash-drives and sealed labeled envelopes to the first author. Fourth, teacher candidates received email notification that their documents were received. Comparison group members were not guided while watching their video or when reflecting. Some participants in the comparison group did seek out feedback regarding their written reflections. In such cases, the responses were strictly about if the participant followed the correct video self-reflection cycle as outline in the step-by-step checklist.

Data Analysis Procedures

<Insert Table 8 here>

A rationale for aggregating findings across teacher preparation program within condition was necessary given the differences in program purposes. Therefore, an Independent Samples Kruskal-Wallis Nonparametric Test was run using SPSS to determine if the distributions were similar across programs on prior experience based a composite score of three likert-scale

variables: *previous weeks of field experience, previous number of videotaped lessons,* and *previous number of written reflections*. The composite scores ranged from 0 – 14 and 14 equated to more than 30 weeks of prior field experience, more than 10 previously videotaped lessons, and more than 30 previously written reflections. Table 8 shows the crosswalk from scores to frequency of prior experience activities. Distributions were similar across all five preparation programs and the null hypothesis was retained ($p = 0.6$). Next, one-way analysis of variance test (ANOVA) was used to identify between group differences on prior experience based on preparation program (mild/moderate, severe, early childhood, or general education). Descriptive statistics indicated that mean prior experience scores reported by teacher candidates in the severe disabilities program was 4.67 (standard deviation [*SD*] = 3.47), teacher candidates in the mild/moderate disabilities program was 2.57 (*SD* = 3.91), teacher candidates in the early childhood special education program was 4.75 (*SD* = 5.19), and teacher candidates in the general education program 2.69 (*SD* = 2.39). Levenes' Test of Homogeneity of Variance was not significant ($p = 0.19$), supporting the assumption of equal variance among groups. Results of the ANOVA indicated no significant difference among the means of the four groups, $F(3, 35) = 0.91$, $p = 0.45$. Overall, the field experience frameworks and activities were similar across programs (see Table 4) and teacher candidates' prior experiences were similar across program. Therefore, all findings were analyzed by group condition and not disaggregated by teacher preparation program.

The data from the current quasi-experimental group designed investigation were analyzed using mixed model analysis of variance (ANOVA) tests followed by post-hoc tests using SPSS to compare within and between group differences of continuous dependent variables *perceived professional ability* (research question 1), *reflective ability* (research question 2), and

instructional skills (research question 3) across time points based on the independent variable (*treatment, comparison*). A mixed model ANOVA compliments the classical educational design used in this investigation by allowing for investigation of main effects between subject with the Factorial ANOVA and main effects within subject with the repeated measures ANOVA as well as interactions. This section includes an explanation of how data were prepared for analysis including recoding data, screening for missing data, assumption testing, and pairwise comparison selection to justify the selected data analyses.

Recoding data. Data were adjusted before analyses occurred. Specifically, dependent variable *perceived professional ability* (research question 1) was a composite score comprised of thirteen four-point likert-scale questions where scores could range from 4-52. The composite score addressed concerns regarding the unreliability of a single likert-scale item, but did not allow for straightforward analysis. Therefore, the items in the scale were recoded to begin at 0 rather than 1 and end at 3 rather than 4 adjusting the possible range to 0-39. This allowed for the new scores to be summed into a composite score and then divided by 39 to result in a continuous variable ranging from 0-100 with 50 as a mid-point permitting a straightforward interpretation of the results (for an example of this method using a national data set see Weiss, Banilower, McMahon, & Smith, 2001). Dependent variables *reflective ability* (research question 2) and *instructional skills* (research question 3) were coded using the same procedures.

Screening for missing data. There was no missing data ($N = 36$) for dependent variables *perceived professional ability* (research question 1) and *reflective ability* (research question 2). As previously mentioned, some teacher candidates knew before beginning this project that they would not be allowed to remove videotaped lessons from school property given the school's policies. The eight participants who were not allowed to turn in videotaped lessons for coding

were not isolated to one condition. For the purposes of answering research question three regarding the impact guided video analysis has on teacher candidates' instructional skills, 28 out of 36 total participants were included in the analysis (n = 15 in treatment, n = 13 in comparison).

Additionally, in two instances the video file was defective for one of two time points used to analyze research question three (*instructional skills*). Specifically, one participant in the comparison group turned in the first videotaped lesson, but there was no audio captured. The determination was made to use this participants' second videotaped lesson in place of the first for analyses related to research question three. Similarly, one participant in the treatment group turned in the fourth videotaped lesson on a flash drive that was no longer in working order when it was removed from the sealed envelope by the first scorer (first author). The determination was made to use this participants' third videotaped lesson in place of the fourth for the analysis related to research question three. There was no probable relationship between these two isolated technology issues to suggest any correlation of missing data.

Assumption of normality. The normal distribution of the variables is fundamental to determining generalizability of results. Normality was assessed for the variable (*prior experience*) used to assure groups were comparable given the lack of random sampling and assignment and for dependent variables *perceived professional ability*, *reflective ability*, and *instructional skills* at both pre and post time points using descriptive statistics skew and kurtosis. The distributions were analyzed using the whole data set and then again after splitting the data by condition. Table 9 shows the normalcy of the variable *prior experience* and dependent variables analyzed to answer research questions one, two, and three. Results are reported as absolute values and showed no issues of skewness or kurtosis.

<Insert Table 9 here>

Assumptions of multisample sphericity and covariance. For all three research questions, there is one between (treatment, comparison) and one within (time) group factor in each analysis. The assumptions of both sphericity and homogeneity of variance were considered because together they determine multisample sphericity. Therefore, Mauchley's Test of Sphericity and Levenes' Test of Equality of Error Variances were run using SPSS for dependent variables *perceived professional ability* (research question 1), *reflective ability* (research question 2), and *instructional skills* (research question 3) across time points. Additionally, since there are multiple dependent variables, it is also required that their intercorrelations (covariances) are homogeneous across the cells of the design. Therefore, Box's Test of Equality of Covariance Matrices was run using SPSS for the same three dependent variables. There were no significant findings and all assumptions were held in regards to sphericity, homogeneity, and covariance justifying the use of mixed model ANOVAs in order to answer the three research questions.

Selecting a pairwise comparison. In cases where a main effect was present, post hoc pairwise comparisons were used to investigate differences between groups and across time points. The Bonferoni post hoc pairwise comparison was chosen because it is valid for equal and unequal sample sizes and allows several comparisons to be made while maintaining the overall confidence coefficient (calculated as family-wise error rate divided by number of tests) (Tabachnick & Fidell, 2007). The Bonferoni post hoc is a conservative pairwise comparison in that it can lack power and increases the chance for Type II error. For these reasons, the Bonferoni seemed most appropriate for this investigation, with a sample less than 100, given the negative correlation between sample size and effect size where smaller samples relate to larger effect sizes (Slavin & Smith, 2009).

CHAPTER 4

Results

<Insert Table 10 here>

<Insert Table 11 here>

Research Question One

Research question one investigated the difference in teacher candidates' perceived professional ability in relation to reflective abilities and instructional skills across time (a semester long field experience) for treatment (guided video analysis) and comparison (video self-reflection) groups and was investigated with three hypotheses: 1.1 There will be a significant difference in *perceived professional ability* across time as measured by an adjusted composite score from the teacher candidate questionnaires. 1.2 There will be a significant difference in *perceived professional ability* between treatment and comparison groups as measured by an adjusted composite score from the teacher candidate questionnaires. 1.3 There will be a significant difference in *perceived professional ability* at the beginning and end of teacher candidates' field placements depending on group assignment.

These hypotheses were tested using a mixed model ANOVA. Means and standard deviations are shown in Table 10. On average, teacher candidates in the treatment group originally scored themselves at 48.57 (SD = 5.26) out of 100 and after the field experience teacher candidates in the treatment group scored themselves at 67.72 (SD = 13.99) out of 100. Similarly, teacher candidates in the comparison group started at 53.33 (SD = 19.28) out of 100 and finished at 64.10 (SD = 13.57) on average. Results of the mixed model ANOVA (see Table 11) indicated a significant within-group effect on perceived professional ability across time, $F(1, 34) = 35.32$, $p < .001$. While teacher candidates in the treatment group reported slightly greater professional ability when compared to the comparison group after participating in the field

experience, there were no significant differences between treatment and comparison groups and no significant interaction of perceived professional ability by group (see Figure 5).

The Bonferoni post hoc pairwise comparison indicated significant ($p < .001$) differences between perceived professional ability before and after participating in a semester long field experience. Teacher candidates, regardless of group, reported significantly greater professional ability participating in a field experience that included videotaping lessons in order to watch them back and write reflections about their own instructional skills specific to communication and questioning techniques used during instruction. Only research hypothesis 1.1 was supported.

<Insert Figure 5 here>

Research Question Two

Research question two investigated the difference in teacher candidates' reflective ability as measured by a rubric used to score written reflections across time (a semester long field experience) for treatment (guided video analysis) and comparison (video self-reflection) groups and was investigated with three hypotheses: 2.1 There will be a significant difference in *reflective ability* across time as measured by an adjusted composite score from written reflections measuring teacher candidates' ability to describe, analyze, judge, and apply six elements of instruction specific to communicating and questioning techniques. 2.2 There will be a significant difference in *reflective ability* between treatment and comparison groups as measured by an adjusted composite score from written reflections. 2.3 There will be a significant difference in *reflective ability* at the beginning and end of teacher candidates' field placements depending on group assignment.

These hypotheses were tested using a mixed model ANOVA. Means and standard deviations are shown in Table 10. On average, teacher candidates in the treatment group went

from scoring 37.99 (*SD* = 14.80) out of 100 to 57.60 (*SD* = 21.61) on the reflective ability measure. On average, teacher candidates in the comparison group went from scoring 43.42 (*SD* = 16.16) out of 100 to 36.84 (*SD* = 17.69) on the reflective ability measure. Results of the mixed model ANOVA (see Table 11) indicated a significant within-group effect on reflective ability across time, F (1, 34) = 8.19, $p < 0.01$ and a significant interaction between group condition and time F (1, 34) = 33.09, $p < 0.001$. The effects of the interaction prompted further investigation.

Unplanned post hoc pairwise comparisons were calculated using a 2X2 matrix to understand where the interaction between group and condition was specifically. Table 12 shows the differences in means between treatment and comparison group at both pre and post time points. Results of the pairwise comparison indicate that on average, teacher candidates in the treatment group had significantly higher ($p < 0.01$) reflective ability scores as measured by the reflective rubric after participating in guided video analysis and these scores were also significantly higher ($p < 0.01$) than those of the comparison group (Table 12). While teacher candidates in the treatment group significantly improved their reflective ability, teacher candidates in the comparison group demonstrated a slight decline in reflective ability after participating in video self-reflection without guidance and support (see Figure 6). All three research hypotheses related to research question two were supported.

<Insert Table 12 here>

<Insert Figure 6 here>

Research Question Three

Research question three investigated the difference in teacher skills as measured by a rubric used to score videotaped lessons across time (a semester long field experience) for treatment (guided video analysis) and comparison (video self-reflection) groups and was

investigated with three hypotheses: 3.1 There will be a significant difference in *instructional skills* across time as measured by scoring teacher candidates on six elements of communication and questioning techniques as unsatisfactory, basic, proficient, or distinguished using videotaped lessons. 3.2 There will be a significant difference in *instructional skills* between treatment and comparison groups as measured by rubric scores from videotaped lessons. 3.3 There will be a significant difference in *instructional skills* at the beginning and end of teacher candidates' field placements depending on group assignment.

These hypotheses were tested using a mixed model ANOVA. Means and standard deviations are shown in Table 10. On average, teacher candidates in the treatment group went from scoring 35.04 (SD = 20.33) out of 100 to 47.78 (SD = 19.94) on the instructional skills measure. On average, teacher candidates in the comparison group went from scoring 37.14 (SD = 20.33) out of 100 to 40.17 (SD = 16.88) on the instructional skills measure. Results of the mixed model ANOVA (see Table 11) indicated a significant within-group effect on instructional skills across time, F (1, 26) = 16.76, $p < 0.001$ and a significant interaction between group condition and time F (1, 26) = 6.83, $p < 0.01$. The effects of the interaction prompted further investigation.

Unplanned post hoc pairwise comparisons were calculated using a 2X2 matrix to understand where the interaction between group and condition was specifically. Table 13 shows the differences in means between treatment and comparison group at both pre and post time points. Results of the pairwise comparison indicate that on average, teacher candidates in the treatment group had significantly higher ($p < 0.01$) instructional skills as measured by the instructional skills rubric after participating in guided video analysis and these scores were also significantly higher ($p < 0.05$) than those of the comparison group. While teacher candidates in the treatment group significantly improved their instructional skills, teacher candidates in the

comparison group demonstrated little change in instructional skills after participating in video self-reflection without guidance and support (see Figure 7). All three research hypotheses related to research question three were supported.

<Insert Table 13 here>

<Insert Figure 7 here>

CHAPTER 5

Discussion

Preparing special education teachers requires an understanding of program features necessary for facilitating learning. Typically, preparation programs are designed to blend knowledge with application. Special education teacher candidates gain knowledge of evidence-based practices and effective instructional skills to apply such knowledge during field experiences. Incorporating field experiences into preparation programs allows teacher candidates to strive towards exhibiting professional teaching standards while learning to meet the needs of diverse learners. Despite the importance of field experiences during special education teacher preparation, there was a paucity of systematic documentation specific to how field experience activities benefit prospective teachers. Therefore, the purpose of this quasi-experimental study was to understand the effects of guided video analysis on teacher candidates' reflective ability and instructional skills during teacher preparation field experiences that included students with disabilities.

This chapter summarizes the results from this investigation on special education field experiences. Specifically, this chapter discusses reflection as a component of field experience, the benefits of structuring reflection using rubrics and video evidence, and the impact of guided video analysis as it relates to teachers' reflective abilities and instructional skills. Finally, methods for addressing the challenges of past research and implications for future investigations are discussed.

Reflection as a Component of Field Experience

Teacher candidates need to learn how to reflect and examine their own teaching experiences. Reflection activities in this investigation included teacher candidates writing about their instructional decisions and the outcomes of their decisions on student learning. The goal of

the reflection requirements was to guide teacher candidates towards recognizing their own strengths and limitations as they developed their own instructional decision-making. Teacher candidates in both the treatment (guided video analysis) and comparison (video self-reflection) groups felt they made substantial improvements in their own reflective abilities and instructional decision-making skills after participating in field experiences that included reflection and videotaping activities. Seventy-two percent (n = 26) of the teacher candidates said the entire project was a worthwhile time investment. Most of the teacher candidates felt they made substantial improvements in reflecting on their own teaching choices, analyzing why they made such choices, judging the effectiveness of their choices, and applying lessons learned to future teaching choices. Teacher candidates also felt such growth in reflective ability translated to specific improvements in their instructional skills including the ability to communicate expectations for learning as well as directions for activities, ability to explain instructional content using oral and written language, and use of questioning and discussion techniques.

Interestingly, teacher candidates from both groups felt they were better at teaching all students including students with disabilities after participating in the field experiences that included reflection and videotaping activities. Perceived ability, or self-efficacy, is critical for teacher candidates new to the field because they must feel empowered to implement evidence-based instructional strategies successfully while teaching students with disabilities if they are going to find real success (Buell, Hallam, & Gamel-McCormick, 1999). While self-efficacy is not a proxy for actual ability; it is an important starting point in developing profession ready teachers.

Structuring Reflection through Rubric and Videotaping Activities

Guiding teacher candidates towards what they should reflect on is a straightforward way to structure the reflective process. The reflective rubric used in this investigation narrowed teacher candidates' focus and encouraged them to reflect across different dimensions rather than just recalling events. Additionally, by pairing reflection activities with videotaping activities, the reflective process had more structure. Readily available mobile technology made capturing instruction on video easy for the teachers. This allowed all teacher candidates across both conditions to watch video evidence of their own teaching and then write reflections about their instructional choices. Previous research had used videotaping activities in conjunction with the reflective process to improve in-service teachers' reflective abilities (Beck et al., 2002; Sherin & van Es, 2005; van Es & Sherin, 2010), but previous research had not examined preservice teachers activities in such a systematic manner. The goal of this investigation was to limit the number of instructional skills teacher candidates focused on and to provide a reflection rubric in conjunction with video evidence of their instruction, so teacher candidates would be more likely to engage authentically in reflection activities, which would lead to improved reflective abilities.

Unfortunately, teacher candidates in the comparison group, who repeated this video self-reflection process four times over the course of their field experience, did not improve their reflective abilities. In fact, this group demonstrated a slight decline in reflective ability over time. It is possible that the teacher candidates in the comparison group did not authentically engage in the reflection and videotaping activities during their field experience. Another possibility is that teacher candidates in the comparison group put forth the same efforts as teacher candidates in the treatment group, but without guidance and support, they were unsure how to make improvements during video self-reflection.

The Impact of Guided Video Analysis on Reflective Abilities

One way to ensure teacher candidates reflect on the videos of their own teaching in order to self-evaluate their instructional skills in authentic and meaningful ways is to guide their video analysis process. Providing a rubric for reflection to the comparison group without providing further guidance and support did not result in changes in reflective ability. The treatment group received additional guidance during the reflective process in the form of feedback and probing questions specific to the written reflections. Feedback was specific to the quality of their reflecting not the quality of their teaching. The idea was not to tell the teacher candidates what was good or bad about their teaching choices, but rather to guide the teacher candidates towards noticing their own strengths and areas for improvement based on watching their own teaching videos and considering all four dimensions for reflection. Additionally, teacher candidates in the treatment group used an instructional skills rubric to help the narrow their focus and evaluate their current level of proficiency on six specific instructional elements. The instructional skills rubric included the same six elements of instruction specific to communication and questioning to help teacher candidates write a reflection focusing on these six instructional elements.

Almost all of the teacher candidates in the treatment group said they used the feedback from one written reflection to guide how they wrote the next reflection. As a result, the treatment group did improve their reflective abilities. Teacher candidates in the treatment group were better able to describe their own teaching choices, analyze why they made specific choices, judge the success of those choices based on student outcomes, and identify changes for future lessons. While similar findings were found with in-service teachers (Calandra et al., 2006), the current investigation extends the potential for guided video analysis to benefit teacher candidates during pre-service experiences.

The Impact of Guided Video Analysis on Instructional Skills

Research has suggested that video analysis is a promising practice for transforming existing teaching beliefs and for improving teachers' instructional skills (see Nagro & Cornelius, 2013). This investigation added to the literature base by targeting preservice teacher populations. Teacher candidates who did not receive guidance and support, did not demonstrate notable improvements in their instructional skills as measured by the ability to clearly communicate expectations for learning and directions for activities, effectively explain content to students, use precise oral and written language, and use quality questions, prompts, and discussion techniques. On average, teacher candidates in the comparison group remained at a basic ability level when referring to the Danielson Framework rating scale ranging from unsatisfactory to basic to proficient to distinguished.

In contrast, teacher candidates who received guidance during video analysis did improve their reflective abilities and their instructional skills. This group started at a basic ability level similar to the comparison group, but by the end of their field experiences, the average teacher candidate who received guidance during video analysis scored at a proficient level on four of the six instructional skills: ability to clearly communicate expectations for learning, ability to effectively explain content to student, ability to use precise oral and written language, and ability to use quality questions and prompts. The results suggest guided video analysis that occurs in authentic education settings has the potential to help teacher candidates improve their reflective abilities and such improvements can translate to actual teaching ability.

Addressing Challenges and Acknowledging Limitations

Research on video analysis as a way to target reflective abilities and instructional skills during field experiences is extremely limited, likely due to the many challenges involved in studying authentic teaching contexts. Borg and colleagues (1969) were the last researchers to

attempt a study of similar scale and reported many challenges surrounding the fidelity of the treatment and comparison conditions. The purpose of this study was to understand the effects of guided video analysis on teacher candidates' reflective ability and instructional skills during teacher preparation field experiences including students with disabilities. The current study followed several recommendations of Borg and colleagues (1969) by including a procedures manual, timeline of activities, and step-by-step checklist to increase implementation fidelity of the group activities.

Another challenge of previous attempts to study video analysis was specific to using video technology to capture instruction. Pianta and colleagues (2008) found that video evidence from different content areas was not always easily comparable and length of video positively related to teacher score. This investigation asked teacher candidates to film a lesson with a beginning, middle, and end so the focus was not on length but on capturing a complete lesson in the hopes that all teaching elements would then be observable. There were only five cases out of the 56 videotaped lessons scored where one of the six teaching elements was unobservable. In addition, each teaching element was scored only once rather than using frequency to proxy for quality. Finally, teacher candidates were encouraged to record the same type of lesson across all four videotapes, but teacher candidates were sometimes required to teach different types of lessons depending on their mentor teacher's guidelines.

Furthermore, video technology is still imperfect. Issues related to capturing instruction on video, uploading video files to one's own computer, and downloading video files to review all posed challenges to several teacher candidates. Despite the fact that 33 out of 36 teacher candidates had readily available mobile technology for videotaping, many of them experienced technical difficulties at one or all portions of the video analysis process. Video files were deleted

unintentionally, video files were not playable, or in some instances, lessons were cut short because a student was shown turning off the camera. Almost half of the teacher candidates said the technical aspects of this project were harder than they expected. Many teacher candidates needed ongoing technical support in order to complete the steps related to moving the video file from their recording decide to a shareable platform (dropbox, google drive, or a flash drive). As more universities expand their use of video analysis and use of online platforms for uploading, storing, and sharing video files, some of these challenges may not be issues of concern.

Standardized implementation of activities was not always realistic given real-world conditions of field placements for teacher candidates. While authentic classrooms may not be ideal for experimental research, teacher education research that takes place in authentic settings may offer insight into the actual potential of field experience activities such as guided video analysis. Sampling procedures including sample selection and group assignment limited the generalizability of the findings. While the teacher candidates spanned 36 classrooms, in over a dozen schools, from five different preparation programs, they all attended one university. According to WWC (2011), conducting a study with participants from only one school introduces the confounding effect of school on treatment. Previously, studying teacher candidates in naturally occurring field experiences using an experimental or quasi-experimental group design was the greatest challenge across the body of research on video analysis (Andrews et al., 2010: Chuanjun & Chunmei, 2011; Copeland, 1977). This investigation demonstrated methods for overcoming many of the challenges associated with authentic settings and group design field experience research, but future efforts will have to consider the feasibility of spanning such an investigation across several universities.

Implications for Future Research

Preparing teachers to educate students with disabilities is a complex undertaking. Special education teacher preparation programs equip teacher candidates with essential skills necessary for educating students with a wide range of learning and behavioral needs across various settings by requiring the candidates complete an experience in the field. Field experiences have the potential to encompass all the features of effective teacher preparation, but the vast majority of previous field experience research is descriptive in nature only. This quasi-experimental group designed study was designed to address limitations and suggestions of previous video analysis research while balancing realities and complexities of real classrooms to investigate specific activities within field experiences.

As video analysis becomes commonplace within field experiences, given the rising popularity of edTPA, edTPA-like teacher preparation activities, and more broadly distance education models, continued efforts in understanding how to guide teacher preparation using reflection and videotaping activities remains important. A key finding in this investigation is that, without guidance and support, teacher candidates did not improve their reflective ability or instructional skills when participating in video self-reflection. Teacher candidates are just learning to notice effective teaching during their field experience (Sherin & van Es, 2010; van Es & Sherin, 2005) and narrowing their focus for video self-reflection using a rubric is an important first step but was not enough for the teacher candidates in this investigation.

Teacher candidates are shaping their identities as educators and need guidance and support. Teacher candidates in this investigation who demonstrated the greatest levels of growth received guidance and support. Teacher candidates who participated in guided video analysis used a self-evaluation instructional skills rubric to help operationalize instructional skills. Instructional skills related to communication and questioning techniques do not have a discrete

start and finish as they occur throughout the entire lesson. This adds a layer of complexity for teacher candidates trying to reflect on their own performance. The instructional skills rubric included critical attributes and operational definitions of each instructional skill to help teacher candidates make a decision about their ability levels. On average, teacher candidates rated self-evaluation using the instructional skills rubric as "somewhat helpful" but felt that reflecting was more meaningful to their professional growth.

Teacher candidates also received feedback about written reflections, including probing questions, to use during guided video analysis. Teacher candidates who received guidance while reflecting on their own teaching did improve because they used feedback to shape their reflective process. Almost half the teacher candidates who received guidance during video analysis rated feedback as the most important contributor to their professional growth. Guidance and support throughout the project was the second most common teacher candidate response regarding greatest contributor to their professional growth. Taken together, teacher candidates who improved their reflective abilities and instructional skills felt they benefitted most from receiving feedback and knowing someone was guiding and supporting them throughout the learning process. Investigating which activities translate to applied professional skill in the classroom is critical as special education teacher preparation programs continue to be under fire to prove their worth (Brownell, Griffin, Leko, & Stephens, 2011). Researchers must continue to extend the research base with rigorous efforts to link changes in SETC knowledge, skills, and dispositions to specific field experiences activities considered essential to special education teacher preparation.

References

Adams, A., Bondy, E., & Kuhel, K. (2005). Preservice teacher learning in an unfamiliar setting. *Teacher Education Quarterly, 32*(2), 41-62.

Adams, S., & Wolf, K. (2008). Strengthening the preparation of early childhood teacher candidates through performance-based assessments. *Journal of Early Childhood Teacher Education, 29*, 6-29.

Alexander, M., Williams, N. A., & Nelson, K. L. (2012). When you can't get there: Using video self-monitoring as a tool for changing the behaviors of pre-service teachers. *Rural Special Education Quarterly, 31*(4), 18-24.

American Association of Colleges for Teacher Education. (2013). *About edtpa*. Retrieved from http://edtpa.aacte.org/about-edtpa

Anderson, C. L., & Petch-Hogan, B. (2001). The impact of technology use in special education field experience on preservice teachers' perceived technology expertise. *Journal of Special Education Technology, 16*(3), 27-44.

Andrews, A., Bobo, L., & Spurlock, A. (2010). Use of video feedback in the training of pre-service teachers. *Journal of Instructional Pedagogies, 2*, 1-11.

Andrews, L., Miller, N., Evans, S., & Smith, S. D. (2003). An internship model to recruit, train, and retain special educators for culturally diverse urban classrooms: A program description. *Journal of Teacher Education and Special Education, 26*, 74–78.

Beck, R. J., King, A., & Marshall, S. K. (2002). Effects of videocase construction on teacher candidates' observations of teaching. *Journal of Experimental Education, 70*, 345-361.

Borg, W. R., Kallenbach, W., Morris, M., & Friebel, A. (1969). Videotape feedback and microteaching in a teacher training model. *The Journal of Experimental Education, 37*(4), 9-16.

Borko, H., Jacobs, J., Eiteljorg, E., & Pittman, M. E. (2008). Video as a tool for fostering productive discussions in mathematics professional development. *Teaching and Teacher Education, 24*, 417-436. doi:10.1016/j.tate.2006.11.012

Borman, G. D. (2002). Experiments for educational evaluation and improvement. *Peabody Journal of Education, 77*(4), 7-27.

Brownell, M. T., Griffin, C., Leko, M. M., & Stephens, J. (2011). Improving collaborative teacher education research: Creating tighter linkages. *Teacher Education and Special Education, 34,* 235-249.

Brownell, M. T., Ross, D. D., Colon, E. P., & McCallum, C. L. (2005). Critical features of special education teacher preparation: A comparison with general teacher education. *Journal of Special Education, 38*(4), 242-252.

Brownell, M. T., Sindelar, P. T., Kiely, M., & Danielson, L. C. (2010). Special education teacher quality and preparation: Exposing foundations, constructing a new model. *Exceptional Children, 76*, 357-377.

Bryson, S., & Asher, C. J. (2008). Building capacity for leadership and teamwork: Developing, delivering and evaluating an experiential group relations conference. *Psychiatric Bulletin, 32, 189-192.* doi: 10.1192/pb.bp.107.017699 Retrieved from http://pb.rcpsych.org/content/32/5/189.full

Buck, G., Morsink, C., Griffin, C., Hines, T., & Lenk, L. (1992). Preservice training: The role of field experiences in the preparation of effective special educators. *Teacher Education and Special Education, 15*, 108-123. doi:10.1177/088840649201500206

Buell, M. J., Hallam, R. A., & Gamel-McCormick, M. (1999). A survey of general and special education teachers' perceptions and inservice needs concerning inclusion. *International Journal of Disability, Development & Education, 46*(2), 143-156.

Burrows, D. E. (1995). The nurse teacher's role in the promotion of reflective practice. *Nurse Education Today, 15*, 346-350. doi: http://dx.doi.org/10.1016/S0260-6917(95)80007-7

Burtless, G. (2002). Randomized field trials for policy evaluation: Why not in education? In. F. Mosteller & R. Boruch (Eds.), *Evidence matters: Randomized trials in education research* (pp. 179-197). Washington, DC: Brookings Institution.

Burton, S. (2000). A critical essay on professional development in dietetics through a process of reflection and clinical supervision. *Journal of Human Nutrition and Dietetics, 13,* 323-332. doi: 10.1046/j.1365-277x.2000.00249.x

Butler, A. (2001). Preservice music teachers' conceptions of teaching effectiveness, microteaching experiences, and teaching performance. *Journal of Research in Music Education, 49*(3), 258-272.

Capizzi, A., Wehby, J., & Sandmel, K. (2010). Enhancing mentoring of teacher candidates through consultative feedback and self-evaluation of instructional delivery. *Teacher Education and Special Education, 33*, 191-212. doi:10.1177108884064093600 12

Calandra, B., Brantley-Dias, L., Dias, M. (2006). Using digital video for professional development in urban schools: A teacher candidates experience with reflection. *Journal of Computing in Teacher Education, 22*, 137-145.

Calandra, B., Brantley-Dias, L., Lee, J. K., & Fox, D. L. (2009). Using video editing to cultivate novice teachers' practice. *Journal of Research on Technology in Education, 42*, 73-94.

Calandra, B., Gurvitch, R., & Lund, J. (2008). An exploratory study of digital video editing as a tool for teacher preparation. *Technology and Teacher Education, 16*(2), 137-153.

Cantrell, S., & Kane, T. J. (2013). *Ensuring fair and reliable measures of effective teaching culminating findings from the met project's three-year study*. [Research Brief]. Retrieved from http://metproject.org/downloads/MET_Ensuring_Fair_and_Reliable_Measures_Practitioner_Brief.pdf

Childre, A. L. (2014). Preparing special educators highly qualified in content: Alternative route certification for unlicensed teachers in rural georgia. *Rural Special Education Quarterly, 33*, 23-31.

Chuanjun, H., & Chunmei, Y. (2011). Exploring authenticity of microteaching in pre-service teacher education programmes. *Teaching Education, 22*, 291-302.

Conderman, G., Morin, J., & Stephens, J. (2005). Special education student teaching practices. *Preventing School Failure, 49*, 5-10.

Connelly, V., Graham, S. (2009). Student teaching and teacher attrition in special education. *Teacher Education and Special Education, 32*, 257-269. doi:10.1177/0888406409339472

Cook, B. G., & Schirmer, B. R. (Eds.). (2006). *What is special about special education: The role of evidence-based practices.* Austin, TX: Pro-Ed.

Copeland, W. D. (1977). Some factors related to student teacher classroom performance following microteaching training. *American Educational Research Journal, 14*, 147-157.

Cornelius, K. E., & Nagro, S. A. (2014). Evaluating the evidence base of performance feedback in preservice special education teacher training. *Teacher Education and Special Education, 37,* 133-147. doi:10.1177/0888406414521837

Council for Exceptional Children. (2012). *Initial preparation standards with elaborations*. Retrieved from http://www.cec.sped.org/Standards/Special-Educator-Professional-Preparation

Council for Exceptional Children. (2009). *Special educator professional preparation*. Retrieved from http://www.cec.sped.org/Standards/Special-Educator-Professional-Preparation

Council of Chief State School Officers. (2011, April). *Interstate teacher assessment and support consortium (intasc) model core teaching standards: A resource for state dialogue. Wa*shington, DC: Author.

Crawford, S., O'Reilly, R., & Luttrell, S. (2012). Assessing the effects of integrating the reflective framework for teaching in physical education (RFTPE) on the teaching and learning of undergraduate sport studies and physical education students. *Reflective Practices, 13*(1), 115-129. doi:10.1080/14623943.2011.626025

Danielowich, R. M., & McCarthy, J. M. (2013). Teacher educators as learners: How supervisors shape their pedagogies by creating and using classroom videos with their student teachers. *Action in Teacher Education, 35*(3), 147-164.

Darling-Hammond, L., Sykes, G. (2003). Wanted, a national teacher supply policy for education: The right way to meet the "highly qualified teacher" challenge. *Education Policy Analysis Archives, 11*(33) 1-55. Retrieved from http://epaa.asu.edu/ojs/article/view/261.

Dawson, P., Dawson, K., & Forness, S. (1975). Effect of video feedback on teacher behavior. *Journal of Educational Research, 68*(5), 197-201.

Dewey, J. (1933). *How we think.* Buffalo, NY: Prometheus Books.

Dieker, L. A., & Monda-Amaya, L. E. (1997). Using problem solving and effective teaching frameworks to promote reflective thinking in preservice special educators. *Teacher Education and Special Education, 20*(1), 22-36. doi:10.1177/088840649702000104

Downera, J. T., Pianta, R. C., Fan, Z., Hamrea, B. K., Mashburna, A., & Justice, L. (2011). Effects of web-mediated teacher professional development on the language and literacy skills of children enrolled in prekindergarten programs. *NHSA Dialog: A Research-to-Practice Journal for the Early Childhood Field, 14*(4), 189-212. doi:10.1080/15240754.2011.613129

Dymond, S. K., Renzaglia, A., Halle, J. W., Chadsey, J., & Bentz, J. L. (2008). An evaluation of videoconferencing as a supportive technology for practicum supervision. *Teacher Education and Special Education, 31*, 243-256. doi:10.1177/0888406408330645

Elliot, K., & Fawkes, D. K. (2011). *Charlotte danielson framework for teaching sees record growth as states and districts redefine teacher evaluation*. Teachscape Press Release. Retrieved from http://www.teachscape.com/about/press-and-news/2011/charlotte-danielsons-framework-for-teaching-sees-record-growth-as-states-and-districts-redefine-teacher-evaluation.html

Etscheidt, S., Curran, C. M., & Sawyer, C. M. (2012). Promoting reflection in teacher preparation programs: A multilevel model. *Teacher Education and Special Education, 35*, 7-26. doi:10.1177/0888406411420887

Falaye, F.V. (2009). Issues in mounting randomized experiments in educational research and evaluation. *Global Journal of Educational Research, 8*(1/2), 21-27.

Feuer, M. J., Towne, L., & Shavelson, R. J. (2002). Scientific culture and educational research. *Educational Researcher, 31*(8), 4-14.

Fukkink, R. G., & Tavecchio, L. W. (2010). Effects of video interaction guidance on early childhood teachers. *Teaching and Teacher Education, 26*, 1652-1659.

Gibbs, G. (1988). *Learning by doing: A guide to teaching and learning methods*. Further Education Unit, Oxford Brookes University, Oxford.

Griffin, C. C., Winn, J. A., Otis-Wilborn, A., & Kilgore, K. L. (2003). *New teacher induction in special education.* [Executive Summary]. Center on Personnel Studies in Special Education, University of Florida.

Haefner-Berg, M., & Smith, J. P. (1996). Using videotapes to improve teaching. *Music Educators Journal, 82*(4), 31-37.

Hager, K. D. (2012). Self-monitoring as a strategy to increase student teachers' use of effective teaching practices. *Rural Special Education Quarterly, 31*(4), 9-17.

Hanline, M. (2010). Teacher candidates' perceptions of field experiences in inclusive preschool setting: Implications for personnel preparation. *Teacher Education and Special Education, 33*, 335-351. doi:10.1177/0888406409360144

Harford, J., & MacRuairc, G. (2008). Engaging student teachers in meaningful reflective practice. *Teaching and Teacher Education, 24*, 1884-1892. doi:10.1016/j.tate.2008.02.010

Hixon, E., & So, H. J. (2009). Technology's role in field experiences for teacher candidate training. *Journal of Educational Technology & Society*, *12*(4), 294-304.

Jung, L., Galyon-Keramidas, C., Collins, B., & Ludlow, B. (2006). Distance education strategies to support practica in rural settings. *Rural Special Education Quarterly, 25*(2), 18-24.

Kalk, K., Luik, P., Taimalu, M., & Täht, K. (2014). Validity and reliability of two instruments to measure reflection: A confirmatory study. *Trames: A Journal of the Humanities & Social Sciences*, *18*(2), 121-134. doi:10.3176/tr.2014.2.02

Kamens, M. (2007). Learning about co-teaching: A collaborative student teaching experience for teacher candidates. *Teacher Education and Special Education, 30*, 155-166.

Knowlesa, Z., Tylera, G., Gilbournea, D., & Eubanka, M. (2006). Reflecting on reflection: Exploring the practice of sports coaching graduates. *Reflective Practice: International and Multidisciplinary Perspectives, 7,* 163-179. doi:10.1080/14623940600688423

Konig, J., Blomeke, S., Klein, P., Suhl, U., Busse, A., & Kaiser, G. (2014). Is teachers' general pedagogical knowledge a premise for noticing and interpreting classroom situations? A video-based assessment approach. *Teaching and Teacher Education 38*, 76-88.

Koszalkaa, T., & Ganesana, R. (2004). Designing online courses: A taxonomy to guide strategic use of features available in course management systems (CMS) in distance education. *Distance Education, 25*, 243-256. doi:10.1080/0158791042000262111

Leko, M. M., & Brownell, M. T. (2011). Special education teacher candidates' appropriation of pedagogical tools for teaching reading. *Exceptional Children, 77*, 229-251.

Ludlow, B. L., Galyon-Keramidas, C., & Landers, E. J. (2007). Project STARS using desktop conferencing to prepare autism specialists at a distance. *Rural Special Education Quarterly, 26*(4), 27-35.

Maheady, L., Jabot, M., Rey, J., & Michielli-Pendl, J. (2007). An early field-based experience and its impact on pre-service candidates' teaching practice and their pupils' outcomes. *Teacher Education and Special Education, 30*, 24-33. doi:10.1177/088840640703000103

Marsh, B., Mitchell, N., & Adamczyk, P. (2010). Interactive video technology: Enhancing professional learning in initial teacher education. *Computers & Education, 54*(3), 742-748. doi:10.1016/j.compedu.2009.09.011

Martin, F., & Ertzberger, J. (2013). Here and now mobile learning: An experimental study on the use of mobile technology. *Computers & Education, 68*, 76–85. http://dx.doi.org/10.1016/j.compedu.2013.04.021

McCall, Z., Alvarez, P., McHatton, M., & Williams Shealey, M. (2014). Special education teacher candidate assessment: A review. *Teacher Education and Special Education, 37*, 24-33. doi:10.1177/0888406413512684

Moore, R. (2003). Reexamining the field experiences of teacher candidate. *Journal of Teacher Education, 54*, 31- 42. doi:10.1177/0022487102238656

Moore, R. S. (1976). The effects of videotaped feedback and self-evaluation forms on teaching skills, musicianship and creativity of prospective elementary teachers. *Bulletin of the Council for Research in Music Education, 47*, 1-7.

Morewood, A., & Condo, A. (2012). A preservice special education teacher's construction of knowledge: Implications for coursework and retention in the field. *Rural Special Education Quarterly, 31*, 15-21.

Nagro, S. A. (2014, November). *How much do we know about effective field-based experiences in special education teacher preparation?* Paper presented at the Teacher Education Division of the Council for Exceptional Children Annual Conference, Indianapolis, IN.

Nagro, S. A., & Cornelius, K. E. (2013). Evaluating the evidence base of video analysis: A special education teacher development tool. *Teacher Education and Special Education, 36*, 312-329. doi:10.1177/0888406413501090

National Child Care Information and Technical Assistance Center (NCCIC). (2009, August). *The experiential learning cycle.* A Partnerships, Alliances, and Coordination Techniques (PACT) Resource. Retrieved from http://www.mncpd.org/docs/the_experiential_learning_cycle.pdf

No Child Left Behind Act of 2001, Pub. L. No. 107-110, § 115, Stat. 1425 (2002).

O'Brian, M., Stoner, J., Appel, K., & House, J. J. (2007). The first field experience: Perspectives of preservice and cooperating teachers. *Teacher Education and Special Education, 30*, 264-275. doi:10.1177/088840640703000406

Osipova, A., Prichard, B., Boardman, A. G., Kiely, M. T., & Carroll, P. E. (2011). Refocusing the lens: Enhancing elementary special education reading instruction through video self-reflection. *Learning Disabilities Research & Practice, 26*(3), 158–171. doi:10.1111/j.1540-5826.2011.00335.x

Ostrosky, M. M., Mouzourou, C., Danner, N., & Zaghlawan, H. Y. (2012). Improving teacher practices using microteaching: Planful video recording and constructive feedback. *Young Exceptional Children, 16*, 16-29. doi:10.1177/1096250612459186

Pearson Education. (2014). *edTPA fact sheet.* Retrieved from http://edtpa.aacte.org/about-edtpa

Peterson, T. L. (1973). Microteaching in the preservice education of teachers: Time for a reexamination. *The Journal of Educational Research, 67*, 34-36.

Pfeiffer, J.W., & Ballow, A.C. (1988). *Using structured experiences in human resource development*. San Diego, CA: University Associates.

Pianta, R.C., Mashburn, A. J., Downer, J. T., Hamre, B. K., & Justice, L. (2008). Effects of web-mediated professional development resources on teacher-child interactions in pre-kindergarten classrooms. *Early Childhood Research Quarterly, 23*(4), 431-451.

Pugach, M.C., Blanton, L.P., & Correa, V.I. (2011). A historical perspective on the role of collaboration in teacher education reform: Making good on the promise of teaching all students. *Teacher Education and Special Education, 34,* 183-200. doi: 10.1177/0888406411406141

Recchia, S. L., & Puig, V. I. (2011). Challenges and inspirations: Student teachers' experiences in early childhood special education classrooms. *Teacher Education and Special Education, 34*, 133-151. doi:10.1177/0888406410387444

Rich, P. J., & Hannafin, M. J. (2008). Decisions and reasons examining teacher candidate decision-making through video self-analysis. *Journal of Computing in Higher Education, 20*, 62-94.

Rich, P. J., & Hannafin, M. J. (2009). Scaffolded video self-analysis: Discrepancies between teacher candidates' perceived and actual instructional decisions. *Journal of Computing in Higher Education, 21*, 128-145.

Roberson, L., Woolsey, M. L., Seabrooks, J., & Williams, G. (2004a). Data-driven assessment of teacher candidates during their internships in deaf education. *American Annals of the Deaf, 148*, 403-412. doi:10.1353/aad.2004.0007

Roberson, L., Woolsey, M. L., Seabrooks, J., & Williams, G. (2004b). An ecobehavioral assessment of the teaching behaviors of teacher candidates during their special education internship experiences. *Teacher Education and Special Education, 27*, 264-275. doi:10.1177/088840640402700306

Robinson, L., & Kelley, B. (2007). Developing reflective thought in preservice educators: Utilizing role-plays and digital video. *Journal of Special Education Technology, 22*(2), 31-43.

Rock, M., Gregg, M., Thead, B., Acker, S. E., Gable, R., & Zigmond, N. (2009). Can you hear me now? Evaluation of an online wireless technology to provide real-time feedback to special education teachers-in-training. *Teacher Education and Special Education, 32*, 64-82.

Rosaen, C.L., Lundeberg, M., Cooper, M., Fritzen, A., & Terpstra, M. (2008). Noticing noticing: How does investigation of video records change how teachers reflect on their experiences? *Journal of Teacher Education, 59*, 347-360. doi:10.1177/0022487108322128

Ruhl, K. L., & Hall, T. E. (2002). Continuum of special education and general education field experiences in the preservice, special education program at penn state. *Teacher Education and Special Education, 25*, 87-91. doi:10.1177/088840640202500109

Sayeski, K., & Paulsen, K. (2012). Student teacher evaluations of cooperating teachers as indices of effective mentoring. *Teacher Education Quarterly, 39*, 117-130.

Sandmel, K., & Nagro, S. A. (2013, November). *The effect of videotaped lessons and university supervisor evaluations on student interns' written self-reflections.* Paper presented at the Teacher Education Division of the Council for Exceptional Children Annual Conference, Ft. Lauderdale, FL.

Sartain, L., Stoelinga, S.R., & Brown, E. (2011, November). R*ethinking teacher evaluation in Chicago: Lessons learned from classroom observations, principal-teacher conferences, and district implementation.* Consortium on Chicago school research at the University of Chicago, Research Report. Retrieved from http://ccsr.uchicago.edu/sites/default/files/publications/Teacher%20Eval%20Report%20FINAL.pdf

Saunders, W., Nielson, E., Gall, M. D., & Smith, G. (1975). The effects of variations in microteaching on prospective teachers' acquisition of questioning skills. *The Journal of Educational Research, 69*, 3-8.

Scheeler, M. C., McAfee, J. K., Ruhl, K. L., & Lee, D. L. (2006). Effects of corrective feedback delivered via wireless technology on teacher candidate performance and student behavior. *Teacher Education and Special Education, 29*, 12-25. doi:10.1177/088840640602900103

Scheeler, M. C., McKinnon, K., & Stout, J. (2012). Effects of immediate feedback delivered via webcam and bug-in-ear technology on teacher candidate performance. *Teacher Education and Special Education*, *35*, 78-90. doi:10.1177/0888406411401919

Scheeler, M. C., Ruhl, K. L., & McAfee, J. K. (2004). Providing performance feedback to teachers: A review. *Teacher Education and Special Education, 27,* 396-407.

Seidel, T., Sturmer, K., Blomberg, G., Kobarg, M., & Schwindt, K. (2011). Teacher learning from analysis of videotaped classroom situations: Does it make a difference whether teachers observe their own teaching or that of others? *Teaching and Teacher Education, 27*, 259-267. doi:10.1016/j.tate.2010.08.009

Sharpe, T., Spies, R., Newman, D., & Spickelmier-Vallin, D. (1996). Assessing and improving the accuracy of in-service teachers' perceptions of daily practice. *Journal of Teaching in Physical Education, 15*, 297-318.

Sherin, M. G., & van Es, E. A. (2009). Effects of video club participation on teachers' professional vision. *Journal of Teacher Education, 60*, 20-37. doi: 10.1177/0022487108328155

Sherin, M. G., & van Es, E. A. (2005). Using video to support teachers' ability to notice classroom interactions. *Technology and Teacher Education, 13*, 475-491.

Sindelar, P. T., Brownell, M. T., & Billingsley, B. (2010). Special education teacher education research: Current status and future directions. *Teacher Education and Special Education*, *33*, 8-24.

Slavin, R., & Smith, D. (2009). The relationship between sample sizes and effect sizes in systematic reviews in education. *Educational Evaluation and Policy Analysis, 31,* 500-506. doi:10.3102/0162373709352369

Snoeyink, R. (2010). Using video self-analysis to improve the withitness of student teachers. *Journal of Digital Learning in Teacher Education, 26*(3), 101-110.

Stockero, S. (2008). Differences in preservice mathematics teachers' reflective abilities attributable to use of a video case curriculum. *Journal of Technology and Teacher Education, 16*, 483-509.

Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed.). Boston, MA: Pearson.

The Danielson Group. (2013). *General questions about the framework*. [Fact sheet]. Retrieved from http://danielsongroup.org/questions-about-the-framework-for-teaching/

Tripp, T. R, & Rich, P. J. (2012a). The influence of video analysis on the process of teacher change. *Teaching and Teacher Education, 28*, 728-739. doi:10.1016/j.tate.2012.01.011

Tripp, T. R, & Rich, P. J. (2012b). Using video to analyze one's own teaching. *British Journal of Educational Technology, 43*, 678-704. doi:10.1111/j.1467-8535.2011.01234.x

van Es, E. A. (2010). Viewer discussion is advised: Video clubs focus teacher discussion on student learning. *Journal of Staff Development, 31*, 54-58.

van Es, E. A., & Sherin, M. (2002). Learning to notice: Scaffolding new teachers' interpretations of classroom interactions. *Journal of Technology and Teacher Education*, *10*, 571-596.

van Es, E. A., & Sherin, M. G. (2010). The influence of video clubs on teachers' thinking and practice. *Math Teacher Education, 13*, 155–176.

van Es, E. A., Tunney, J., Goldsmith, L. T., & Seago, N. (2014). A framework for the facilitation of teachers' analysis of video, *Journal of Teacher Education 65*, 340-356. doi: 10.1177/0022487114534266

Wang, J., & Hartley, K. (2003). Video technology as a support for teacher education reform. *Journal of Technology and Teacher Education*, *11*, 105-138.

Weiss, I. R., Banilower, E. R., McMahon, K. C., & Smith, P. S. (2001). *Report of the 2000 national survey of science and mathematics education.* Chapel Hill, NC: Horizon Research, Inc. Retrieved from http://www.horizon-research.com/horizonresearchwp/wp-content/uploads/2013/04/complete.pdf

What Works Clearinghouse. (2011). *Procedures and standards handbook version 2.1.* Washington, DC: Author. Retrieved from http://ies.ed.gov/ncee/wwc/pdf/reference_resources/wwc_procedures_v2_1_standards_handbook.pdf

Wideen, M., Mayer-Smith, J., & Moon, B. (1998). A critical analysis of the research on learning to teach: Making the case for an ecological perspective on inquiry. *Review of Educational Research, 68*, 130–178.

Wiens, P. D., Hessberg, K., LoCasale-Crouch, J., & DeCoster, J. (2013). Using a standardized video-based assessment in a university teacher education program to examine teacher candidates' knowledge related to effective teaching. *Teaching and Teacher Education, 33*, 24-33. Doi:10.1016/j.tate.2013.01.010

Wright, G. A. (2008, October). *Improving teacher performance using an enhanced digital video reflection technique.* Paper Presented at International Conference on Cognition and Exploratory Learning in Digital Age, Freiburg, Germany.

Table 1

Summarized Field Experience Literature Specific to Special Education Teacher Candidates [a]

Author (year)	Sample	Research Design, Data Collection, & Analysis	Author Findings & Conclusions
Adams, Bondy, and Kuhel (2005)	3 Groups of dual certification EC/SETC: A. *N* = 5 completed junior field experience B. *N* = 7 completed both junior and senior field experience C. *N* = 6 program completed	Design • Qualitative Data • Audiotape recorded Semi-structured open-ended interviews ranging from 45-60 minutes were coded for themes	Individual responses relating to the impact of this initial field experience ranged a waste of time to instilling passion and commitment towards the career. Although no clear distension was made between groups, Group A found the least benefit, Group B was in the middle, and Group C found the most benefit from the initial field experience in relation to their future in education
Adams and Wolf (2008)	*N* = 86 dual certification EC/SETC	Design • Descriptive Data • Data collected over 5 years • Scores on 10 elements of Performance-Based assessments including planning, teaching, and reflecting • Average aggregated scores (1- 4; basic - advanced)	Over 5 years of the field experiences focused on professional standards and performance-based assessments, TC consistently demonstrated proficiency Authors noted clear expectations organized through rubrics were essential for TC as well as site and university supervisors
Anderson and Petch-Hogan (2001)	*N* = 8 SETC	Design • Case Study Data • Pre/Post student surveys including a self-evaluation rating scale (5-point likert) were compared using a paired samples t-test	TC made significant improvements in perceived acquisition of knowledge and ability to use technology (computer software and assistive technology) as a teacher tool and to facilitate instruction after participating in the field experience
Andrews, Miller, Evans, and Smith (2003)	*N* = 1 SETPP	Design • Program Description Data • Student surveys regarding satisfaction with the program and career • Descriptive Statistics	80% of survey respondents felt proud to be special education teachers, but there was no description or analysis regarding the impact of field experiences
Capizzi, Wehby, and Sandmel (2010)	*N* = 3 SETC	Design • Single-Subject Multiple Baseline Data • Percentage of correct lesson comp1nts, behavior specific praise (general and specific), and opportunities to respond (whole group and individual) • Visual analysis across staggered baseline, intervention, and maintenance phases	Across 3 cases, TC increased the percentage of correctly implemented lesson components after participating in the field experience
Childre (2014)	*N* = 15 dual certification GE/SETC	Design • Program Description Data • Descriptive statistics	While 93% of TC graduated and were certified in both special education and at least 1 general education content area, there was no description or analysis regarding the impact of field experiences

Table 1 Continued

Author (year)	Sample	Research Design, Data Collection, & Analysis	Author Findings & Conclusions
Conderman, Morin, and Stephens (2005)	*N* = 61 SETPP	Design • Exploratory Study Data • Surveyed field experience coordinators • Descriptive statistics	Field experience frameworks that combined pedagogy and knowledge through critical discussion and reflection were thought by field experience coordinators to lead to high quality special education teacher preparation
Dymond, Renzaglia, Halle, Chadsey, and Bentz (2008)	*N* = 2 SETC	Design • Case Study Data • Skills monitoring checklist as an observation instrument • Point-by-point comparison between distance observer and on-site observer	Videoconferencing is a promising and potentially reliable practice for observing TC during field experiences when observers were trained to score TC using a checklist
Evans, Williams, King, and Metcalf (2010)	*N* = 1 SETPP	Design • Program Description Data • No data, no analysis	TC have several opportunities to implement evidence-base practices and strategies for using a UDL framework within real and different classrooms during field experiences
Falconer and Lignugaris-Kraft (2002)	*N* = 4 SETC	Design • Qualitative Data • Supervisor field notes and TC interviews • Divided negative and positive statements then coded for themes	Computer-based 2-way conferencing enhanced the frequency, immediacy, and types of communication between supervisors and TC as well as personalized support based on individual TC needs
Fullerton, Ruben, McBride, and Bert (2011)	*N* = 1 dual certification SETPP	Design • Program Description Data No data, no analysis	After 5 years development on this program continues
Griffin, Jones, and Kilgore (2006)	Pilot: *N* = 30 dual certification GE/SETC Follow-up study: *N* = 22 dual certification EC/SETC	Design • Qualitative Data • Written assignments and collaborative reflective journals • Face-to-face interviews • Pilot study data was coded for recurring topics and domains • Domains were expanded and modified during the follow-up study	Collaborative problem solving conducted during student teaching allowed TC to bring to life one model of collaboration as opposed to only reading about collaboration, which expanded the TC's definition of collaboration
Hanline (2010)	*N* = 15 dual certification EC/SETC	Design • Qualitative Data • Reflective journals • US observation notes • Exit interviews All coded for themes	TC benefited from field experiences by connecting theory to classroom realties where TC observed the effects of intervention implementation for young children

Table 1 Continued

Author (year)	Sample	Research Design, Data Collection, & Analysis	Author Findings & Conclusions
Jung, Gaylon-Keramidas, Collins, and Ludlow (2006)	*N* = 4 SETPP A. Increasing the Number, Competence, and Resources of Early Interventionists in Areas of Shortage (INCREAS) B. Reaching Educators with Alternative Certification in Teaching (REACT) C. Harnessing Technology to Integrate Technology for Children with Severe Disabilities (Hi-tech) Inclusion for Young Children with Special Needs (PIPPIN)	Design • Program Description Data • No data, no analysis	Programs using online practicums to facilitate field experiences can address geographic restraints of teacher preparation programs in rural areas
Kamens (2007)	*N* = 2 dyads GE/SETC:GETC	Design • Case Study Data • Researcher field notes during formal teaching observations, class sessions, and school visits • TC interviews • Email exchanges between TC pairs • US and C notes • Data coded for themes	TC found emotional support from working in pair. TC emphasized the importance of the field experience in shaping their expectations for the career and collaborating with someone with differing perspectives
Keller, Brady, and Taylor (2005)	*N* = 3 SETC	Design • Single-subject Multiple Baseline Data • 5 minute interval audio recordings of teacher led instruction self-coded between 5 and 21 times across staggered baseline and intervention phases • Mentor teachers collected 4 - 6 maintenance for each TC	All 3 TC increased frequency of targeted teacher behavior while participating in ongoing data-based self-evaluation during field experience, although such behaviors were not maintained consistently suggesting TC would benefit from ongoing prompts or self-evaluation practices
King-Sears, Carran, Dammann, and Sullivan Arter (2012)	*N* = 64 GETC *N* = 34 SETC From 5 TPP both traditional and alternative	Design • Quasi-experimental Data • *Online Student Teaching Skills Survey for Student Teachers Working with Students with Disabilities* completed after TC completed both field experiences were compared using independent t-tests • Descriptive statistics	Special education candidates self-rated their skills in educating students with disabilities significantly higher across all 6 domains (instruction, environment, behavior, strategies, assessment, and professional practice) after participating in field experiences specific to special education when compared to general education TC own self-ratings

Table 1 Continued

Author (year)	Sample	Research Design, Data Collection, & Analysis	Author Findings & Conclusions
Knapczyk, Hew, Frey, and Wall-Marencik (2005)	*N* = 26 SETC in a collaborative TPP across 4 campuses	Design • Qualitative Data • TC questionnaire, • Electronic logs of mentor/TC interactions • Reflection logs • All coded for themes • Descriptive statistics	Online mentoring provided TC with guidance and support when geographical limitation may have otherwise prevented such support. TC felt the field experience enhanced their professional development by helping them apply interventions in real life teaching situations
Leko and Brownell (2011)	D. *N* = 6 SETC	Design • Qualitative Data • Tape-recorded interviews • Researcher field notes • Researcher observation ratings • TC surveys • Pre/post concept maps • All coded for themes • Program course syllabi were also collected for data triangulation	Overall, TC benefited from opportunities to apply their knowledge in practical settings that had a high degree of structure, focused on student needs, included opportunities for implementation of intensive instruction, and included cooperating teachers who were knowledgeable in both special education and the content area of focus
Ludlow, Gaylon Keramidas, and Landers (2007)	*N* = 18 SETC	Design • Program Description Data • Participant satisfaction forms after completing first course with initial field experience • Mean responses for 14 items scored on a 5-point likert scale	TC felt most important was that instructors linked course to practical situations, they learned to solve problems in the field, and the skills gained were directly applicable to their career
Morewood and Condo (2012)	*N* = 1 SETC	Design • Case Study Data • TC thoughts and suggestions regarding the 5 year special education teacher preparation program were quoted	Over the 5 year program the TC felt the best way to learn was through authentic teaching experiences
O'Brian, Stoner, Appel, and House (2007)	*N* = 9 SETC	Design • Qualitative Data • Quotations from TC interviews • Reflective logs coded for themes • TC observations	Hands on experiences supported reflection and influenced teacher knowledge and development
Oyler (2011)	*N* = 1 SETPP	Design • Program Description Data • No data, no analysis	Field partners were looking for TC trained in the service delivery models in place in the district (self-contained classrooms or pull-out recourse rooms), but teacher educators in this program were committed to a focus on specialized instruction regardless of setting
Recchia and Puig (2011)	*N* = 5 dual certification EC/SETC	Design • Qualitative Data • Reflective journals coded for themes	Overall, field experiences in self-contained settings offered a particular value for TC because these classrooms were a rich training ground given the range of individual student needs and TC felt more prepared to work with SWD because of their field experience

Table 1 Continued

Author (year)	Sample	• Research Design, Data Collection, & Analysis	Author Findings & Conclusions
Ruhl and Hall (2002)	*N* = 1 SETPP	Design • Program Description Data • No data, no analysis	This model focused on using validated and best practices for teacher education
Roberson, Woolsey, Seabrooks, and Williams (2004a)	*N* = 8 SETC	Design • Descriptive Study Data • Mean percentages of Computer coded TC behaviors and student behaviors collected in 20 second intervals during formal observations using the Mainstream Code for Instructional Structure and Student Academic Response (MS-CISSAR)	Overall, TC behaviors during field experiences were similar to those of in-service teachers. Video-based data collection with computer-based coding is one way to supplement teacher preparation
Roberson, Woolsey, Seabrooks, and Williams (2004b)	*N* = 13 SETC	Design • Descriptive Study Data • Mean percentages of computer coded TC behaviors and student behaviors collected in 20 second intervals during formal observations using the Mainstream Code for Instructional Structure and Student Academic Response (MS-CISSAR) • Description of instructional groupings, TC focus and behaviors, student behaviors and responses	Providing TC with a data-timeline of their field experience produced through video-based data collection and computer-based coding helped them to notice their strengths and weaknesses and can be used to demonstrate the effective teaching during needed for certification
Rock and colleagues (2009)	*N* = 15 SETC	Design • Mixed Methods Data • Pre/post videotaped lessons were frequency coded for changes in teacher behavior, classroom climate, and student engagement as well as the level of disruption caused by the bug in ear technology and then compared using paired samples t-test • TC self-reported data including written responses to prompts were coded for themes	Overall, teachers made significant increases in desired teaching practices as well as significant decreases in less desired teacher practices. The combination of video, audio, and computer-based technologies allowed for real-time supervision of teachers and this is a possible solution when geographical limitations may otherwise prevent TC support
Sayeski and Paulsen (2012)	*N* = 389 TC from elementary, special, or secondary Education TPP	Design • Qualitative Data • Data collected over 3 years • Field placement exit surveys called The *Cooperating Teacher Evaluation* • Dichotomously coded for affirmation of established categories	TC highly valued 1-on-1 mentorship, concrete and frequent written and verbal feedback, ability to explore different teaching strategies, and engagement is all aspects of the profession including teaching, meetings, professional development, and extracurricular activities

Table 1 Continued

Author (year)	Sample	• Research Design, Data Collection, & Analysis	Author Findings & Conclusions
Scheeler, McAfee, Ruhl, and Lee (2006)	*N* = 5 SETC	Design • Single-subject Multiple Baseline Data • Percentage of completed 3-term contingency trials graphed over 20 sessions across staggered baseline, intervention, and maintenance phases	Immediate, corrective feedback resulted in higher levels of targeted teacher practice compared to deferred feedback, and providing this type of feedback using technology promotes more teacher learning in applied settings
Scheeler, McKinnon, and Stout (2012)	*N* = 5 SETC	Design • Single-subject Multiple Baseline Data • Checklist of procedural correctness of desired teacher practices were coded for each TC between 6 and 11 individual sessions across staggered baseline, intervention, and maintenance phases	Overall, immediate feedback delivered using technology increased desired teacher practices more effectively compared to delayed feedback and this method of feedback is a possible solution when geographical limitations may otherwise prevent TC support
Van Laarhoven, Munk, Lynch, Bosma, and Rouse (2007)	3 Groups: A. *N* = 15 SETC B. *N* = 38 GETC C. *N* = 53 GETC (control group)	Design • Quasi-experimental Data • Data collected over 2 semesters • Pre/post surveys to evaluate attitude and disposition towards inclusion • Pre/post written response probes based on vignettes • Pre/post instructional adaptation survey • Descriptive statistics • ANOVA parametric tests	Although the data was inconclusive in regards to differences between groups, participants felt actual teaching in real classrooms was "very beneficial"
Voss and Bufkin (2011)	*N* = 123 ECTC some of which were seeking dual certification in SE	Design • Mixed Methods Data • TC interviews, and reflections as well as researcher field notes were coded for themes • Pre/post TC perceived teaching competence survey were analyzed using a paired samples t-test	Overall, as TC became more comfortable working with students with disabilities, they improved professionally and field experience enhanced opportunities for TC to practice and develop professional skills

Note. CT = cooperating teacher; EC = early childhood; IEP = individualized education program; GE = general education; SE = special education; SWD= students with disabilities; TC = teacher candidate; US = university supervisor.

[a] Table Adapted from "How much do we know about effective field experiences in special education teacher preparation?" by S. A. Nagro, November, 2014, Paper to be presented at the Teacher Education Division of the Council for Exceptional Children Annual Conference, Indianapolis, IN.

Table 2

Dimensions of Reflection Found in Reflection Models and Rubrics

Authors by Date	Dimensions of Reflection
Gibbs (1988)	1. Description 2. Expression 3. Evaluation 4. Analysis 5. Conclusion 6. Planning
Pfeiffer and Ballew (1988)	1. Experiencing 2. Publishing 3. Processing 4. Generalizing 5. Applying
Robinson and Kelley (2007)	1. Technical 2. Descriptive 3. Dialogic 4. Critical 5. Reflect-on-action
Stockero (2008)	1. Describing 2. Explaining 3. Theorizing 4. Confronting 5. Restructuring
Mariko (2011)	1. Technical 2. Reflection-in-action 3. Reflection-on-action 4. Reflection-for-action
Crawford, O'Reilly, and Luttrell (2012)	5. Descriptive 6. Descriptive and justification 7. Descriptive and critique 8. Descriptive, justification and critique
Sandmel and Nagro (2013)	1. Describe 2. Analyze 3. Judge 4. Apply

Table 3

Research Questions Outlined by Variable, Measure and Analysis

Research Question	Independent Variable	Dependent Variable	Data	Measures	Data Analysis
1. Is there a difference in teacher candidates' perceived professional ability in relation to reflective abilities and instructional skills after participating in a field experience based on level of guidance and support during video analysis?	Treatment: Guidance and Support	Perceived Professional Ability	Teacher candidate questionnaires (pre and post)	Teacher candidates scored themselves using a 4-point scale (unsatisfactory, basic, proficient, distinguished) on 13 items relating to perceived ability to reflect on teaching abilities, analyze videotaped lessons, communicate with students, and use questioning techniques during instruction. The composite score ranged from 4-52 and was adjusted to a score out of 100.	Mixed Model Analysis of Variance (ANOVA)
2. Is there a difference in reflective abilities for teacher candidates in a field experience supported by guided video analysis using rubrics and feedback compared to teacher candidates in a field experience supported by video self-reflection alone?	Treatment: Guidance and Support (probing questions and feedback on written reflections)	Reflective Abilities	Written Reflections (first and last)	The reflection rubric (Figure 1) included 6 elements of communication and questioning techniques scored across 4 dimensions of reflection (describe, analyze, judge, and apply) to represent reflective ability. The composite score ranged from 0-24 and was adjusted to a score out of 100.	Mixed Model Analysis of Variance (ANOVA)
3. Is there a difference in instructional skills for teacher candidates in a field experience supported by guided video analysis using rubrics and feedback compared to teacher candidates in a field experience supported by video self-reflection alone?	Treatment: Guidance and Support (self-evaluation rubric to use while reviewing videotaped lessons)	Instructional Skills	Videotaped lessons (first and last)	The instructional skills rubric (Figure 2) included 6 elements of communication and questioning techniques where each element was scored on a 4-point scale (unsatisfactory, basic, proficient, distinguished). The composite score ranged from 6-24 and was adjusted to a score out of 100.	Mixed Model Analysis of Variance (ANOVA)

Table 4

Field Experience Descriptions by Teacher Preparation Program within the Sample

Program	Sample	Field Experience Placement	Field Experience Activities Beyond Writing and Teaching Lessons
Special Education: Mild/Moderate Disabilities (Treatment Condition)	*n* = 7	Placement • Included students with disabilities • Both grade level and student population matched the program focus for most teacher candidates Framework • Focused on Professional Practices • At least 4 seminar classes • Two semester long field placements	Teaching • Videotaped lessons • Reflected on videotaped lessons • Self-evaluated • Kept a reflection journal • Modified student work/assessments • Collected student data to make data driven decisions • Developed and implemented individual student interventions • Some developed behavior management systems • Used technology to supplement teaching • Implemented EBP Professional Activities • Developed and Executed a Professional Development Plan • Collected teaching artifacts for a portfolio • Attended professional meetings or PD • Some attended IEP meetings Assessment & Guidance • At least 3 formal US Observations • 2 formal MT Observations • Received feedback from US and MT • Completed assignments for other courses within placement
Special Education: Severe Disabilities (Comparison Condition)	*n* = 12	Placement • Included students with disabilities • Both grade level and student population matched the program focus for all teacher candidates Framework • Focused on Professional Practices • At least 4 seminar classes • Two semester long field placements	Teaching • Videotaped lessons • Reflected on videotaped lessons • Self-evaluated • Kept a reflection journal • Modified student work/assessments • Collected student data to make data driven decisions • Developed and implemented individual student interventions • Developed behavior management systems • Used technology to supplement teaching • Implemented EBP Professional Activities • Collected teaching artifacts for a portfolio • Attended professional meetings or PD • Some attended IEP meetings Assessment & Guidance • At least 3 formal US Observations • 2 formal MT Observations • Received feedback from US and MT • Completed assignments for other courses within placement

Table 4 Continued

Program	Sample	Field Experience Placement	Field Experience Activities Beyond Writing and Teaching Lessons
Special Education: Early Childhood (Comparison Condition)	*n* = 4	Placement • Included students with disabilities • Both grade level and student population matched the program focus for most teacher candidates Framework • At least 4 seminar classes • Two semester long field placements, one in formal education setting one in alternative setting	Teaching • Videotaped lessons • Reflected on videotaped lessons • Self-evaluated • Kept a reflection journal • Modified student work/assessments • Collected student data to make data driven decisions • Developed and implemented individual student interventions • Used technology to supplement teaching • Implemented EBP Professional Activities • Developed and Executed a Professional Development Plan • Developed and implemented individual student interventions • Attended professional meetings or PD Assessment & Guidance • At least 3 formal US Observations • 4 formal MT Observations • Received feedback from US and MT • Completed assignments for other courses within placement
General Education: Elementary (Two sections split between Treatment and Comparison Conditions)	*n* = 13	Placement • Included students with disabilities • Both grade level and student population matched the program focus for all teacher candidates Framework • Focused on Professional Practices • At least 4 seminar classes • 2, consecutive, semester long field placements	Teaching • Videotaped lessons • Reflected on videotaped lessons • Self-evaluated • Modified student work/assessments • Collected student data to make data driven decisions • Developed and implemented individual student interventions • Developed behavior management systems • Used technology to supplement teaching • Implemented EBP Professional Activities • Developed and Executed a Professional Development Plan • Collected teaching artifacts for a portfolio • Attended professional meetings or PD • Some attended IEP meetings Assessment & Guidance • At least 3 formal US Observations • MT Observations ranged from zero to daily • Received feedback from US and MT • Completed assignments for other courses within placement

Note. CT = cooperating teacher; EBP = evidence-based practices; IEP = individualized education program; MT = Mentor Teacher; PD = professional development; SWD= students with disabilities; TC = teacher candidate; US = university supervisor.

Table 5

Teacher Candidates' Descriptive Characteristics by Group Condition

Characteristics	Treatment	Comparison
Race		
African American	2	2
Asian	1	4
Caucasian	13	11
Other	1	2
Gender		
Male	4	1
Female	13	18
Prior Weeks of Field Experience		
0	2	6
1-10	11	4
11-30	2	2
> 30	2	7
Number of Prior Videotaped Lessons		
0	12	11
1-5	4	7
> 5	1	1
Number of Prior Written Reflections		
0	3	10
1-10	9	7
11-20	4	1
> 20	1	1
Previously Certified in another Education Field		
Yes	0	7
No	17	12
Current Placement Setting		
General Education	10	4
Mild/Moderate	6	2
Severe	1	13
Current Placement Included Students with Disabilities		
Yes	17	19
No	0	0

Table 6

Average Value-Added Measures for Teacher Ratings on the Danielson Framework

Framework Component Subject	4-point Scale				Omnibus F-statistic
	Unsatisfactory	Basic	Proficient	Distinguished	
2a Communicating with Students					
Reading	-0.041	-0.162	0.226	0.264	5.33*
Math	-0.030	-0.237	0.042	0.327	4.73*
2b Questioning Techniques					
Reading	-0.470	-0.086	0.186	0.411	6.60*
Math	-0.552	-0.301	0.083	0.368	6.83*

* $p < 0.05$

[a] Table Adapted from "Rethinking teacher evaluation in Chicago: Lessons learned from classroom observations, principal-teacher conferences, and district implementation" by L. Sartain, S.R. Stoelinga, & E. Brown, November 2011, Consortium on Chicago school research at the University of Chicago, Research Report. Retrieved from http://ccsr.uchicago.edu/sites/default/files/publications/Teacher%20Eval%20Report%20FINAL.pdf

Table 7

Reflection Rubric Scoring Procedures

Scoring Procedure	Example
1. The element being scored must to be explicitly stated rather than implicitly stated	Explicit: I used open-ended questioning techniques during the lesson. Implicit: The students raised their hands to answer questions about the solar system.
2. Elements discussed within the reflection will not be double scored.	A TC gives one example of a think-pair-share activity and then describes a debate style activity, but can only receive one point for describing the element discussion techniques.
3. Dimensions of reflection are discrete and one is not a prerequisite of the next.	A TC *describes* and *judges* their discussion techniques in a written reflection, without *analyzing* why a discussion technique was used or *applying* the newly gained insight to plans for future lessons resulting in a score of two out of four for the element discussion techniques.
4. If something written can be scored under two different elements scorers will follow the rubric from top to bottom to assure consistency across scorers.	A TC Reflects on a questioning technique selected by explaining how it was presented with precision of both oral and written language, and receives a score under the element of oral and written language.
5. APA or other organizational headings within the reflection will be ignored because they may not align to elements within the corresponding paragraphs.	**Expectations for Learning**
6. Student behaviors will not be scored because the focus of the reflection activities are to describe, analyze, judge, and apply knowledge to teacher behaviors.	Student focus: Students were asking several questions after I gave directions because they were not listening. Teacher focus: Students were asking several questions after I gave directions, which prompted me to simplify the multi-stepped process into single-steps on the board in order to increase student comprehension.
7. Strong signal words for the dimension applied include "in the future I will" but in order for the TC to earn a point for the dimension applied in any element, the application must be observable rather than a general statement.	Observable: Next time, I will increase the number of open-ended questions and decrease the number of close-ended questions. General: I will try to improve my questioning techniques.

Table 8

Measuring Teacher Candidates' Prior Field Experiences

Subcategories of Prior Experience	Score
Prior Weeks of Field Experience	
0	0
1-5	1
6-10	2
11-20	3
21-30	4
> 30	5
Number of Prior Videotaped Lessons	
0	0
1-2	1
3-5	2
6-10	3
>10	4
Number of Prior Written Reflections	
0	0
1-5	1
6-10	2
11-20	3
21-30	4
> 30	5
Total	14

Table 9

Normalcy of Data for Dependent Variables under Analysis

	Complete Data Set (N = 36)						Comparison Group (N = 19)						Treatment Group (N = 17)					
Variables	S	SE	Skewness[a]	K	SE	Kurtosis[b]	S	SE	Skewness[a]	K	SE	Kurtosis[b]	S	SE	Skewness[a]	K	SE	Kurtosis[b]
Prior Experience	0.66	0.39	1.69	0.48	0.77	0.62	0.69	0.52	1.33	0.53	1.01	0.52	0.62	0.55	1.13	0.64	1.06	0.60
Perceived Ability (pre)	0.23	0.39	0.59	0.65	0.77	0.84	0.55	0.52	1.06	0.31	1.01	0.31	0.14	0.55	0.25	1.79	1.06	1.69
Perceived Ability (post)	0.44	0.39	1.13	0.29	0.77	0.38	0.35	0.52	0.67	0.18	1.01	0.18	0.58	0.55	1.05	0.29	1.06	0.27
Reflective Ability (pre)	0.32	0.39	0.82	0.58	0.77	0.75	0.48	0.52	0.92	0.71	1.01	0.70	0.02	0.55	0.04	0.89	1.06	0.84
Reflective Ability (post)	0.36	0.39	0.92	0.36	0.77	0.47	0.02	0.52	0.04	0.58	1.01	0.57	0.30	0.55	0.55	1.32	1.06	1.25
Instructional Skills (pre)	0.16	0.44	0.36	1.14	0.86	1.33	0.01	0.62	0.02	0.89	1.19	0.75	0.31	0.58	0.53	1.31	1.21	1.08
Instructional Skills (post)	0.57	0.44	1.30	0.36	0.86	0.42	0.12	0.62	0.19	0.86	1.19	0.72	0.73	0.58	1.26	0.73	1.21	0.60

Note. Absolute values are shown. K = kurtosis statistic; N = number of participants in the column; S = skew statistic; SE = standard error.

[a] The skewness formula used was /skew statistic/ divided by standard error of skew statistic.

[b] The kurtosis formula used was /kurtosis statistic/ divided by standard error of kurtosis statistic.

* = /skew/ or /kurtosis/ ≥ 2; ** = /skew/ or /kurtosis/ ≥ 3

Table 10

Descriptive Statistics of Dependent Variables by Group Condition

Variable	Treatment	Comparison	Total
	M (SD) (N = 17)	*M (SD)* (N = 19)	*M (SD)* (N = 36)
Perceived Professional Ability			
Pre	48.57 (15.26)	53.33 (19.28)	51.08 (17.42)
Post	67.72 (13.99)	64.10 (13.57)	65.81 (13.69)
Reflective Ability			
Pre	37.99 (14.80)	43.42 (16.16)	40.86 (15.55)
Post	57.60 (21.61)	36.84 (17.69)	46.64 (22.02)
Instructional Skills			
Pre	35.07 (19.09)	37.14 (20.33)	36.01 (19.33)
Post	48.78 (19.94)	40.17 (16.88)	44.78 (18.76)

Note. M = mean; N = number of participants in the column; SD = standard deviation.

Table 11

Results of Mixed Model ANOVAs for Dependent Variable by Time and Group Condition

	df	*MS*	*F*	ηp^2	ηG^2
Within-Subjects					
Perceived Professional Ability					
Time	1	4017.89	35.32***	0.51	0.00
Time x Group Condition	1	315.31	2.77	0.08	0.00
Error	34	113.76			
Reflective Ability					
Time	1	761.53	8.19**	0.19	0.03
Time x Group Condition	1	3076.34	33.09***	0.49	0.13
Error	34	92.97			
Instructional Skills					
Time	1	979.87	16.76***	0.39	0.05
Time x Group Condition	1	399.16	6.83**	0.21	0.02
Error	26	58.45			
Between-Subjects					
Perceived Professional Ability					
Group Condition	1	5.87	0.02	0.00	0.00
Error	34	382.11			
Reflective Ability					
Group Condition	1	1053.60	1.97	0.06	0.05
Error	34	533.76			
Instructional Skills					
Group Condition	1	147.44	0.22	0.01	0.01
Error	26	674.02			

Note. df = degrees of freedom; DV = dependent variable; F = f statistic; MS = mean square; ηG^2 = generalized eta squared; ηp^2 = partial eta squared

* $p \leq 0.05$; ** $p \leq 0.01$; *** $p \leq 0.001$

Table 12

Matrix of Cell Means for Calculation of Unplanned Post Hoc Pairwise Comparisons of Reflective Ability

	Treatment (pre) 37.99	Treatment (post) 57.60	Comparison (pre) 43.42	Comparison (post) 36.84
Treatment (pre) 37.99		19.61**	4.43	1.15
Treatment (post) 57.60			14.18**	20.76**
Comparison (pre) 43.42				6.58
Comparison (post) 36.84				

Note. Critical difference was calculated using $CD=q_k\sqrt{(MSerror/n_{AB})}$ where $CD=4.45\sqrt{(92.974/17)}$; CD=10.41 for $p < 0.01$. Absolute values are shown.
* $p \leq 0.05$; ** $p \leq 0.01$

Table 13

Matrix of Cell Means for Calculation of Unplanned Post Hoc Pairwise Comparisons of Instructional Skills

	Treatment (pre) 35.04	Treatment (post) 48.78	Comparison (pre) 37.14	Comparison (post) 40.17
Treatment (pre) 35.04		13.74**	2.10	5.13
Treatment (post) 48.78			11.64**	8.69*
Comparison (pre) 37.14				3.03
Comparison (post) 40.17				

Note. Critical difference was calculated using $CD=q_k\sqrt{(MSerror/n_{AB})}$ where $CD=4.55\sqrt{(58.45/13)}$; CD=9.65 for $p < 0.01$. Absolute values are shown.
* $p \leq 0.05$; ** $p \leq 0.01$

Written Reflection Rubric				
	Describe	Analyze	Judge	Apply
Expectations for Learning	(scored as present or not)			
Directions for Activities				
Explaining Content				
Using Oral and Written Language				
Quality of Questions/Prompts				
Discussion Techniques				
	/6	/6	/6	/6
			total score	/24

Definitions	
Described	Concrete statements of what happened that can include basic mention of individual elements or a detailed retelling of the lesson
Analyzed	Rationale, reasoning, or justification for teaching decisions that may tie back to coursework or knowledge of evidence-based practices
Judged	Assessing (positive, negative, or neutral) a teaching decision during the lesson by noting the specific effect that decision had on the outcome of a portion of the lesson or the lesson overall
Applied	Use insight from the lesson to create a plan for extending effective practices or changing of ineffective practices in future lessons

Figure 1. Reflection rubric.

Instructional Skills Rubric Adapted from the Danielson Framework				
Ratings	**1 Unsatisfactory**	**2 Basic**	**3 Proficient**	**4 Distinguished**
Critical Attributes of Communication skills	• At no time during the lesson does the TC what students will be learning • TC makes a serious error that will affect students' understanding of content • TC's communication includes errors of vocabulary or usage or imprecise use of academic language • TC's vocabulary is inappropriate given the age or culture of the students	• TC provides little elaboration or explanation about what students will learn • TC's explanation of the content is mainly monologue • TC makes no serious content errors but may make minor ones • TC's explanation of content is purely procedural, with no strategies for strategic student thinking • TC's vocabulary is too advanced, too juvenile, or correct but unimaginative	• TC states clearly, at some point during the lesson, what students will learn • TC clearly explains content & invites student participation/thinking • TC makes no content errors • TC describes different strategies students might use and models for students when needed • TC's vocabulary and usage are correct, appropriate, and include explanations where appropriate	• TC explains content clearly & imaginatively bringing content to life • TC proactively addresses possible misunderstandings • TC invites students to explain the content to classmates including suggesting strategies for approaching a challenge • TC uses rich language, offering brief vocabulary lessons where appropriate • TC encourages student use of academic language
Expectations For Learning	Goals for learning are communicated clearly to students. Even if the goals are not conveyed at the outset of a lesson (in an inquiry lesson), students are clear about what they have been learning by the end of the lesson.			
Directions for Activities	Students understand what they are expected to do during a lesson, particularly during independent or small group work, without direct TC supervision. Directions are provided orally, in writing, or in some combination of the two, with modeling when appropriate.			
Explaining Content	TC use vivid language to explain content and connect explanations to students' interests and lives beyond school. The explanations are clear, with appropriate scaffolding, and, TC anticipate possible student misconceptions.			
Using Oral and Written Language	TC model both accurate syntax and a rich vocabulary when communicating with students. Skilled TC seize opportunities to use and explain precise academic vocabulary and enable students to use similar language.			
Critical Attributes of Questioning Techniques	• Questions are rapid-fire with one correct answer (convergent) and don't invite student thinking • All discussion is between the teacher and students; students are not invited to speak directly to one another. • TC does not ask students to explain their thinking. • TC calls on the same students	• TC frames some questions designed to promote student thinking, but many have a single correct answer, and the TC calls on students quickly • TC inconsistently invites students to respond directly to one another's ideas • TC calls on many students, but only a small number actually participate • TC inconsistently asks students to explain their reasoning	• TC uses open-ended questions, inviting students to think and/or offer multiple possible answers • TC effectively uses wait time • Students are enabled to talk to one another without ongoing TC mediation • TC calls on most students, even those who do not initially volunteer • TC asks students to justify their reasoning, and most attempt to do so	• TC enables student initiated questions • TC builds on/uses student responses in order to deepen student understanding • TC set up lesson so that students invite comments from their classmates, challenge one another's thinking, and enrich the discussion • TC ensures virtually all students engage in discussion
Quality of Questions and Prompts	TC's questions cause students to think and reflect, to deepen their understanding, and to test their ideas against those of their classmates. TC ask questions with purpose (close-ended to check for understanding and open-ended to deepen students' understanding) and provide sufficient think time.			
Discussion Techniques	TC promote learning through discussion and require students to explain and justify their reasoning and answers. Some TC confuse discussion with explanation of content, but skilled TC recognize the difference.			

Figure 2. Instructional skills rubric.

Ratings	**1** **Unsatisfactory**	**2** **Basic**	**3** **Proficient**	**4** **Distinguished**	Not Observable
1. Communicating Expectations For Learning					
2. Communicating Directions for Activities					
3. Explaining Content to Students					
4. Using oral and written language when communicating with Students					
5. Using Quality Questions and Prompts with Students					
6. Using Discussion Techniques with Students					

Figure 2 Continued.

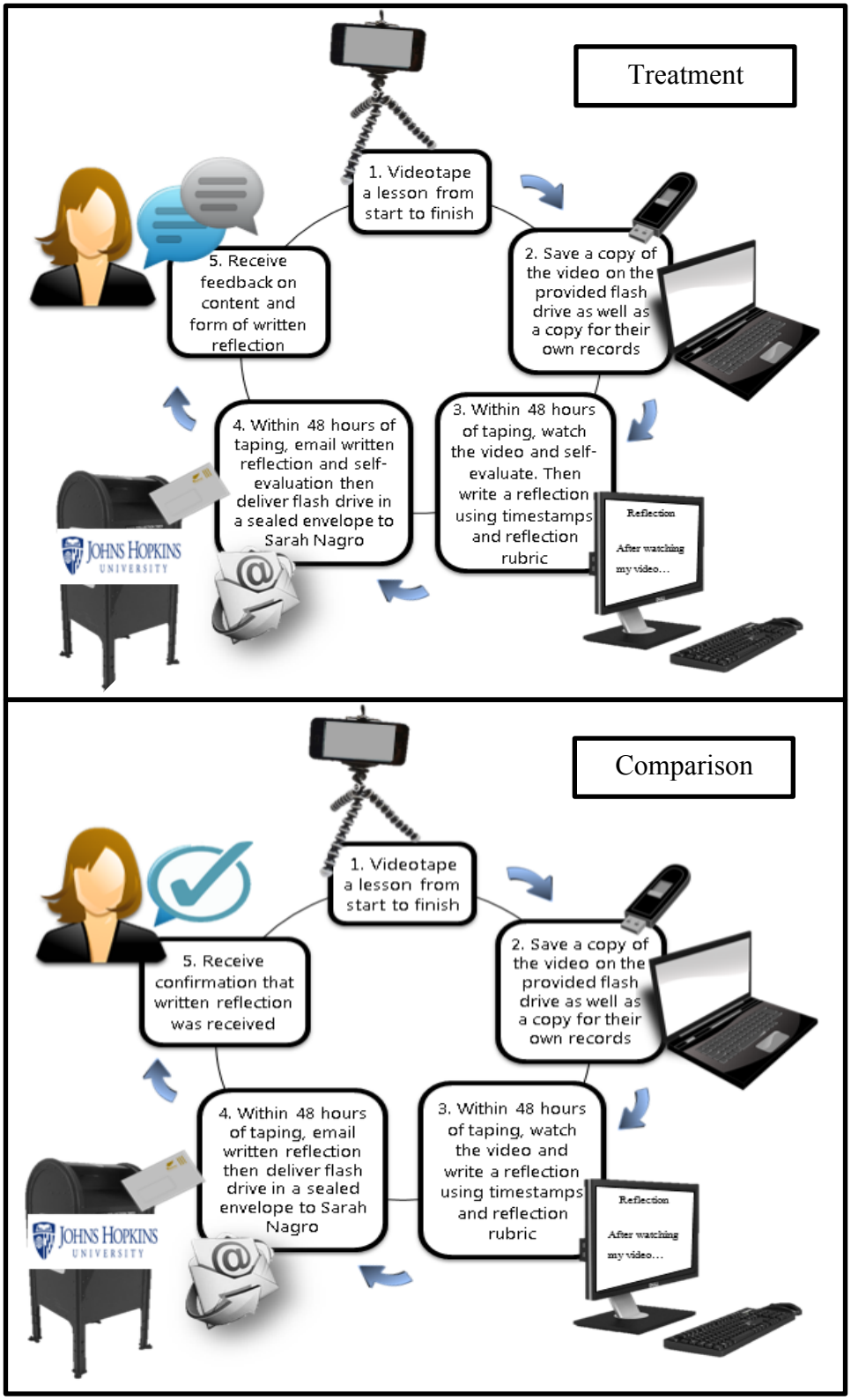


Figure 3. Guided video analysis cycle for treatment group and video self-reflection cycle for comparison.

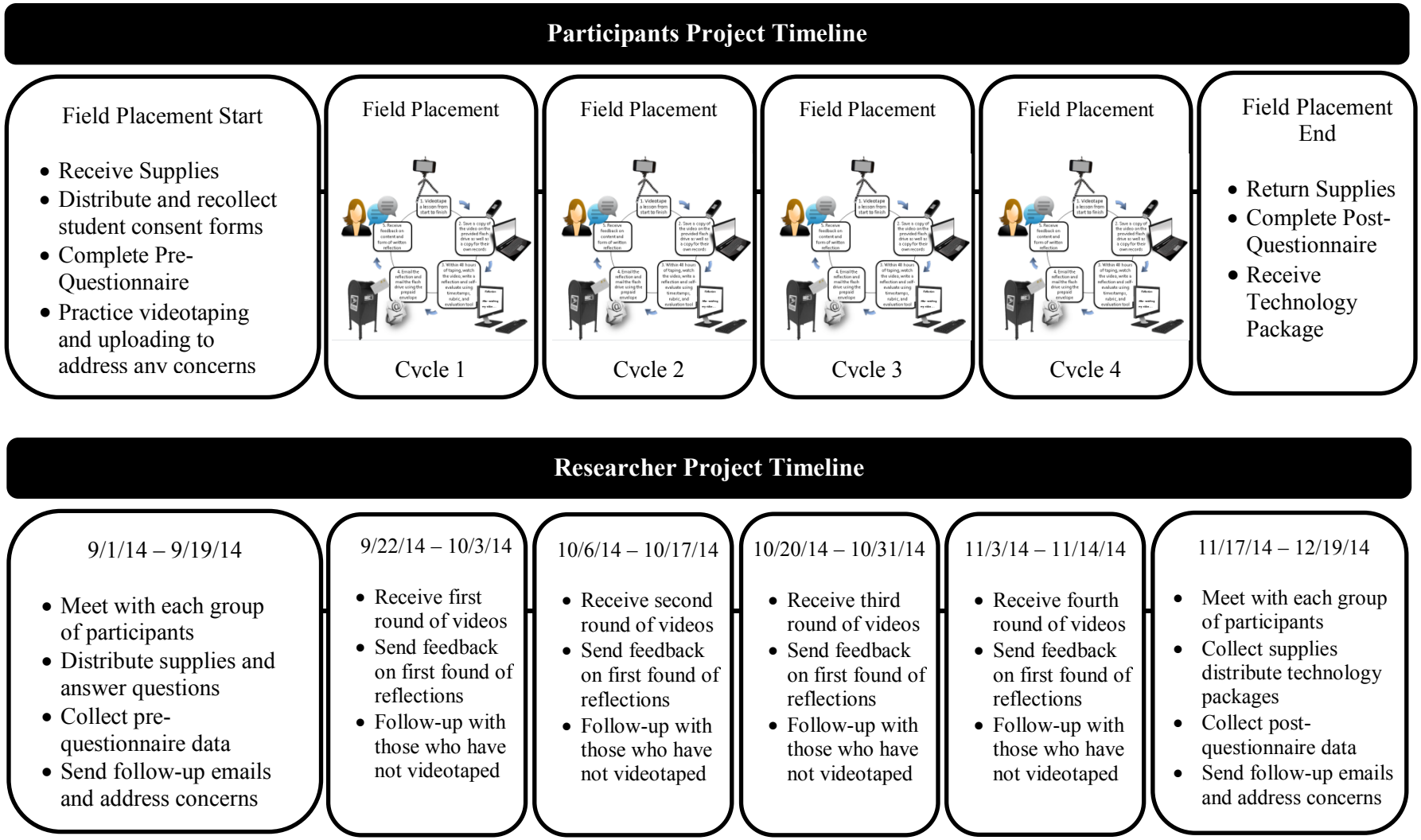


Figure 4. Timeline and activities of current investigation.

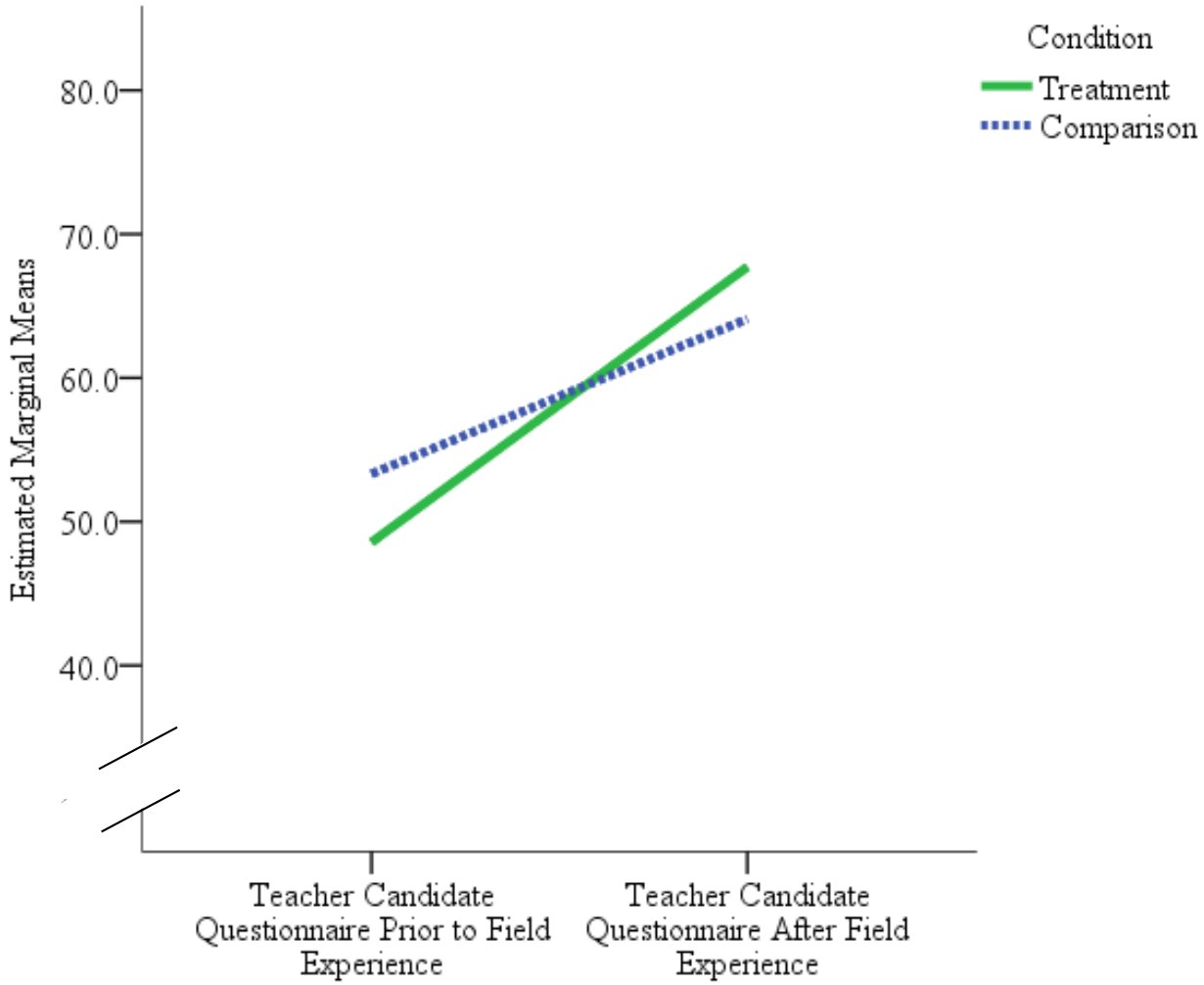


*Figure 5.*Graph of perceived professional ability across time based on group condition.

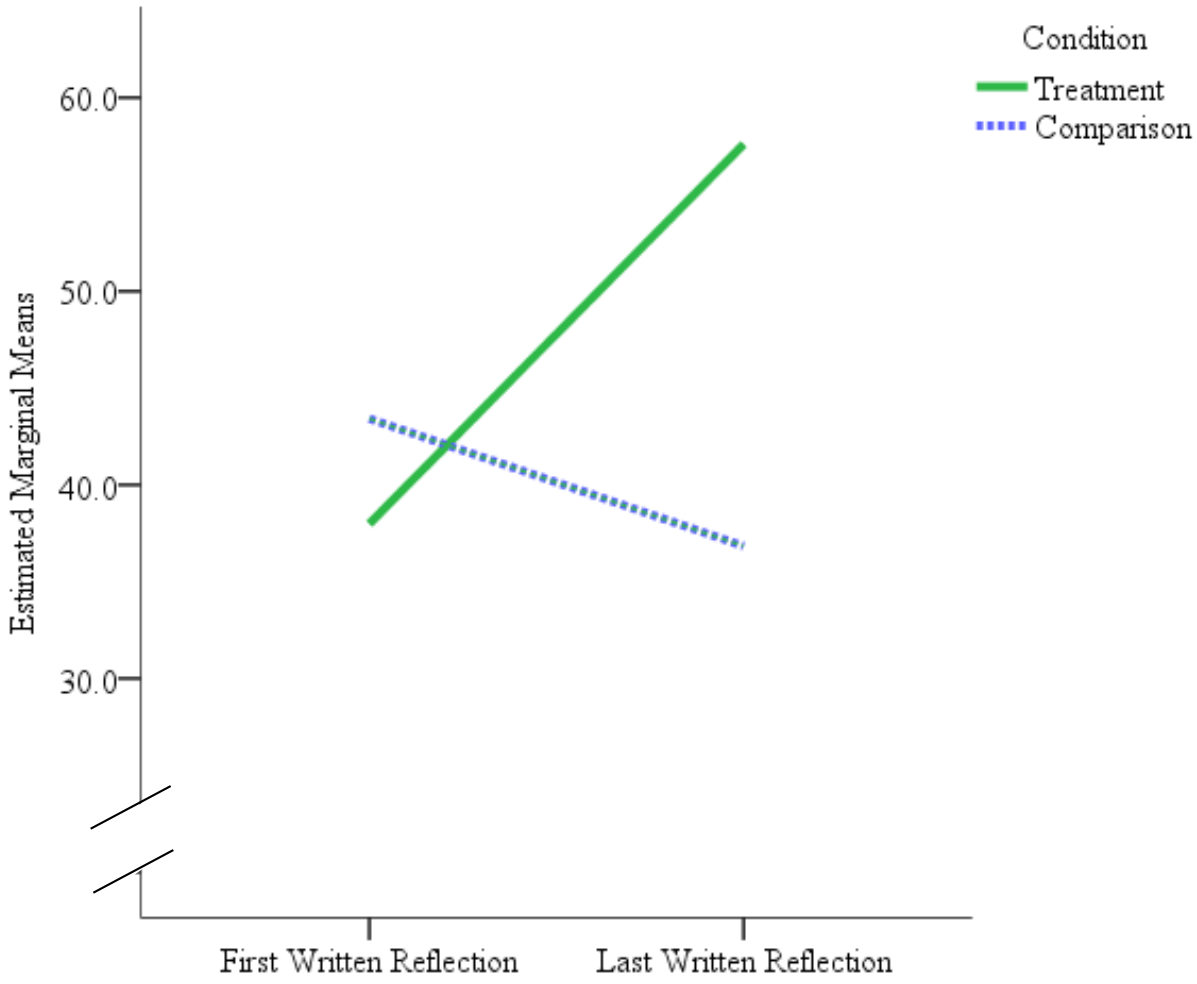


*Figure 6.*Graph of reflective ability across time based on group condition.

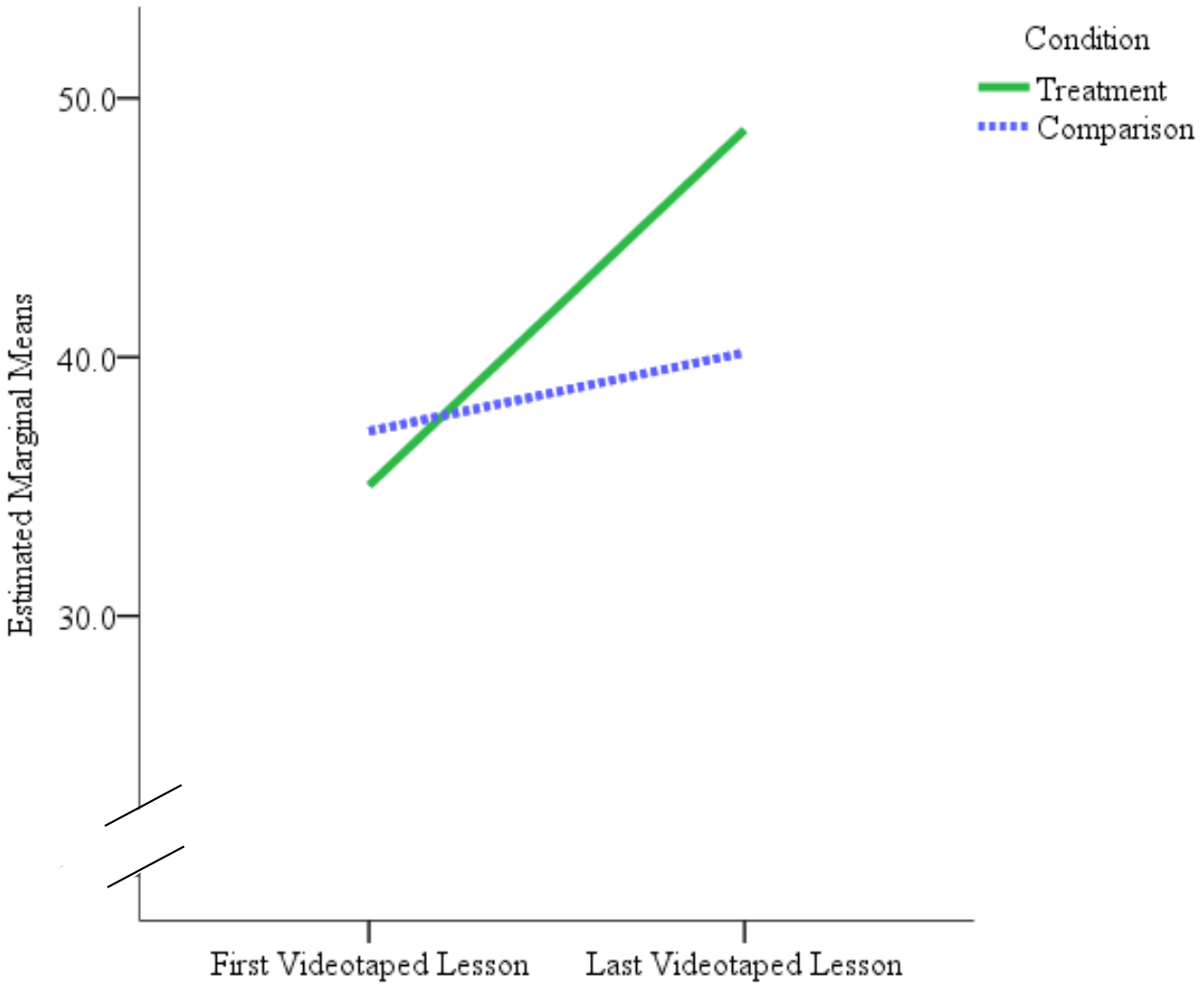


Figure 7. Graph of instructional skills across time based on group condition.

Appendix A

Electronic Homewood Institutional Review Board

Current Status: Approved

Title:

Investigating the effects of student teaching field placement activities on teacher candidate preparation

Number: HIRB00002319

Principal Investigator: Laurie Debettencourt

PI's HSR Training Date: 8/14/2009

Study Team:

	Last Name	First Name	Role	HSR Training Date	HSR Certificate Uploaded
View	Nagro	Sarah	Research Team Member	8/31/2011	Yes

Review Type:

Not Human Subjects Research

Date Created: 9/3/2014 1:06 PM

Study Expiration: 9/10/2017

Original Approval: 9/10/2014

Outcome Recorded	Emerson, Carley	9/10/2014 4:41 PM EDT

Appendix B

Dear Parents and Guardians,

During the 2014-2015 school year, your child's classroom teacher is supporting a student intern who is finishing his/her Education Master's Degree Program at Johns Hopkins University. The program of study requires the interns to apply the concepts presented in coursework during classroom instruction. As part of their assignment requirements, the interns will be recording four segments of classroom instruction for review by their internship supervisor. The purpose is to guide and support the intern during their teaching experience.

The School of Education is committed to best practice and the focus of the video is the intern and his/her teaching practices. Appropriate steps will be taken to avoid the direct recording of student faces. The video footage will be kept secure and viewed only by the intern, the internship supervisor, and the course instructor. The video footage will never be uploaded to the internet and will be permanently deleted at the end of the school year.

We believe that the practice of video analysis and review will continue to strengthen our program, and we request permission for your child's participation in recorded instruction. **Please complete and return this form to your child's classroom teacher. If this form is not returned, parent assent is assumed.**

If you have questions regarding the video project contact Sarah Nagro either by phone – 716-572-4315 or by email snagroc1@jhu.edu.

Sincerely,

Sarah Nagro

Johns Hopkins University

School of Education

snagroc1@jhu.edu

++

Parent/Guardian Name (please print) _____

Child's Name (please print) _____

_____ Yes, I grant permission for my child to participate in this project. Please sign below.

_____ No, I do not grant permission for my child to participate in this project. Please sign below.

Parent Signature _____ Date _____

Appendix C

Name: _____ **Predicting Your Experience**

Please circle or fill in the bubble for those that apply to you:

1. How many weeks of field experience (student teaching, internship, practicum) have you completed BEFORE starting this semester?
   - ❍ 0 weeks (no previous field experience)
   - ❍ 1-5 weeks
   - ❍ 6-10 weeks
   - ❍ 11-20 weeks
   - ❍ 21-30 week
   - ❍ More than 30 weeks

2. When are you starting this field experience?
   - ❍ Before the students come back to school from summer break
   - ❍ Same time as the students coming back to school from summer break
   - ❍ After the students start back to school from summer break

3. Early Childhood Placement OR Elementary Placement OR Secondary Placement

4. Mild/Moderate Placement OR Severe Placement OR General Education Placement

   a. Do any of your students have an Individualized Family Service Plan (IFSP), Individualized Education Program (IEP), or 504? Yes OR No

5. How often have you videotaped your teaching? (recorded a lesson while teaching real children)
   - ❍ 0 times
   - ❍ 1-2 times
   - ❍ 3-5 times
   - ❍ 6-10 times
   - ❍ More than 10 times

6. How often have you written reflections about your teaching BEFORE this semester?
   - ❍ 0 times

- ☐ 1-5 reflections
- ☐ 6-10 reflections
- ☐ 11-20 reflections
- ☐ 21-30 reflections
- ☐ More than 30 reflections

7. If you have previously written reflections about your teaching, did you ever watch a video of your teaching before writing the reflection?
   - ☐ Yes
   - ☐ No

Please give your opinion on the following statements in regards to your preparation as a teacher :	Extremely Unhelpful 1	Somewhat Unhelpful 2	Neutral 3	Somewhat Helpful 4	Extremely Helpful 5
8. Videotaping my classroom teaching at the beginning and end of the internship					
9. Videotaping my classroom teaching frequently throughout the internship					
10. Watching my own teaching videos to reflect on my teaching choices					
11. Writing reflections about my teaching choices					
12. Scoring my own teaching videos to determine my capabilities					
13. Focusing my written reflections on how I communicate with my students					
14. Focusing my written reflections on questioning techniques I use with my students					
15. Analyzing my own teaching choices while reflecting					
16. Judging my own teaching choices while reflecting					
17. Applying insight gained during reflecting to choices I will make in future lessons					
18. A rubric to help me write my video reflections					
19. Guidance during reviewing my own teaching videos					

20. Specific feedback on my written video reflections					
21. Teaching in a real classroom with real children					
22. Support from my cooperating teaching to let me teach					
23. Feedback from my university supervisor					
24. Developing my professional development plan					
25. Compiling teaching artifacts in a portfolio					
26. Writing lessons					

Everyone feels differently about videotaping his or her own teaching. There is no right way to feel. Check all that apply to you:

- ☐ I am excited to watch myself teaching on video
- ☐ I am excited to let others (course instructor & university supervisor) see my videos
- ☐ I think videotaping will be useful to me
- ☐ I am apprehensive to watch myself on video
- ☐ I am apprehensive to let others (course instructor & university supervisor) see my videos
- ☐ I think videotaping will be challenging
- ☐ I do not want to videotape myself
- ☐ I do not want others (course instructor & university supervisor) to see my videos
- ☐ I think videotaping will be a waste of time

Please rate your own abilities:	1 Unsatisfactory	2 Basic	3 Proficient	4 Distinguished
27. Teaching				
28. Teaching students with disabilities				
29. Communicating expectations For learning to students				
30. Communicating directions for activities				
31. Explaining content to students				
32. Using oral and written language when communicating with students				
33. Using questions and prompts with students				
34. Using discussion techniques with students				
35. Reflecting on my own teaching choices				
36. Analyzing my own teaching choices				
37. Judging my own teaching choices				
38. Knowing how to review a video of my own teaching				
39. My accuracy when evaluating my own teaching abilities				

Thank You!!!! ☺

Appendix D

Name: _____ **Reviewing**

Your Experience

i. If you are willing to follow-up with me in the future, please provide your personal email ___
ii. What is your ethnic background? ___
iii. Are you the teacher of record in your placement? ___

Section One: Field Experience

40. Internship start date: _____ Internship end date: _____

41. How many hours of field experience (classroom time with students, time in schools preparing instructional materials or attending meetings) did you complete this semester?
_____hours

42. Estimate, how many lessons would you say you taught during this semester?
_____lessons

43. Did your placement match the certification you are seeking?
    a. The grade level and the student population matched
    b. The grade level matched but the student population did not match
    c. The student population matched but the grade level did not match
    d. The grade level and the student population did not match

44. How many times were you observed?
    _____ by your university supervisor
    _____ by your cooperating teacher/mentor teacher
    _____ by your university internship instructor

45. Check all internship activities you participated in. Then, rank the top five you participated in where 1 is most important and 5 is least important when relating to your preparation to be profession ready.

a. Teaching children _____
b. Teaching children with disabilities _____
c. Videotaping your lessons_____
d. Self-evaluating your teaching performance_____
e. Writing reflections about your videos _____
f. Writing a reflection journal_____
g. Developing and executing a professional development plan_____
h. Writing lesson plans_____
i. Collecting teaching artifacts and composing a portfolio _____
j. Modifying student tasks and assessments_____
k. Getting feedback on your teaching from school personnel_____
l. Getting feedback on your teaching from university personnel_____
m. Collecting student data to make decisions about instruction and/or assessment_____
n. Designing and implementing individualized interventions for specific student(s)_____
o. Attending professional meetings, grade level meetings, or professional development sessions_____
p. Writing IEPs _____
q. Attending IEP meetings_____
r. Designing classroom/behavior management system_____
s. Using technology to supplement teaching_____
t. Trying out different evidence-based practices while teaching_____
u. Focusing on professional standards (CEC, InTasc, etc.) _____
v. Attending internship seminar classes at JHU_____
w. Completing assignments four other classes during your internship placement_____
x. Other_____ _____

Please use lines after each activity for ranking purposes

46. Is this your initial certification in teaching? (If not what is your previous certification in?)

_____

Section Two: Videotaping

1. How many of your lessons did you videotape during this internship? _____

2. Fill in the date (to the best of your memory) of each video you recorded whether you turned them in or not. If something went wrong when trying to videotape a lesson, put a ★ next to that specific date.

   Video 1 Date:_____ Video 2 Date:_____ Video 3 Date:_____

   Video 4 Date:_____ Video 5 Date:_____ Video 6 Date:_____

   Video 7 Date:_____ Video 8 Date:_____ Video 9 Date:_____

2a. If you were unable to record at least four videos, please explain why?

_____
_____
_____

3. Overall, how were the technical aspects (videotaping, playing back, and sharing video files) of this project?
   - ☐ Easier than I expected
   - ☐ Exactly what I expected
   - ☐ Harder than I expected

4. Overall, how much technical support did you need?
   - ☐ I did not need technical support and was able to complete this project independently
   - ☐ I needed some technical support early on but then I got the hang of things
   - ☐ I needed some technical support throughout the project
   - ☐ I needed ongoing technical support throughout this entire project

5. Based on your experiences from this internship, please check all that apply:
   - ☐ I was enthusiastic to watch myself teaching on video
   - ☐ I was enthusiastic to let others (course instructor & university supervisor) see my videos
   - ☐ I think videotaping was useful to me
   - ☐ I was apprehensive to watch myself on video
   - ☐ I was apprehensive to let others (course instructor & university supervisor) see my videos
   - ☐ I think videotaping was challenging

- ☐ I did not want to videotape myself
- ☐ I did not want others (course instructor & university supervisor) to see my videos
- ☐ I think videotaping was a waste of time

6. What do you think about the number of videotapes (four) you were asked to complete?
   - ☐ Too many videos to complete in one internship and _____ would be enough to see growth in my teaching
   - ☐ Too few videos to notice growth in my teaching and _____ would be better
   - ☐ An appropriate number of videos to notice growth in my teaching

7. If you had to choose one word to describe the videotaping portion of this project what would it be?

   _____

8. On average, how many times did you watch each video? _____time(s) each

9. On average, how long did it take you from the point of reviewing your videotaped lesson to emailing me your reflection? (don't include the time to record the video, just everything that came after)

   _____

Section Three: Video Reflecting

1. What are the four dimensions of reflection?

   _____

2. Did you use a self-evaluation rubric while watching your videos to score yourself?
   - ☐ yes
   - ☐ no
3. If yes to 1, was this a helpful tool for reflection?
   - ☐ Extremely helpful
   - ☐ Somewhat helpful
   - ☐ Minimally helpful
   - ☐ Not helpful
4. If yes to 1, what was the hardest part about scoring yourself using the self-evaluation rubric?

   _____
   _____
   _____

5. Did you use the reflection rubric while writing reflections?
   - ☐ yes
   - ☐ no
6. If yes to 4, was this a helpful tool for reflection?
   - ☐ Extremely helpful
   - ☐ Somewhat helpful
   - ☐ Minimally helpful
   - ☐ Not helpful

Why was the rubric helpful or not?

7. Did you use the Danielson Handbook as a reference when writing your reflections?
   - ☐ yes
   - ☐ no
8. If yes to 6, was this a helpful tool for reflection?
   - ☐ Extremely helpful
   - ☐ Somewhat helpful
   - ☐ Minimally helpful
   - ☐ Not helpful

Why was the Danielson Handbook helpful or not?

9. Did you get feedback on your video reflections?
   - ☐ yes
   - ☐ no
10. If yes to 8, did you use the feedback from a reflection to write the following reflection in the sequence?
    - ☐ yes
    - ☐ no
11. If yes to 8, was this a helpful tool for reflection?
    - ☐ Extremely helpful
    - ☐ Somewhat helpful
    - ☐ Minimally helpful
    - ☐ Not helpful

Why was the feedback helpful or not?

12. Did you receive support and guidance while writing your reflections?
    - ☐ Yes, I received all the support and guidance I needed
    - ☐ Yes, but I needed more support and guidance
    - ☐ No, I did not receive support and guidance but I did not need it
    - ☐ No, I did not receive support and guidance and I did need it

13. How many video reflections did you write? _____

14. On average, how soon after reviewing your videotaped lesson did you write a reflection?

- ☐ Same day
- ☐ Next day
- ☐ Within 48 hours
- ☐ Within the same week
- ☐ Longer than a week

15. On average, How long did it take you to write one video reflection?
    - ☐ Less than 30 minutes
    - ☐ About 30 – 59 minutes
    - ☐ About 60 – 89 minutes
    - ☐ About 90 – 120 minutes
    - ☐ More than two hours per video reflection

16. Was writing video reflections a worthwhile time investment?
    - ☐ Yes
    - ☐ No
    - ☐ I have mixed feeling about the time it took to write reflections because

      _____

      _____

      _____

17. Will you continue to reflect on your teaching in the future?
    - ☐ Yes
    - ☐ No
        a. Why?

           _____

           _____

18. Do you think it is important to reflect across the four dimensions of reflection?
    - ☐ Yes
    - ☐ No
        a. Why?

           _____

           _____

19. Did reflecting on your videotaped lessons change your teaching practices?
    - ☐ Yes
    - ☐ No

a. How so?

_____
____

20. Do you think reflective practices are important to your preparation as a teacher?
    - ☐ Yes
    - ☐ No
        a. Why?

        _____
        _____

21. Did reflecting help you notice more about what went on in your classroom while you were teaching?
    - ☐ Yes - please provide an example

      _____
      _____

      _____

    - ☐ No – If there was an activity that helped you notice more, what was it?

      _____
      _____

      _____

Please give your opinion on the following statements in regards to your preparation as a teacher :	**Was Extremely Unhelpful**	**Was Somewhat Unhelpful**	**Was Neutral**	**Was Somewhat Helpful**	**Was Extremely Helpful**
	1	**2**	**3**	**4**	**5**
22. Videotaping my classroom teaching at the beginning and end of the internship					
23. Videotaping my classroom teaching frequently throughout the internship					
24. Watching my own teaching videos to reflect on my teaching choices					
25. Writing reflections about my teaching choices					
26. Scoring my own teaching videos to determine my capabilities					
27. Focusing my written reflections on how I communicate with my students					
28. Focusing my written reflections on questioning techniques I use with my students					
29. Analyzing my own teaching choices while reflecting					
30. Judging my own teaching choices while reflecting					
31. Applying insight gained during reflecting to choices I will make in future lessons					
32. A rubric to help me write my video reflections					
33. Guidance during reviewing my own teaching videos					
34. Specific feedback on my written video reflections					
35. Teaching in a real classroom with real children					
36. Support from my cooperating teaching to let me teach					
37. Feedback from my university supervisor					

38. Developing my professional development plan					
39. Compiling teaching artifacts in a portfolio					
40. Writing lessons					

Rate your own abilities after this internship	**1 Unsatisfactory**	**2 Basic**	**3 Proficient**	**4 Distinguished**
41. Teaching				
42. Teaching students with disabilities				
43. Communicating expectations For learning to students				
44. Communicating directions for activities				
45. Explaining content to students				
46. Using oral and written language when communicating with students				
47. Using questions and prompts with students				
48. Using discussion techniques with students				
49. Reflecting on my own teaching choices				
50. Analyzing my own teaching choices				
51. Judging my own teaching choices				
52. Knowing how to review a video of my own teaching				
53. My accuracy when evaluating my own teaching abilities				

Section Four: Professional Growth

54. Was this video reflection project a learning experience?

55. Was this entire video reflection project a worthwhile time investment?

56. Rank the components in this video reflection project where 1 is a component that led to the most professional growth and 5 equates to least professional growth. Please write N/A if you did not grow professionally from a specific component.
    - ___ Videotaping
    - ___ Reflecting
    - ___ Self-evaluating
    - ___ Getting Feedback
    - ___ Getting Guidance and Support

57. What, if any, was the greatest challenge?

58. If you could improve this project, what would you change?

59. What is your ethnic background? _____

Appendix E

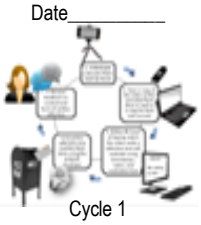
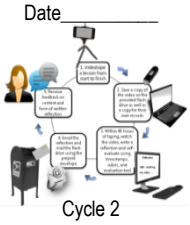
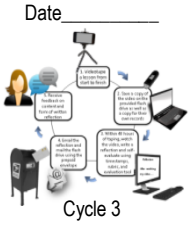
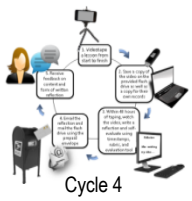
So in my scoring world everyone starts at "1" and has to work their way up by hitting the next threshold. If they don't hit the threshold they go back to the last score they achieved. Rather than saying everyone starts at "4" and loses points as the mess up. I outlined the thresholds here to hopefully make this process more streamlined. This comes directly from the Danielson Handbook.

Ratings	**1 Unsatisfactory**	**2 Basic**	**3 Proficient**	**4 Distinguished** (student led learning)	N.O.
Communicating Expectations For Learning	Instructional purpose of the lesson is unclear	In order to get a "2" teacher would have to attempt to minimally explain the instructional purpose of the lesson at some point without elaborating on why this matters. Ex. *"by the way, today we're going to factor polynomials"* Ex. *"You will need to know this stuff for the test."*	In order to get a "3" teacher would have to clearly communicate the instructional purpose of the lesson AND include where it is situated within broader learning	In order to get a "4" teacher would have to link the instructional purpose of the lesson to the larger curriculum AND goals are so clear that If asked, students are able to explain what they are learning and where it fits into the larger curriculum context.	Ex. The video starts mid lesson
Communicating Directions for Activities	Directions and procedures are Confusing	In order to get a "2" teacher would have to give directions for all tasks but directions will likely need clarification. Also teacher may just repeat the same directions to students who did not understand them the first or teacher may change the direction because students could not complete the task based on the original explanation.	In order to get a "3" teacher would have to explain directions and procedures clearly without mistakes or altering of directions as a result of confusion AND directions may be modeled or the teacher describes specific strategies students might use.	In order to get a "4" teacher would have to catch misunderstandings before they happen through pre-teaching AND Student Led Learning is occurring even at the direction giving stage Ex. *The teacher says, "Here's a spot where some students have difficulty; be sure to read it carefully."* Ex. *When clarification about the learning task is needed, a student offers it to classmates.*	
Explaining Content to Students	The teacher's explanation of the content contains major errors & does not include any explanation of strategies students might use	In order to get a "2" teacher would have to explain the content so that at least some portions are clear to follow. The content may contain minor errors. The teacher's explanation of the content consists mostly monologue, with minimal participation or intellectual engagement by students (very procedural)	In order to get a "3" teacher would have to explain the content clearly with no content errors. The teacher's explanation invites student participation and thinking AND the teacher focuses, as appropriate, on strategies students can use when working independently. Ex. *While presenting content, the teacher asks students, "Can anyone think of an example of that?"*	In order to get a "4" teacher would have to invite students to explain the content to their classmates *Ex. The teacher, in explaining the westward movement in U.S. history, invites students to consider that historical period from the point of view of the Native Peoples.* Ex. *The teacher asks, "Who would like to explain this idea to us?"*	Ex. The lesson is checking for understanding or an assessment
Using oral and written language when communicating with Students (*this is all about precision in teacher language*)	The teacher's spoken or written language contains errors of grammar or syntax. The teacher's academic vocabulary is	In order to get a "2" teacher would have to use correct but unimaginative spoken language and vocabulary. Such uses of vocabulary are either limited or not fully appropriate to the students' ages or backgrounds.	In order to get a "3" teacher would have to use clear and correct spoken language and vocabulary suitable to students' ages and interests. The teacher's use of academic vocabulary is precise and serves to extend student understanding. The	In order to get a "4" teacher would have to use rich language, offering brief vocabulary lessons where appropriate, both within the discipline and for more general use. Ex. *The teacher pauses during an explanation of the civil rights*	

	inappropriate, vague, or used incorrectly, leaving students confused.	- The teacher rarely takes opportunities to explain academic vocabulary. - The teacher cannot "fill-in" using background knowledge OR does not use accurate explanations other than those given in the textbook. (very procedural)	teacher use of vocabulary helps student generalize understanding beyond just what is necessary to complete the current lesson. *Ex. The teacher uses a Venn diagram to illustrate the distinctions between a republic and a democracy.*	*movement to remind students that the prefix* in- *as in* inequality *means "not" and that the prefix* un- *also means the same thing.* Students contribute to correct use of academic vocabulary. Ex. *A student says to a peer, "I think that side of the triangle is called the* hypotenuse*."*	
Using Quality Questions and Prompts with Students	The teacher's questions are of low cognitive challenge, with single correct responses; Questions do not invite student thinking	In order to get a "2" teacher would have to ask student to explain their reasoning at least once even if all students do not make attempts/ The teacher frames some questions designed to promote student thinking, but MOST are low level and many have a single correct answer, and the teacher calls on students quickly. Ex. *The teacher asks a student to explain his reasoning for why 13 is a prime number but does not follow up when the student falters.*	In order to get a "3" teacher would have to use both open and close-ended questions The teacher frames MOST questions designed to promote student thinking, and only some are low level AND the teacher makes effective use of wait time. The teacher calls on most students, even those who don't initially volunteer.	In order to get a "4" teacher would have to use a variety or series of questions or prompts to challenge students cognitively, advance high-level thinking and discourse, and promote metacognition. The teacher builds on and uses student responses to questions in order to deepen student understanding.	
Using Discussion Techniques with Students	the teacher accepts all contributions without asking students to explain their reasoning. *The teacher calls only on students who have their hands up.*	In order to get a "2" teacher would have invited students to talk to one another at some point. "The teacher attempts to engage all students in the discussion, to encourage them to respond to one another, and to explain their thinking, with uneven results." Ex. *The teacher asks, "Maria, can you comment on Ian's idea?" but Maria does not respond or makes a comment directly to the teacher.* *Ex. The teacher asks, "Who has an idea about this?" The usual three students offer comments.*	In order to get a "3" teacher would have to create a genuine discussion among students, providing adequate time for students to respond and stepping aside when doing so is appropriate. The teacher challenges students to justify their thinking AND successfully engages most students in the discussion that is student-to-student not student-to-teacher-to-student, employing a range of strategies to ensure that most students are "heard" Ex. *The teacher asks, "Maria, can you comment on Ian's idea?" and Maria responds directly to Ian.* Ex. *The teacher poses a question, asking every student to write a brief response and then share it with a partner, before inviting a few to offer their ideas to the entire class.*	In order to get a "4" teacher would have to facilitate a student led discussion where students invite comments from their classmates during a discussion and challenge one another's thinking AND virtually all students are engaged in the discussion. Ex. *A student says to a classmate, "I don't think I agree with you on this, because…"* Ex. *A student asks of other students, "Does anyone have another idea how we might figure this out?"*	

Appendix F

Guided Video Analysis Group (Treatment Group)

Field Placement Week One	Date_____	Date_____	Date_____	Date_____	Week Ten
• Receive Supplies • Distribute and recollect student consent forms • Complete Pre-Questionnaire • Practice videotaping and uploading to address any concerns	 Cycle 1	 Cycle 2	 Cycle 3	 Cycle 4	• Return Supplies • Complete Post-Questionnaire • Receive Technology Package

Check off as you accomplish	To Do's	Date
□ Step 1	Listen to the project overview.	
□ Step 2	Fill out questionnaire about experiences up to this point.	
□ Step 3	Receive: o Tripod o USB flash drives x 4 (3 Yellow + 1 Purple) o Labeled envelopes x 4 o Universal wide view (fisheye) clip on lens o USB flash drive with electronic copies of all files (Blue) o Danielson Handbook for Effective Instruction o Written Reflection Rubric hard copy o Self-Evaluation Rubric hard copy o Step-by-step directions o Video permission forms for your students	
□ Step 4	Ask any and all questions.	
□ Step 5	During your first week of your field placement, try out your equipment. Practice videotaping and uploading to see if you have any questions or issues with your supplies. Email or call Sarah Nagro with any concerns snagroc1@jhu.edu / 716-572-4315	
□ Step 6	During your second week (or dates provided by internship instructor), videotape one lesson from start to finish. The night before videotaping: o Make sure your phone, tablet, flip-cam, laptop, or other recording device is fully charged. o Make sure you have enough space on your device to record an entire lesson (between 1 and 2 GB of free space). The day of videotaping: o Turn you device on airplane mode to prevent the video from pausing o Clip your fisheye lens to your phone and remove the lens cover. o Adjust the clip-on lens so that the camera lens on your device is not impeded in any way (no black edges when you look at the image being captured). o Do not face the camera towards windows because the image will be washed out or all black due to the sunlight. If you have no choice, make sure to close the blinds or curtains before recording.	

	○ Set up the camera in the back of the room to capture you as you move around. There may be times when you, the teacher, are off camera but you should set up the camera so it captures you the majority of the time. ○ Aim the camera at the backs of students so students are not the focus of the video. The goal is to capture you teaching and to protect student identities as much as possible. ○ Start the recording before you start teaching the lesson and stop the video after you finish teaching the lesson because there is a bit of lag and you do not want to cut off the start or finish. ○ Save a copy of the videotaped lesson to your computer and save a copy of the video to the USB flash drive #1 as soon as possible because the video will suck up space on your device. Make sure the video recording captured the entire lesson. For help getting the video file from your device to the USB see additional handout (If something went wrong please contact me immediately so we can figure out the issue and try the process again)	
□ Step 7	Within 48 hours of videotaping a lesson, seal USB flash drive #1 in the provided envelop and leave in one of Sarah Nagro's mailboxes at the security desk in Columbia or in suite 307 at the Baltimore Campus.	
□ Step 8	Within 48 hours of videotaping a lesson, watch the video back and complete the video self-evaluation rubric based on your own opinion of your lesson. This will help guide how to watch the video. Refer to the Danielson Handbook if needed.	
□ Step 9	Within 48 hours of videotaping a lesson and after watching your video back to self-evaluate, write a self-reflection of the lesson using the written reflection rubric as a guide. Include timestamps in parentheses when referring to something specific that happened in the videotape (e.g., Minute 13.10). This allows me to go back and see what you saw in the video. You do not need to include a time-stamp after every sentence. Just provide reference points throughout your written reflection. Refer to the Danielson Handbook if needed.	
□ Step 10	Email your completed self-evaluation rubric and your written reflection (attach two separate word documents to the email: one for the self-evaluation rubric and one for the written reflection) to Sarah Nagro snagroc1@jhu.edu.	
□ Step 11	Within 24 hours of emailing Sarah Nagro, receive feedback on your reflection. This is not evaluative feedback. This is guidance, probing questions, and possible suggestions to bolster you not make you feel like you are being graded.	
□ Step 12	Read your feedback over and think about your own reflections and analyses while you continue to teach in your placement.	

□ Step 13	Videotape your second lesson (see step 6 for tips on videotaping).	
□ Step 14	Save a copy of the lesson on your computer for your records and save a copy of the whole video on USB flash drive #2.	
□ Step 15	Within 48 hours of videotaping a lesson, seal USB flash drive #2 in the provided envelop and leave in one of Sarah Nagro's mailboxes at the security desk in Columbia or in suite 307 at the Baltimore Campus.	
□ Step 16	Within 48 hours of videotaping a lesson, watch the video back and complete the video self-evaluation rubric based on your own opinion of your lesson. This will help guide how to watch the video. Refer to the Danielson Handbook if needed.	
□ Step 17	Within 48 hours of videotaping a lesson and after watching your video back to self-evaluate, write a self-reflection of the lesson using the written reflection rubric as a guide. Include timestamps in parentheses when referring to something specific that happened in the videotape (e.g., Minute 13.10). This allows me to go back and see what you saw in the video. You do not need to include a time-stamp after every sentence. Just provide reference points throughout your written reflection. Refer to the Danielson Handbook if needed.	
□ Step 18	Email your completed self-evaluation rubric and your written reflection (attach two separate word documents to the email: one for the self-evaluation rubric and one for the written reflection) to Sarah Nagro snagroc1@jhu.edu.	
□ Step 19	Within 24 hours of emailing Sarah Nagro, receive feedback on your reflection. This is not evaluative feedback. This is guidance, probing questions, and possible suggestions to bolster you not make you feel like you are being graded.	
□ Step 20	Read your feedback over and think about your own reflections and analyses while you continue to teach in your placement.	
□ Step 21	Videotape your third lesson (see step 6 for tips on videotaping).	
□ Step 22	Save a copy of the lesson on your computer for your records and save a copy of the whole video on USB flash drive #3.	
□ Step 23	Within 48 hours of videotaping a lesson, seal USB flash drive #3 in the provided envelop and leave in one of Sarah Nagro's mailboxes at the security desk in Columbia or in suite 307 at the Baltimore Campus.	
□ Step 24	Within 48 hours of videotaping a lesson, watch the video back and complete the video self-evaluation rubric based on your own opinion of your lesson. This will help guide how to watch the video. Refer to the Danielson Handbook if needed.	

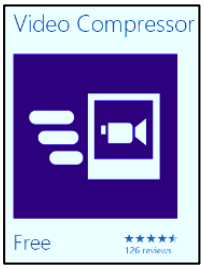
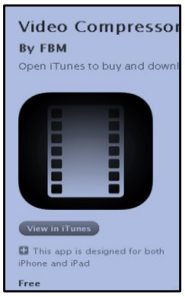
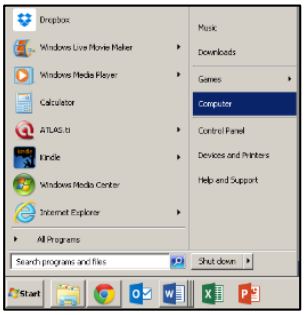
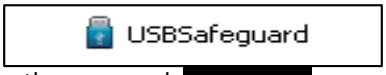
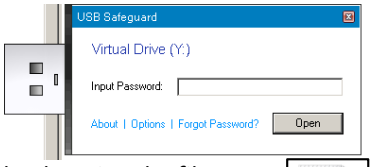
□ Step 25	Within 48 hours of videotaping a lesson and after watching your video back to self-evaluate, write a self-reflection of the lesson using the written reflection rubric as a guide. Include timestamps in parentheses when referring to something specific that happened in the videotape (e.g., Minute 13.10). This allows me to go back and see what you saw in the video. You do not need to include a time-stamp after every sentence. Just provide reference points throughout your written reflection. Refer to the Danielson Handbook if needed.	
□ Step 26	Email your completed self-evaluation rubric and your written reflection (attach two separate word documents to the email: one for the self-evaluation rubric and one for the written reflection) to Sarah Nagro snagroc1@jhu.edu.	
□ Step 27	Within 24 hours of emailing Sarah Nagro, receive feedback on your reflection. This is not evaluative feedback. This is guidance, probing questions, and possible suggestions to bolster you not make you feel like you are being graded.	
□ Step 28	Read your feedback over and think about your own reflections and analyses while you continue to teach in your placement.	
□ Step 29	Videotape your fourth lesson (see step 6 for tips on videotaping).	
□ Step 30	Save a copy of the lesson on your computer for your records and save a copy of the whole video on USB flash drive #4.	
□ Step 31	Within 48 hours of videotaping a lesson, seal USB flash drive #4 in the provided envelop and leave in one of Sarah Nagro's mailboxes at the security desk in Columbia or in suite 307 at the Baltimore Campus.	
□ Step 32	Within 48 hours of videotaping a lesson, watch the video back and complete the video self-evaluation rubric based on your own opinion of your lesson. This will help guide how to watch the video. Refer to the Danielson Handbook if needed.	
□ Step 33	Within 48 hours of videotaping a lesson and after watching your video back to self-evaluate, write a self-reflection of the lesson using the written reflection rubric as a guide. Include timestamps in parentheses when referring to something specific that happened in the videotape (e.g., Minute 13.10). This allows me to go back and see what you saw in the video. You do not need to include a time-stamp after every sentence. Just provide reference points throughout your written reflection. Refer to the Danielson Handbook if needed.	

☐ Step 34	Email your completed self-evaluation rubric and your written reflection (attach two separate word documents to the email: one for the self-evaluation rubric and one for the written reflection) to Sarah Nagro snagroc1@jhu.edu.	
☐ Step 35	Within 24 hours of emailing Sarah Nagro, receive feedback on your reflection. This is not evaluative feedback. This is guidance, probing questions, and possible suggestions to bolster you not make you feel like you are being graded.	
☐ Step 36	Read your feedback over and think about your own reflections and analyses while you continue to teach in your placement.	
☐ Step 37	Complete a follow-up questionnaire to describe your experience and share your opinions of this process.	
☐ Step 38	Return supplies to Sarah Nagro.	
☐ Step 39	Receive your technology package to use in your future classroom as a thank you for completing the process.	

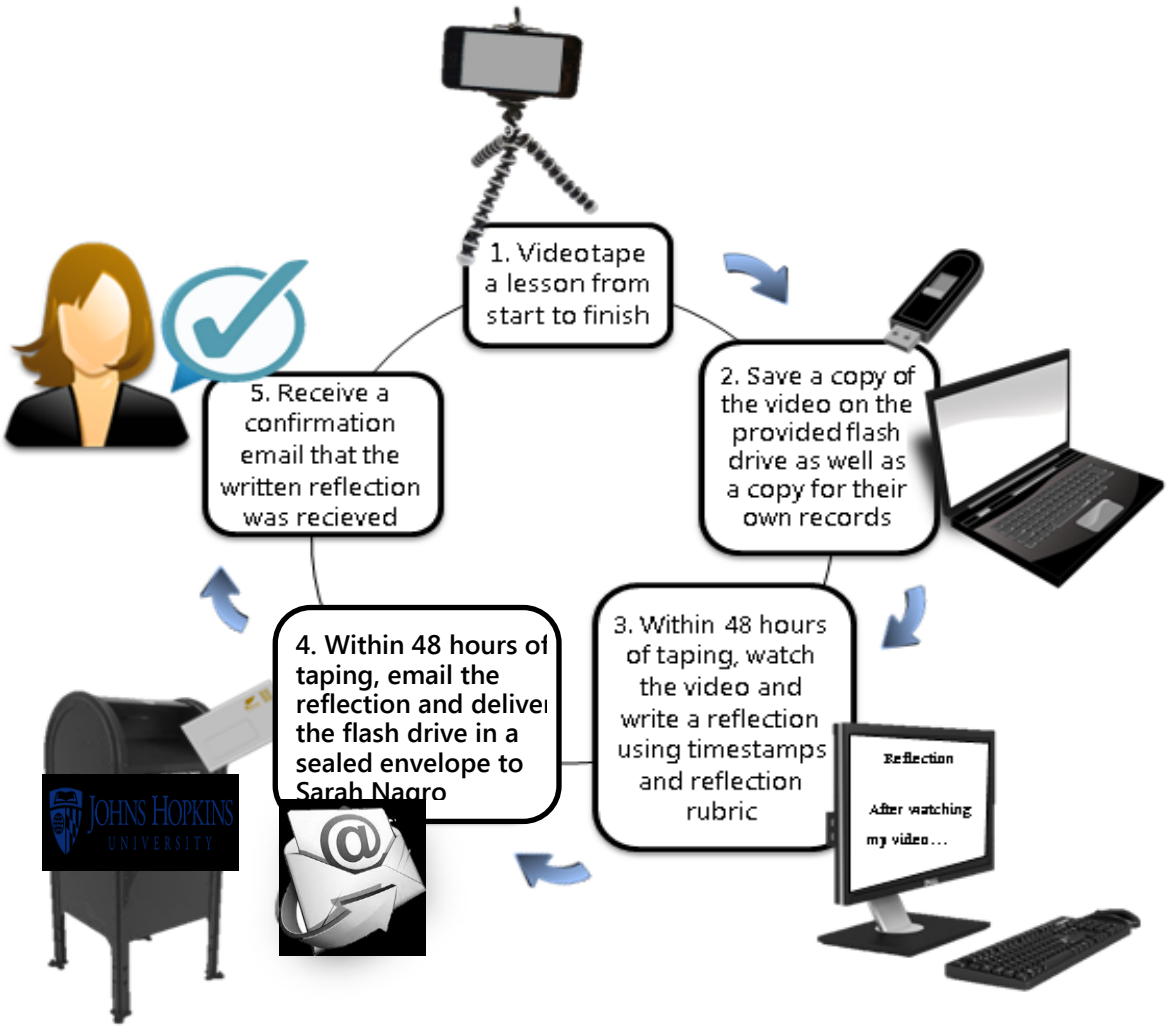
Appendix G

I videotaped my lesson, now what?

A Guide to Moving Your Video File to Your Computer and USB Flash Drives for Analysis

1. Make sure you captured the entire lesson on video, and then turn your device off of airplane mode.	
2. Use a video compression app to shrink the file size of your video. This will speed up moving the video from the device to your computer. There are many free apps that will compress video files. See the recommendations to the right.	Windows Android Apple   
3. After you shrink the video file you can choose one of several ways to move the file from your device to your computer. See the recommendations to the right. Please keep in mind: Uploading speeds are slowing than downloading speeds. This means uploading (saving) a video file to a computer or flash drive will take much longer than downloading (watching) a video file. Do not panic if this takes several minutes or hours depending on your file size and computer speed.	1. Plug your device directly into your computer and upload (save) the video file to your desktop 2. Email the smaller video file to yourself as an attachment and then download the file to your desktop 3. Upload (save) your video file to dropbox using the dropbox app on your device and then drag the file to your desktop (This is a useful way to move video files, but do not leave video files here because they suck up space) 4. Upload (save) your video file to google drive using google on your device and then drag the file to your desktop (This is a useful way to move video files, but do not leave video files here because they suck up space) 5. Plug your USB flash drive directly into your device through a USB port or using a converter cord and then drag the file to your desktop
4. Now that your video fil is on your computer save the file to your USB flash drive by plugging in the flash drive and following the steps to the right	 1. Click “computer” 2. Click “removable disk”  3. Click “USB Safeguard”  4. Enter the password: [redacted]  5. Save your video file on the flash drive by dragging the file from your desktop to the flash drive where is says “Save Video Here” 

Appendix H



Guided Video Analysis Group (Treatment Group)

Field Placement Week One
- Receive Supplies
- Distribute and recollect student consent forms
- Complete Pre-Questionnaire
- Practice videotaping and uploading to address any concerns

Date_____
Cycle 1

Date_____
Cycle 2

Date_____
Cycle 3

Date_____
Cycle 4

Week Ten
- Return Supplies
- Complete Post-Questionnaire
- Receive Technology Package

Check off as you accomplish	To Do's	Date
□ Step 1	Listen to the project overview.	
□ Step 2	Fill out questionnaire about experiences up to this point.	
□ Step 3	Receive: o Tripod o USB flash drives x 4 (3 Yellow + 1 Purple) o Labeled envelopes x 4 o Universal wide view (fisheye) clip on lens o USB flash drive with electronic copies of all files (Blue) o Danielson Handbook for Effective Instruction o Written Reflection Rubric hard copy o Step-by-step directions o Video permission forms for your students	
□ Step 4	Ask any and all questions.	
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□ Step 6	During your second week (or dates provided by internship instructor), videotape one lesson from start to finish. The night before videotaping: o Make sure your phone, tablet, flip-cam, laptop, or other recording device is fully charged. o Make sure you have enough space on your device to record an entire lesson (between 1 and 2 GB of free space). The day of videotaping: o Turn you device on airplane mode to prevent the video from pausing o Clip your fisheye lens to your phone and remove the lens cover. o Adjust the clip-on lens so that the camera lens on your device is not impeded in any way (no black edges when you look at the image being captured). o Do not face the camera towards windows because the image will be washed out or all black due to the sunlight. If you have no choice, make sure to close the blinds or curtains before recording. o Set up the camera in the back of the room to capture you as you move around. There may be times when you, the teacher, are off camera but you should set up the camera so it captures you the majority of the time.	

	○ Aim the camera at the backs of students so students are not the focus of the video. The goal is to capture you teaching and to protect student identities as much as possible. ○ Start the recording before you start teaching the lesson and stop the video after you finish teaching the lesson because there is a bit of lag and you do not want to cut off the start or finish. ○ Save a copy of the videotaped lesson to your computer and save a copy of the video to the USB flash drive #1 as soon as possible because the video will suck up space on your device. Make sure the video recording captured the entire lesson. For help getting the video file from your device to the USB see additional handout (If something went wrong please contact me immediately so we can figure out the issue and try the process again)	
□ Step 7	Within 48 hours of videotaping a lesson, seal USB flash drive #1 in the provided envelop and leave in one of Sarah Nagro's mailboxes at the security desk in Columbia or in suite 307 at the Baltimore Campus.	
□ Step 8	Within 48 hours of videotaping a lesson, watch the video back and write a self-reflection of the lesson using the written reflection rubric as a guide. Include timestamps in parentheses when referring to something specific that happened in the videotape (e.g., Minute 13.10). This allows me to go back and see what you saw in the video. You do not need to include a time-stamp after every sentence. Just provide reference points throughout your written reflection. Refer to the Danielson Handbook if needed.	
□ Step 9	Email your completed written reflection (attach as a word document) to Sarah Nagro at snagroc1@jhu.edu	
□ Step 10	Sarah Nagro will email you to let you know your written reflection was received.	
□ Step 11	Videotape your second lesson (see step 6 for tips on videotaping).	
□ Step 12	Save a copy of the lesson on your computer for your records and save a copy of the whole video on USB flash drive #2.	
□ Step 13	Within 48 hours of videotaping a lesson, seal USB flash drive #2 in the provided envelop and leave in one of Sarah Nagro's mailboxes at the security desk in Columbia or in suite 307 at the Baltimore Campus.	
□ Step 14	Within 48 hours of videotaping a lesson, watch the video back and write a self-reflection of the lesson using the written reflection rubric as a guide. Include timestamps in parentheses when referring to something specific that happened in the videotape (e.g., Minute 13.10). This allows me to go back and see what you saw in the video. You do not need to include a time-stamp after every sentence.	

	Just provide reference points throughout your written reflection. Refer to the Danielson Handbook if needed.	
□ Step 15	Email your completed written reflection (attach as a word document) to Sarah Nagro at snagroc1@jhu.edu	
□ Step 16	Sarah Nagro will email you to let you know your written reflection was received.	
□ Step 17	Videotape your third lesson (see step 6 for tips on videotaping).	
□ Step 18	Save a copy of the lesson on your computer for your records and save a copy of the whole video on USB flash drive #3.	
□ Step 19	Within 48 hours of videotaping a lesson, seal USB flash drive #3 in the provided envelop and leave in one of Sarah Nagro's mailboxes at the security desk in Columbia or in suite 307 at the Baltimore Campus.	
□ Step 20	Within 48 hours of videotaping a lesson, watch the video back and write a self-reflection of the lesson using the written reflection rubric as a guide. Include timestamps in parentheses when referring to something specific that happened in the videotape (e.g., Minute 13.10). This allows me to go back and see what you saw in the video. You do not need to include a time-stamp after every sentence. Just provide reference points throughout your written reflection. Refer to the Danielson Handbook if needed.	
□ Step 21	Email your completed written reflection (attach as a word document) to Sarah Nagro at snagroc1@jhu.edu	
□ Step 22	Sarah Nagro will email you to let you know your written reflection was received.	
□ Step 23	Videotape your fourth lesson (see step 6 for tips on videotaping).	
□ Step 24	Save a copy of the lesson on your computer for your records and save a copy of the whole video on USB flash drive #4.	
□ Step 25	Within 48 hours of videotaping a lesson, seal USB flash drive #4 in the provided envelop and leave in one of Sarah Nagro's mailboxes at the security desk in Columbia or in suite 307 at the Baltimore Campus.	
□ Step 26	Within 48 hours of videotaping a lesson, watch the video back and write a self-reflection of the lesson using the written reflection rubric as a guide. Include timestamps in parentheses when referring to something specific that happened in the videotape (e.g., Minute 13.10). This allows me to go back and see what you saw in the video. You do not need to include a time-stamp after every sentence. Just provide reference points throughout your written reflection. Refer to the Danielson Handbook if needed.	

□ Step 27	Email your completed written reflection (attach as a word document) to Sarah Nagro at snagroc1@jhu.edu	
□ Step 28	Sarah Nagro will email you to let you know your written reflection was received.	
□ Step 29	Complete a follow-up questionnaire to describe your experience and share your opinions of this process.	
□ Step 30	Return supplies to Sarah Nagro.	
□ Step 31	Receive your technology package to use in your future classroom as a thank you for completing the process.	

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School of Education, Department of Special Education
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Education

Ed.D. *Special Education* August, 2011 – May, 2015
Focus: *Teacher Preparation Research*
Dissertation: The Effects of Guided Video Analysis on Teacher Candidates' Reflective Ability and Instructional Skills during Field Experiences including Students with Disabilities
Advisors: Dr. Laurie U. deBettencourt and Dr. Michael Rosenberg
Johns Hopkins University, Baltimore, MD

M.S. *Special Education* 2005 - 2006
D'Youville College, Buffalo, NY

M.S. *Childhood Education* 2005 - 2006
D'Youville College, Buffalo, NY

B.A. *Interdisciplinary Studies in Education* 2002 - 2005
D'Youville College, Buffalo, NY

Professional Experience

Doctoral Fellow 2011- 2015
Department of Special Education
Johns Hopkins University, Baltimore, MD

Special Education Instructor 2012- 2015
Department of Special Education
Johns Hopkins University, Baltimore, MD

Graduate Research Assistant 2011 - 2014
Department of Education Leadership
Johns Hopkins University, Baltimore, MD

Graduate Teaching Assistant 2011 - 2012
Teacher Preparation Internship Seminar
Department of Special Education
Johns Hopkins University, Baltimore, MD

Special Education Teacher, grades 1-6 2007 - 2011

Positions: Self-contained, Co-teacher, Resource Room, Consultant,
and Inclusive Classroom Lead Teacher
Buffalo City Public Schools, Buffalo, NY

Special Education Program Coordinator 2010 - 2011
Brain Builders After School Program
Buffalo, New York

Coordinator of Special Education 2006 - 2007
Saint Mark Elementary School, Buffalo, New York

Research Interests

Teacher Preparation in Special Education

Developing Teachers to Educate Students with Disabilities in Inclusive Classrooms

The Use of Video Technology to Promote Reflection and Critical Thinking

School-Family Partnership Practices for Families of Students with Disabilities

Publications in Refereed Journals

Stein, M. L., & **Nagro, S. A.** (in press). The readability and complexity of district provided school choice information. *Journal of Education for Students Placed at Risk*.

Nagro, S. A. (2015). PROSE checklist: Strategies for improving school-to-home written communication. *Teaching Exceptional Children*. Advanced online publication. doi:10.1177/0040059915580031

Nagro, S. A., & Stein, M. L. (2015). Measuring accessibility of written communication for parents of students with disabilities: Reviewing 30 years of readability research. *Journal of Disability Policy Studies.* Advanced online publication. doi:10.1177/1044207314557489

Cornelius, K. E., & **Nagro, S. A.** (2014). Evaluating the evidence base of performance feedback in preservice special education teacher training. *Teacher Education and Special Education 37*(2), 133-146.

Nagro, S. A., & Cornelius, K. E. (2013). Evaluating the evidence base of video analysis: A special education teacher development tool. *Teacher Education and Special Education, 36*, 312-329. doi:10.1177/0888406413501090

Manuscripts Submitted for Peer Review

Hooks, S., & Fraser, D., & **Nagro, S. A.** (2014). *Beyond classroom management 101: Proactive strategies to increase student engagement and decrease problematic behavior.* Manuscript submitted for publication.

Nagro, S. A., Hooks, S., & Fraser, D. (2014). *Teachers in the driver seat: Using teacher input to design school-wide professional development.* Manuscript submitted for publication.

Nagro, S. A. (2014). *Why are field experiences the keystone of special education teacher preparation?.* Manuscript submitted for publication.

Research Presentations

International Conferences

Nagro, S. A. (2014, May). *Investigating the accessibility of print materials for low-income parents of students with disabilities: Using the PROSE checklist to improve school-to-home communication.* Paper presented at the Pacific Rim International Conference on Disability and Diversity, Honolulu, HI.

Nagro, S. A., & Cornelius, K. E. (2014, May). *Determining evidence-based practices for training special education teachers.* Poster session at the Pacific Rim International Conference on Disability and Diversity, Honolulu, HI.

Nagro, S. A., Hooks, S., & Fraser, D. (2014, May). *Proactive teacher strategies to promote student engagement and learning for hard to reach students in inclusive settings.* Paper presented at the Pacific Rim International Conference on Disability and Diversity, Honolulu, HI.

National Conferences (*invited)

Hooks, S., Fraser, D., & **Nagro, S. A.** (2015, April). *Strategies to Meet the Needs of Non-Responders.* Poster presented at the Council for Exceptional Children Annual Convention, San Diego, CA.

Nagro, S. A. (2015, April). *The Effects of Guided Video Analysis on Teacher Candidates Reflective Abilities and Instructional Skills during Field Experiences including Students with Disabilities.* Poster presented at the Council for Exceptional Children Annual Convention, San Diego, CA.

Nagro, S. A., Hooks, S., & Fraser, D. (2015, April). *University-School Partnerships, School-Wide Professional Development, Inclusive Classrooms, and Proactive Student Engagement Strategies.* Poster presented at the Council for Exceptional Children Annual Convention, San Diego, CA.

Gamble, R., **Nagro, S. A.**, Piotrowski, P., & March, C. C. (2015, February). *The Perceived Usefulness of Teacher Preparation Field Experiences that Included edTPA Activities.*

Poster presented at the American Association of Behavioral and Social Sciences Annual Conference, Las Vegas, NV.

deBettencourt, L. U., & **Nagro, S. A.** (2014, November). *Teaching Educators to Become Reflective Practitioners*. Paper presented at the Teacher Education Division of the Council for Exceptional Children Annual Conference, Indianapolis, IN.

Hooks, S., & Fraser, D., & **Nagro, S. A.** (2014, November). *A decade of practice: Are special educators using research-based tertiary interventions?*. Paper presented at the Teacher Education Division of the Council for Exceptional Children Annual Conference, Indianapolis, IN.

Nagro, S. A. (2014, November). *How much do we know about effective field-based experiences in special education teacher preparation?*. Paper presented at the Teacher Education Division of the Council for Exceptional Children Annual Conference, Indianapolis, IN.

True, J., **Nagro, S. A.**, Larson, K., Hooks, S., & Fraser, D. (2014, November). *Does instructor-pair collaboration improve special education teacher preparation?*. Paper presented at the Teacher Education Division of the Council for Exceptional Children Annual Conference, Indianapolis, IN.

***Nagro, S. A.**, & Larson, K. (2014, October). *Engaging families of students with disabilities through parenting, communication, volunteering, learning at home, decision-making, and collaborating with community.* Breakout session at the National Network of Partnership Schools Annual Leadership Development Conference, Baltimore, MD.

Nagro, S. A. (2014, April). *Modifying interactive mathematics homework for elementary students with learning disabilities: Involving parents and improving accessibility.* Poster presented at the Council for Exceptional Children Division for Learning Disabilities, Philadelphia, PA.

Nagro, S. A. (2014, April). *The effects of video exemplar case-based learning on special education preservice teachers' ability to self-reflect during video analysis*. Poster presented at the Council for Exceptional Children Annual Convention, Philadelphia, PA.

True, J., **Nagro, S. A.**, Larson, K., Hooks, S., & Fraser, D. (2014, April). *Closing the gap: Does instructor-pair collaboration improve special education teacher preparation?* Poster presented at the Council for Exceptional Children Annual Convention, Philadelphia, PA.

Nagro, S. A., & Cornelius, K. E. (2013, November). *Systematically evaluating the evidence-base of special education teacher training techniques using quality indicators.* Multiple paper presentation at the Teacher Education Division of the Council for Exceptional Children Annual Conference, Ft. Lauderdale, FL.

Nagro, S. A., Hooks, S., & Fraser, D. (2013, November). *Using teacher input and research-based training techniques to target proactive teaching strategies.* Paper presented at the

Teacher Education Division of the Council for Exceptional Children Annual Conference, Ft. Lauderdale, FL.

Sandmel, K., & **Nagro, S. A.** (2013, November). *The effect of videotaped lessons and university supervisor evaluations on student interns' written self-reflections.* Paper presented at the Teacher Education Division of the Council for Exceptional Children Annual Conference, Ft. Lauderdale, FL.

***Nagro, S. A.**, & Larson, K. (2013, October). *Engaging families of students with special needs.* Breakout session at the National Network of Partnership Schools Annual Leadership Development Conference, Baltimore, MD.

Nagro, S. A. (2013, April). *Evidence-Base of video analysis as a development tool: Literature review & evaluation using quality indicators.* Poster presented at the Council for Exceptional Children Annual Convention, San Antonio, TX.

Nagro, S. A. (2012, November). *Evaluating a summer book distribution program: Proposed modifications.* Poster presented at the Teacher Education Division of the Council for Exceptional Children Annual Conference, Grand Rapids, MI.

State Level Conferences

Nagro, S. A. (2014, February). *Modifying teachers involving parents in schoolwork (TIPS) for students with disabilities: Getting parents involved in math homework.* Paper presented at the Council for Exceptional Children Professional Development Conference, Baltimore, MD.

Professional Development Series

New Teacher Professional Development 2011 – 2012
Classroom Management, Formative Assessment, Performance Feedback, Modifications, Scaffolding, Transitions, Student Grouping
Year long, monthly sessions for novice special education teachers
Baltimore City Public Schools, Baltimore, MD

School-wide Professional Development 2011 – 2012
Bi-monthly series for entire school faculty based on needs assessment
Proactive Classroom Management and Student Engagement: whole group, visual, motor, and choice strategies supported in research
Baltimore City Public Schools, Baltimore, MD

University Level Teaching

Master's Level Courses Taught at Johns Hopkins University

Mathematics: Methods for Students with Mild to Moderate Disabilities
Mild to Moderate Disabilities Internship: Induction - Elementary/Middle

Mild to Moderate Disabilities Internship: Culmination - Elementary/Middle
Mild to Moderate Disabilities Internship: Induction - Secondary/Adult
Mild to Moderate Disabilities Internship: Culmination - Secondary/Adult

Master's Level Courses Co-Taught at Johns Hopkins University

Reading: Methods for Students with Mild to Moderate Disabilities
Reading, English, and Language Arts: Methods for Secondary Students with Mild to Moderate Disabilities

Modules Developed for Distance Education Master's Level Courses at Johns Hopkins University

Partnering with Parents of Students with Disabilities
Introduction to Children and Youth with Exceptionalities

Using Evidence-Based Practices to Differentiate Instruction: Case Study
Educational Alternatives for Students with Special Needs

Guest Lectures at Johns Hopkins University

The Importance of Reflection and Video Analysis during Culminating Field Placements
Internship in Severe Disabilities: Culmination
Mild to Moderate Disabilities Internship: Culmination - Elementary/Middle
Mild to Moderate Disabilities Internship: Culmination - Secondary/Adult

The Importance of Reflection and Video Analysis during Early Childhood Field Placements
Internship: Early Intervention and Preschool Special Education

The Importance of Reflection and Video Analysis during Field Placements in Inclusive Classrooms
Supervised Internship and Seminar in the Elementary Schools
Supervised Internship and Seminar in the Secondary Schools

The Importance of Reflection and Video Analysis during Induction Field Placements
Internship in Severe Disabilities: Induction
Mild to Moderate Disabilities Internship: Induction - Elementary/Middle
Mild to Moderate Disabilities Internship: Induction - Secondary/Adult

Leadership and Awards

Funding

2014 Dissertation Grant Award ($1,736.60) September, 2014
Johns Hopkins University, School of Education

Fulltime Doctoral Fellowship, funding for 2011 - 2015 August, 2011

Johns Hopkins University, Department of Special Education

Positions Held & Honors

Quantitative Research Award April, 2015
Kaleidoscope, Council for Exceptional Children Annual Conference (CEC)

Doctoral Studies Committee Student Representative January, 2014 – May, 2015
Johns Hopkins University, School of Education

Education Policy and Politics Doctoral Scholar January, 2015
Higher Education Consortium of Special Education (HECSE)

Media
It's Not Your Imagination: Special Education Lingo Getting Harder To Grasp March, 2015
Article written by Christina Samuels in Education Week about my work

Professional Service

Editorial Boards

Student Reviewer 2012 - 2015
Teacher Education and Special Education

Co-Editor 2012 - 2013
New Horizons for Learning Open Access Journal
Johns Hopkins University, Baltimore, MD

National Committees and Special Interest Groups

Teacher Education Division (TED) Early Career Special Interest Group 2014 - present
Council for Exceptional Children Teacher Education Division

Teacher Education Division (TED) Research Committee 2013 - present
Council for Exceptional Children Teacher Education Division

Professional Affiliations

American Educational Research Association (AERA) 2014 - present
Special Education Research Special Interest Group 2014 - present
Teaching and Teacher Education Division 2014 - present

Council for Exceptional Children (CEC) 2011 - present
Division for Learning Disabilities (DLD) 2011 - present

Division for Research (DR)	2011 - present
Teacher Education Division (TED)	2011 - present
Council of Administrators of Special Education (CASE)	2011 - present