Video Grand Rounds in Rural Teacher Preparation

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Video grand rounds (VGR) were used at a rural university to prepare special education teacher candidates. Using the VGR structure, teacher candidates were taught to understand, observe, and articulate observations of classroom instruction through the use of authentic classroom videos created locally by K-12 rural special and general educators. The videos include rural special education teachers working with learners with disabilities and implementing instruction aligned with the general and adapted curriculum standards. This article reports the effects of VGR on teacher candidates' development of observation skills in an early experience course in this mixed methods study and shares the design and development of templates for implementing this model.

Keywords: clinical experience, co-teaching, practicum, rural education, special education teaching, teacher education, video grand rounds

Quality teachers are key to positive educational outcomes for children. Unfortunately, many qualified teachers leave school systems, especially in rural areas (Schulte & Justeson, 2019). This teacher attrition, compounded by a growing population of students with disabilities, has created critical special education teacher shortages. Nationally, the shortage in special education teachers is growing (Robinson, Bridges, Rollins, & Schumacker, 2019). In addition, rural school districts have challenges with recruiting and hiring qualified special educators (Berry, Petrin, & Gravelle, 2011). As educator preparation programs in rural regions seek to mitigate the effects of teacher shortages, recruitment difficulties, and general geographic isolation, clinical experiences are closely examined.

It is important that preparation programs for rural special education teachers provide multiple, varied clinical experiences in rural special education classrooms (Reagan et al., 2019). The use of structured video grand rounds (VGR) is one method for teacher candidates to observe and reflect on rural classroom instruction through authentic classroom videos (Cuthrell, Steadman, Stapleton, & Hodge, 2016). This article shares results from a mixed-methods study exploring how an innovative video approach to early field experience observations impacted teacher candidates' observation skills.

It is imperative to include adequate clinical experiences throughout the teacher preparation program and to develop teacher candidates' reflective practice skills to help them use such proficiencies when they are teaching (Coffey, 2014). However, it can be challenging to provide ample experiences that are meaningful, are high quality, and offer opportunities for assessment (Bethune & Kiser, 2017). Literature suggests that reflection is critical to teacher candidates' preparation as

educators (Clarà, Mauri, Colomina, & Onrubia, 2019), supports professional development (Zepeda, 2019), and allows consideration of the cognitive, social, and moral implications of teaching (Pedro, 2006). Reflection should progress from a preoccupation on technical aspects of teaching to consideration of teaching methods and alternative options to diverse dilemmas that occur in teaching (Cavanagh & Prescott, 2010). It is important for preservice teacher candidates to be reflective problem solvers who can challenge the status quo (Larivee, 2000). In this literature review, we present the VGR model and use of video as a tool for enhancing reflection in teacher education in rural areas.

Literature Review

Context for Rural School Districts

In the special education program that is the focus of this study, some challenges with requiring a large number of field experience hours in a rural geographic area have been (a) a limited amount of available special education teachers to serve as clinical teachers in rural areas, (b) the overcrowding of teacher candidates placed in schools located near the university, (c) ensuring teacher candidates experience a variety of K-12 observations, and (d) scheduling times with teachers to view instruction. To supplement and enhance the rural special education practicum experience, a VGR video library was created and implemented. The VGR library, accessed via the internet through a passcode-protected link, contains digital videos of local rural teachers, both general and special educators, instructing students in their K-12 classrooms. With this new model, teacher candidates both participate in face-to-face practicums in rural K-12 classrooms and engage with distance education observations via the VGR video library. This procedure ensures teacher candidates have the opportunity to view high-quality, evidence-based practices in multiple educational environments. Teacher candidates can view the same video clips and see how rural clinical teachers, instructors, and peers respond to the observation protocol. Subsequent class discussions can then be based on the common observation experience.

Teacher education programs have begun using video to enhance the observation experience for several reasons: (a) videos can provide access to multiple settings (Hixon & So, 2009), which is especially problematic for large and/or rural programs where diverse placements may be limited given the size of the program and geography; (b) videos can create shared experiences in which classroom interactions, practices, and specific learning experiences are explored (Borko, Jacobs, Eiteljorg, & Pittman, 2008; Youens, Smethem, & Sullivan, 2014); and (c) research suggests that viewing videos can promote reflective and focused observations as teacher candidates engage in deeper reflection (Goldman, 2007; MacLean & White, 2007; Stockero, 2008).

Video Observations

Field experiences are a critical component of teacher education programs. Creating meaningful field experiences while evaluating student performance can be challenging. Beerer (2017) found that teachers were able to foster authentic learning through culturally responsive teaching while using video technology. Video technology can be an effective mode of instruction, partially due to the emotional response it elicits (Bradley, Carmichael, Karpicke, & Reid, 2018). Additionally, the core intelligences that humans possess—verbal/linguistic, visual/spatial, and musical/rhythmic—can all be used by video (Bannink, 2009).

VGR Framework

Educational VGRs are grounded in the practice of grand rounds used in the medical training model (Crowe, Dotson-Blake, Vazquez, & Malone, 2018; Van Hoof, Monson, Majdalany, Giannotti, & Meehan, 2009). In the medical model, interns participate in observations utilizing grand rounds, whereby they examine authentic medical situations and then debrief with their instructor. The medical grand rounds model has also been recommended to consider for use in teacher education (Roegman & Riehl, 2012; Thompson & Cooner, 2001).

VGR involves teacher candidates viewing a series of lesson videos, completing structured observation protocols, and then debriefing with a

faculty member (Cuthrell et al., 2014). Observation protocols can provide evidence for future instruction and professional development and help predict teacher candidate learning outcomes (Piburn & Sawada, 2000). One VGR model study used a comparative research design to examine effects of employing the VGR process before observing school classrooms in the field (Cuthrell et al., 2016). There were 65 undergraduate sophomore participants in this study: 17 in the control group and 48 in the treatment group. The control group exhibited development, but the treatment group with the VGR experience demonstrated significantly greater growth than their non-VGR classmates. In particular, the VGR group performed better in focusing on salient classroom interaction features, identifying complex classroom interactions, and transferring observation skills from video to in-school experiences. Additional studies involving the use of VGR with undergraduate teacher education candidates are needed to further explore and expand on the results of initial VGR studies, including in the fields of elementary, secondary, and special education.

Similarly, video modeling provides a recorded demonstration of a specific behavior followed by learner performance of the modeled behavior (Catania, Almeida, Liu-Constant, & DiGennaro-Reed, 2009). Video modeling has been examined as an effective means to provide skill-specific instruction and procedural implementation (Gaudin, Chaliès, & Amathieu, 2018; Leblanc, 2018). However, unlike video modeling, VGR is focused on learner performance.

Using Video Observations in Rural Teacher Education Programs

There are challenges associated with requiring a large number of field-experience observation hours for preservice teacher candidates' placements in rural special education classrooms, especially availability and accessibility of quality rural special education teachers to serve as clinical teachers. Teacher quality comprises a teacher's identity combined with knowledge and skills in pedagogy, content, and theory (Churchill et al., 2011). As a way to mitigate these challenges, teacher preparation programs can use technology

for pre- and in-service teacher development (Rock et al., 2016).

Research supports the use of video models and video annotations in teacher development (Beerer, 2017; Leko, Brownell, Sindelar, & Kiely, 2015). Using videos as digital observation tools can offer access to diverse settings (Hixon & So, 2009), such as rural educational contexts. In addition, through videos, teacher candidates can experience authentic learning (Beerer, 2017) and explore shared classroom interactions, practices, and specific learning scenarios (Borko et al., 2008; Youens et al., 2014). Reflecting on focused observations in videos can engage teacher candidates in deeper reflection (Goldman, 2007; MacLean & White, 2007; Stockero, 2008).

Through the use of video observations in conjunction with written instructor feedback, teacher candidates can enhance their capacity to reflect on their teaching skills (Coffey, 2014). With the verbal and nonverbal elements of teaching captured on video (Quigley & Nyquist, 1992), and the ability to pause, annotate, and view the video multiple times (Snoeyink, 2010), teacher candidates have the opportunity to observe elements of teaching that may have otherwise gone unnoticed (Zhang, Lundeberg, & Eberhardt, 2010).

Context for VGR

At East Carolina University, a southeastern-US rural state university, special education teacher candidates have been provided with opportunities to view a variety of instructional strategies in the adapted and general curriculum, across grade spans (K-12), and focused on differing student characteristics and disabilities. Teacher candidates have been offered a wealth of different observation and teaching experiences, including through face-to-face interactions and video observations.

VGRs were used to instruct teacher candidates in how to observe and what to look for as they observed in practicum experiences (Williams, Evans, & King, 2016). Video-recorded examples of authentic rural classroom instruction and a structured observation protocol were provided to teacher candidates to facilitate their video observation and reflective practice. The VGR model

was integrated into an early experience-observation course during the freshman year as partial attainment of a 16-hour practicum in schools. The required student observation hours in this course were key in helping teacher candidates determine if this is the right career choice and supporting their exploration of which initial special education licensure track (i.e., general or adapted curriculum) to pursue. The experiences were also designed to provide teacher candidates with a framework for observations and discussions guided by instructors that could provide a conceptual foundation for their future studies. In this article, we detail the development and implementation of the VGR model in the special education program.

The teacher preparation program that is the focus of this study had teacher candidates observe 16 hours of K-12 instruction in an early experience course, which occurred during the second semester of each candidate's freshman year. Before implementing VGR, there were concerns with the structure of observations. First, there was no set procedure to determine what was being observed. Second, due to the size of the teacher preparation program, a large number of classrooms were needed for all teacher candidates to complete their observation hours. This can be problematic due to the limited number of special education teachers available in rural areas (Cross 2016; Rhew, 2017).

We developed a clinical experience model that used preselected classroom video clips and a grand-rounds approach designed to engage teacher candidates in mentored observations. The observation protocol helped teacher candidates identify specific information about the observed classrooms. The videos provided real-life examples of instruction.

Research Questions

Given the documented benefits of using videos to enhance experiences in teacher preparation, we chose to implement and then investigate the use of VGR in a preparation program for rural special education teachers. We designed and implemented a VGR model (Figure 1) that incorporated specific video excerpts and a structured observation protocol (Appendix A) to direct and support special education teacher candidates' observations and

reflections. This process was then mentored by the course instructor through feedback. We investigated this innovation by using the following three research questions:

1. Does VGR impact candidates' observation skills as documented on the observation protocol?

2. How does VGR affect candidates' observations of and reflections on classroom interactions?

3. In what ways do observation skills transfer from VGR to nonstructured observation events?

Based on the prior literature, we hypothesized that the teacher candidates' observation and reflection skills would improve in quantity and quality through the use of VGR.

Methodology

We used a mixed-methods research design for this case study. The goal of this research was to better understand the effects of VGR on special education teacher candidates' observation skills in an early experience course. We used inferential statistical analysis to determine if there were statistically significant gains in outcomes from the observation protocol use. To triangulate findings, we collected qualitative data from teacher candidates' reflection essays, final examination responses, and debriefing responses.

Procedures and Data Collection

A convenience sample of 69 teacher candidates participated in the VGR case study. All participants were from two consecutive semesters of the course taught by the same instructor. Documents collected throughout the study included (a) completed observation protocols, (b) reflective essays about the overall practicum experience focusing on teacher candidates' observations, (c) observation and reflection responses to a final examination video, and (d) in-class debriefing responses.

Teacher candidates viewed four videos online through the university's learning management system and completed a structured observation protocol to analyze effective teaching practices. For each of the four observations, teacher candidates

conducted VGR observations and completed the observation protocol outside of class, which was followed by a 1-hour debriefing that occurred during a class session. We video-recorded these classes to collect data for research purposes. After class, the instructor's completed observation protocol was posted online for teacher candidates to compare and contrast their observations to their instructor's observations. To conclude the VGR process, the students completed a "3-2-1" assignment, which included three items that were the same on the student's observation protocol and the instructor's observation protocol, two items that were different, and one question designed to elicit teacher candidates' questions about the observation, debriefing, and comparison process. In addition to completing four video observations following the VGR approach, teacher candidates were required to observe classroom teachers in two settings, adapted-curriculum and general-curriculum rural special education, utilizing the same structured observation protocol and reflecting on their observation experiences.

VGR Development

College of Education faculty developed a VGR model, which was integrated in an introductory clinical experiences special education teacher preparation course. Special education teacher candidates viewed a series of lesson videos, completed structured observation protocols, and then debriefed with a faculty member following each video observation (Figure 1).

Classroom Observation Protocol Development

Observation protocols were used because they have been found to provide future instruction evidence and professional development and because they can be used as a predictor of teacher candidate learning outcomes (Piburn & Sawada, 2000). The classroom observation protocol in our study consisted of three sections. Focus area 1, "Context for Observation," requires teacher candidates to identify the college- and career-ready
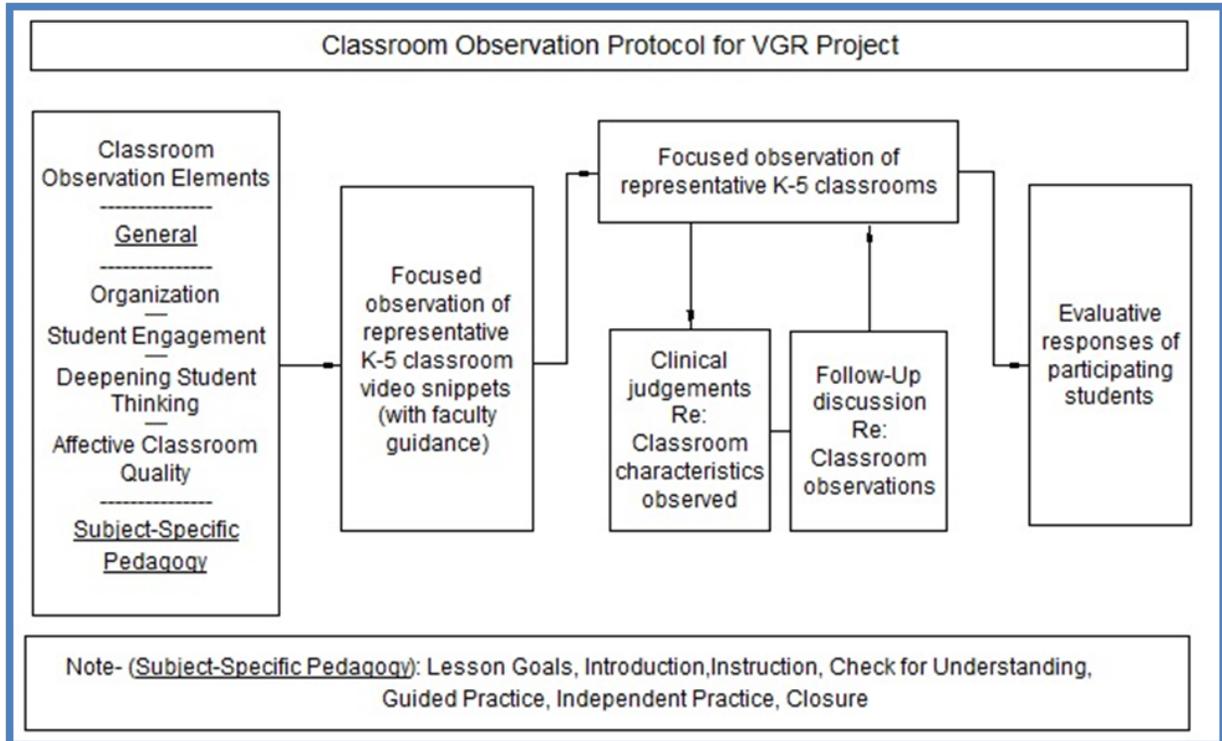

Figure 1. Video grand rounds process.

"Did the students seem to like/enjoy/trust the teacher?" "Were students attentive and 'on task' throughout the lesson?" "Did the teacher monitor the performance of all students?" Teacher candidates would mark "yes" or "no" and then cite specific evidence from the video that influenced their response. Focus area 3, "Subject-Specific Pedagogy," highlights the various lesson components observed, including lesson planning, lesson goals, introduction, instruction, checking for understanding, guided practice, independent practice, closure, and a summary of characteristics. Protocol questions were as follows: "Was background knowledge assessed?" "Did the teacher give examples?" "Was there a guided student activity or exercise?" These three sections reflect core instructional constructs introduced and examined in our special education program. Teacher candidates demonstrated mastery of these core constructs in a capstone performance assessment, edTPA, a validated teacher performance assessment (Stanford Center for Assessment, Learning, and Equity, 2016).

Extending Use of the Model

The VGR teacher preparation model was initially implemented with elementary education majors. The model was extended to business, English, and special education majors. Later, middle grades, birth-kindergarten, health, and counseling education majors incorporated VGR.

Implementation of VGR in Special Education

The special education program area infused the VGR model into the required freshman-year early experience course, which included a 16-hour practicum in schools. In this course, teacher candidates observed classroom teachers in at least two different settings, adapted-curriculum and general-curriculum rural special education, and completed a reflection of their experiences in each setting. Before VGR, students received minimal guidance in how to observe, resulting in lack of specificity in their written observations (Williams, King, Wilhite, & Canter, 2014). The researchers found that teacher candidates generally did not identify effective or ineffective teaching.

As an outcome of this review, faculty revised the course and introduced the VGR model. Before completing 4 hours of observation in their assigned schools, students viewed a series of four videos through the university's website and completed a structured observation protocol. This enabled teacher candidates to begin viewing the process of teaching from a teacher's viewpoint rather than a teacher candidate's perspective. We structured the observation form so teacher candidates could fine-tune their observation skills and begin to analyze effective teaching practices. Before attending class, teacher candidates posted their observation protocols. On class day, there was a 1-hour class debriefing. After class, the instructor's protocol was posted online and the teacher candidates were given an opportunity to reflect and list the similarities and differences between their observation and the instructor's.

VGRs were introduced as a way to instruct teacher candidates in how to observe and what to look for as they begin their practicum experiences. Teacher candidates were provided with video-recorded examples of classrooms along with a specific protocol to guide their observation of the video. Four video observations were completed in class (VGR) before the students observed in a local school using the same observation protocol.

The special education program area produced a series of videos for VGR using classrooms in rural eastern North Carolina. Videos included both adapted curriculum and general curriculum in elementary, middle, and high school general and special education rural classrooms. Each video also included an interview with the classroom teacher modeling the 5-point reflection cycle and highlighting important aspects of the recorded lesson (e.g., instructional or behavioral strategies).

Video Development

The VGR videos used in this study were developed in diverse, rural special education classrooms in eastern North Carolina. The videos were captured in multiple settings and grade levels (i.e., general curriculum, adapted curriculum, and grade levels in elementary, middle, and high school). Classroom teacher interviews were included in each video, which debriefed key points

of the lesson and modeled the 5-point reflection cycle. The video library development process comprised three phases: (1) identifying educators/classrooms, (2) preparing for video sessions, and (3) developing the videos.

Identifying Educators/Classrooms. Initial special education licensure in North Carolina is a K-12 license in either general curriculum or adapted curriculum; therefore, initial licensure teacher candidates engage in a variety of observations and practicum experiences across elementary, middle, and secondary grade spans, as well as in inclusive, resource, and self-contained classrooms. To provide teacher candidates with a range of opportunities, university faculty identified regional general educators and adapted/general curriculum special educators who offered high quality, evidence-based instruction to diverse learners. They also identified essential strategies, practices, and concepts to be highlighted across the video collection. The project director met with potential educators to discuss the goals of the video collection, potential impact on educator preparation, and practical considerations related to video development (i.e., parental consent and student assent).

Preparing for Video Session. Once an educator agreed to participate, the project director provided consent/assent forms to be completed by teachers, parents/guardians, and students. They also discussed the taping session in terms of class session length, instructional focus, considerations for students not participating, preparing K-12 students (e.g., "act natural"), strategies for navigating the video equipment and videographer, and identifying educator coverage and location for the reflection interview. Educators provided a lesson plan or description of the class session, which aided the project director in preparing for the follow-up interview and filming.

The project director met with the videographer to review the recording plan and strategies for filming a variety of students, from those without disabilities to those with a wide range of disabilities.

Developing Videos. Entire class sessions were filmed to provide teacher candidates a realistic simulation of a comprehensive lesson. These sessions ranged from 40 to 90 minutes. Following each instructional session, the project director interviewed the educator. During this conversation, they modeled the university's 5-step educator reflection process.

Editing resulted in several videos for each collection: (a) one video of the entire class session (which could range from 40 to 90 minutes, depending on grade level and student disability), (b) snippets highlighting specific activities or strategies, and (c) the reflection interview with clips showing activities discussed. The special education VGR library included a collection of elementary, middle, and high school video clips that aligned with North Carolina extended content standards and North Carolina general curriculum standards. Using the recently adopted World Wide Web Consortium (W3C) accessibility requirements, we are in the process of adding transcripts to expand access.

Data Analysis

We analyzed rubric scores from the structured observation protocols using paired-samples *t*-tests to address research question 1. Early experience-course researchers developed and then refined the rubric for simplicity after use in an elementary education program VGR pilot at the same university. Participants received an overall rubric score of 1 (below proficient), 2 (proficient), or 3 (above proficient). Rubric constructs focused on level of detail in teacher candidates' responses to the observation protocol questions, evidence of reflection, and detailed examples that aligned with the reflective responses (see Appendix B).

During qualitative analysis, we used an emergent coding system (Boyatzis, 1998; Stemler, 2001) for the remaining three data sets: (a) reflective essays about the overall practicum experience that focused on what teacher candidates learned from their observations, (b) debriefing formative assessments, and (c) observation and reflection responses to the final examination video. The initial step of data analysis involved preliminary examination of the data sets in which we created a checklist of initial categories based on the observation protocol. This checklist of categories was then coded independently by two researchers. We evaluated interrater reliability by

randomly selecting 20% of the data coded by one researcher to be recoded by the other. Interrater reliability was greater than 85% for the selected data. Once we established interrater reliability, any nonagreement in codes was discussed and renegotiated by both researchers.

To address research questions 2 and 3, we coded individual responses and then organized the codes into categories. Finally, we computed the frequency of each category to provide an overall summary of the qualitative findings. Additionally, we identified frequently asked questions during the debriefing formative assessment.

Results

Observation Protocol Rubric Scores

Due to constraints in our sample size, we used G*Power (Faul, Erdfelder, Buchner, & Lang, 2009) to conduct an a priori power analysis, which revealed that a sample size of 34 was needed to achieve high effect (Cohen's $d = 0.50$; Cohen, 1988) with sufficient power ($1 - \beta = .80$; Cohen, 1988). This suggests that our sample size of 69 teacher candidates was sufficient.

To address research question 1, we computed a series of paired-samples t-tests to compare scores for teacher candidates' special education observation-protocol rubric during several observations ($N = 71$). First, we conducted a paired-samples t-test to compare the rubric scores of the first (rubric 1; $M = 2.04$, $SD = 0.44$) and last (rubric 4; $M = 2.26$, $SD = 0.53$) VGR observations. Analysis indicated a significant difference, $t_{(68)} = -2.83$, $p = .006$, $d = 0.34$. Additionally, we conducted a paired-samples t-test to compare the rubric scores completed at the onset of VGR (rubric 1) and during the field observation later in the semester (rubric 5; $M = 2.54$, $SD = 0.56$). Analysis indicated a significant difference, $t_{(68)} = -5.69$, $p < .001$, $d = 0.60$. These results suggest that candidates significantly improved their observation skills from the first to the fourth VGR observations, and from the first (VGR observation) to the fifth (field observation).

Overall Practicum Reflections

To address research question 2, we analyzed teacher candidates' overall practicum reflection essays in which they discussed the practicum experience and debriefed each video. Four main categories emerged from the identified codes: (a) the teacher, which included personal or affective comments about the teacher and/or appraisal of the teacher's work; (b) classroom management, which involved teacher-implemented strategies used to manage the classroom; (c) the students, which included K-12 students' affective reactions to instruction, behaviors, and diverse academic and cultural needs; and (d) student-teacher interactions, which included observations related to respect among students or between the students and their teacher, cooperation, compliance, and other comments related to the classroom environment.

The overall tone of the comments was positive. Teacher candidates most often mentioned classroom management (25.26%) and student-teacher interactions (25.56%). Comments related to classroom management were typically detailed and centered on instruction. For example, one teacher candidate wrote,

> On the days she was not able to be in the classroom the teacher had an entirely different way of running the classroom. There was less one-on-one work being done and a lot more things being done as a group.

Another teacher candidate commented, "The students would take turns and alternate going up to the board answering questions. They love to try and answer the questions that the teacher asks even if they don't know the answer." Further, one teacher candidate reflected,

> It was obvious that the students knew the routine of this sort of attention grabber. The students had fun learning. Then I saw where vocabulary was taught with just using flashcards and lecture. The students were very uninterested in the teacher and the lesson.

Teacher candidates commented on how the student-teacher interactions varied in the video and in field observations. The opportunity to talk to the students in the live observation appeared to provide greater insight for some. For example, one teacher candidate wrote, "This little boy talked very highly of his teacher and only had good things to say. He said that he loved going to [teacher's classroom] because she was so nice to him and the other students." Another teacher candidate commented, "They all said that they liked the room set up, they liked how the teacher was teaching the lessons, they respected the teacher and loved her as well, and that she makes them want to learn." One other teacher candidate reflected,

> The most important thing that I learned throughout all of my observations was how the teachers interacted with the students. It is so important that the teachers build a relationship based on trust and respect, as well as build a warm and welcoming environment that the students feel comfortable to learn and ask questions.

Teacher candidates discussed students (24.22%) and teachers (24.66%) at a similar rate. When mentioning the students, comments often focused on behaviors or academic needs. For example, one teacher candidate wrote, "The students that were in wheelchairs or had speech inhibitions were given flash cards or the Big Mac or other communications device." Another teacher candidate commented,

Letters were written on pieces of popcorn and these pieces popped out of the bucket; the students were to indicate the letter sounds and make words using other popcorn pieces. They counted each day of school then subtracted that number from the total days of school to find how many school days were left.

When discussing the teachers, candidates typically provided rationales or supporting details. For example, one teacher candidate noted that "the teacher would get frustrated with the students if they did not finish their work or were disrupting class." Another teacher candidate shared,

> In the classroom I observed, the teacher chose a "daily helper" every day to help with tasks such as returning the breakfast cart, helping the teacher with other responsibilities and even running a quick errand such as taking a folder to the teacher across the hall.

Lastly, their reflections included a comparison of video observations and live field observations. For example, one teacher candidate replied, "The videos also showed me really cool ideas to help get my students involved with the lessons." Another said, "From watching the videos and observing the classroom, I learned that I would be happy working in an elementary school, middle, or high school. In the beginning of the semester I thought that I would enjoy high school better." Additional responses are listed in Table 1.

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Table 1

Example Candidate Reflections on VGR

Candidate	Comments
1	I liked being able to see a different grade than what I want to teach.
2	The videos also showed me really cool ideas to help get my students involved with the lessons.
3	I really enjoyed how the teachers used Smart Board activities during their lessons to get the students more involved.
4	Being able to watch all of the videos this semester has given me a lot of insight into how teachers differ with skill, experience, etc. I liked the concept of the video observation because I could always rewatch them a second or third time just to be sure I did not miss anything the first go-around.
5	Being able to see how teachers used visual guides as well as instructional technology made me anxious to get a closer look with my in-class practicum teacher.
6	The teachers used different technologies such as voice threads or push talks that more than one student could access. They also used their white boards more throughout the lesson, since in most cases the students benefit more from having a visual tool such as that.
7	From watching the videos and observing the classroom, I learned that I would be happy working in an elementary school, middle, or high school. In the beginning of this semester I thought that I would enjoy high school better.
8	Throughout this semester, my observational skills improved. The videos made me more prepared for when I went to the elementary school.

Final Examinations

To address research question 3, we examined data from final examinations. Teacher candidates all viewed the same video and wrote about what they observed as part of their final examination. They were not required to complete an observation protocol. As was the case with the reflection essay, the same four categories emerged: teacher, classroom management, students, and student-teacher interactions. The overall tone of the comments was again positive.

Analysis revealed that these teacher candidates more frequently made comments associated with the teacher (33.57%) category during the final examination. These comments were highly detailed and most often positive. For example, one teacher candidate commented, "During instruction the teacher modeled the skills that she was trying to teach and then used cues to help the students practice when to do what. The teacher used positive reinforcement to guide her students through the lesson." Another teacher candidate wrote,

> Throughout the lesson the teacher showed times where she had a plan and was executing it. She never hesitated or got stuck when something did not go the way she expected, she just kept right on with her plan. Even when the students were acting out during the reading, she kept going and had one of the helpers go to that student and take care of them to keep them quiet.

Teacher candidates also frequently commented on student-teacher interactions (28.78%), often with detail. For example, one teacher candidate wrote,

Table 2

Example Candidate Debriefing Questions

Where can I locate the Core Curriculum?
What is a hook? Give an example.
How does a teacher scaffold in a lesson?
Why did the teacher spend so much time going over class rules?
What is the difference in a "Go Talk" and a "Big Mac?"
Explain alerting cues and give some examples.
Tell me more about "whole brain teaching."
What is the role of the teacher assistant?
Do all students need behavior plans?
How does autism differ from Asperger's syndrome?
Why didn't the teacher let the student who had challenges with mobility and in the wheelchair go to the "Smart Board?"
Can you identify an IEP from observing?

"The teacher did a great job asking questions about the story, calling the children by name and acknowledging their efforts and participation." Teacher candidates also commented on the learning environment and organization of the classroom within this category. For example, one teacher candidate wrote,

> At first the teacher did not look prepared because before she could start reading she had to get two items. She read the whole story with enthusiasm, as she read she had a pointer so that she could point the words out to the students.

Another teacher candidate commented,

> I loved how the first thing the teacher did was explain to the students what the goal was, since I did not see it posted on the board, and she explained what the story was about to the students as well. She made sure that the students were aware of what they were going to do.

Teacher candidates also mentioned classroom management (20.86%) and students (16.79%). These comments were not as frequent or as detailed. For example, one teacher candidate stated, "The students were very involved in the lesson," while another noted, "They seemed to respond to her in a positive way." When discussing some of the classroom management observations, teacher candidates provided a few more details. For instance, "Once the lesson and comprehension questions were over, she did an excellent job of transitioning by telling the students exactly what they were going to be moving on to."

Discussion

To answer research question 1, "Does VGR impact candidates' observation skills as documented on the observation protocol?", we computed paired-samples *t*-tests. Results indicated that the teacher candidates demonstrated significant growth in their written reflections on the observation protocols when using the VGR model over time. Specifically, these results indicate that candidates significantly improved their observation skills from the first to the fourth VGR observation, and from the first (VGR observation) to the fifth (field observation). This aligns with previous research that candidates who participate in the VGR process have improved focus on salient classroom

interaction features and the ability to identify complex classroom interactions (Cuthrell et al., 2016).

For research question 2, "How does VGR affect candidates' observations of and reflections on classroom interactions?"; and question 3, "In what ways do observation skills transfer from VGR to non-structured observation events?", We analyzed qualitative data collected from the students' overall practicum reflections and final examination written responses. Qualitative analysis suggests that the teacher candidates were able to transfer elements of the VGR observation protocol to live observations as well as to observations in which an observation protocol was not required. Specifically, the teacher candidates were able to move beyond focusing solely on classroom management themes to also including teacher-student interactions. Thus, their reflections were complex and multifaceted. Furthermore, the teacher candidates routinely supported their comments in the reflection essay and final examination with specific details from their classroom experiences and video observations. By adding specific details and varying perspectives of the observed environment, the teacher candidates demonstrated a thoughtful and critical approach to their reflective practice (Cavanagh & Prescott, 2010; Schön, 1983). The language and constructs of the observation protocols, which were reinforced in each video debriefing, were apparent in both the reflection essay responses and the final examinations, even though observation protocols were not required during that task. Such independent use of the instrument suggests that the protocol itself was a beneficial support and guide for the teacher candidates.

Previous research supports our finding that teacher candidate reflections can deepen through the use of video observations (Coffey, 2014; Goldman, 2007; MacLean & White, 2007; Stockero, 2008). The results of this VGR study also validate previous VGR study findings that candidates who participate in the VGR process have improved focus on salient classroom interaction features, identify complex classroom interactions, and transfer observation skills from video to in-school experiences (Cuthrell et al. 2016). Furthermore, using VGR to supplement teacher candidates'

practical observations helped our program mitigate challenges associated with placing candidates in an adequate number of quality practicums in rural areas (Berry et al., 2011) while providing ample authentic experiences supportive of their growth.

Limitations

Limitations of this study include convenience sampling and locally developed videos. Furthermore, the sample size, though adequate, was small and specific to our context. Replication of this approach with these specific videos, filmed in regional rural K-12 classrooms, is limited due to the application of the videos in the context of this teacher preparation program.

Qualitative data were collected using course assignments intended to be evaluated by the instructor, which may compromise internal validity due to social desirability. Finally, although we propose that significant improvements in the rubric scores over time were attributable to the instructional method, it is possible that some of the growth was due to natural maturation through practice.

Lessons Learned: Initial Implementation Successes and Challenges

The initial implementation of special education VGR occurred in generation 2, following the generation 1 VGR implementation by the elementary education program. Learning from generation 1 experiences benefited the special education program VGR initiative. Generation 1 placed VGR in the sophomore year, and generation 2, in the second semester of the freshman year. By placing VGR in the freshman year, teacher candidates were taught how to observe a classroom setting before experiencing any face-to-face practicum experiences. Rural special education classrooms are complex and multifaceted (Burton, Brown, & Johnson, 2013). In this study, VGR provided the opportunity for an experienced instructor to model observational commentary to teacher candidates early in their program of study.

Generation 1 of VGR, as implemented in the elementary education program, used video clips taken from online sources. However, fewer video clips of special education classrooms were

accessible online. The lack of resources led to one of the most beneficial components of the special education program's VGR implementation: authentic video clips developed in local rural special education settings. By developing the videos, faculty could ensure high-quality modeling of specific strategies and interventions. Discussion by the special educator following each video segment provided further insight into what occurred and why the teacher selected specific methods. Furthermore, videos were filmed at elementary, middle, and high school levels, which is an important consideration because in North Carolina special educators are licensed for K-12. The video library can also benefit the special education program at large. For instance, video clips have been used by instructors in other courses to demonstrate specific instructional strategies.

Implications and Future Directions

Because finding high-quality practicum placements can be challenging for teacher preparation programs, particularly in rural areas (Berry et al., 2011), we posit that practicum classes during advanced program years may be able to use a VGR model to supplement or replace face-to-face experiences. In addition, scaling up the observation protocol and VGR clinical experience beyond the early experience class into content methods courses could strengthen the overall curriculum in preparation for the edTPA (a performance assessment required in our state to be recommended for licensure) and final internship experience. Moreover, VGRs could be implemented within K-12 schools as a tool for professional development of educators. VGR for professional development uses is especially relevant when considering the challenging nature of using resources to organize live observations and arrange for class coverage.

Since this university serves 43 public school systems in rural eastern North Carolina, the College of Education felt that quality field placements reflecting the diversity of this geographical area were critical to teacher preparation. Due to limited resources (e.g., number of field placements, transportation), it was important to implement innovative technologies to not only prepare face-to-

face students but also the growing distance-education community. Thus, VGRs have since been used with both face-to-face and distance-education classes.

Since these data were collected, additional video examples were added to the video library collection. This was an outcome of special education legislation requiring "access to the general curriculum" (Yell, Shriner, & Katsiyannis, 2006). As a result, research-based strategies in both reading and math have been infused in the special education program curriculum and instructional courses. These courses have begun to use videos for effective observation and teaching. Therefore, grant money has been used to film videos of master, rural, special education teachers instructing their students in reading and math across different grade levels that include both general curriculum and adaptive curriculum special education.

VGR could also be extended and implemented in rural K-12 schools for teacher professional development. Teachers who work in geographically isolated schools, which often have staffing shortages, tend to need more support for professional development (Sullivan & Johnson, 2012). VGR, which requires minimal technology standards, could be used to address these concerns. When teachers are active participants in targeted professional development that results in discussions about instruction, quality teaching, and student achievement, students benefit academically (Burton et al., 2013). Thus, rural special education teachers could follow the VGR protocol to observe, reflect, and discuss research-based practices implemented by their colleagues in geographically diverse settings.

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Appendix A
Structured Observation Protocol
Classroom Observation Form (Special Education)

Note—The Classroom Observation Protocol has been formatted for electronic access through the College of Education undergraduate TASKSTREAM web-based tool, and teacher candidates are expected to record their observations using the TASKSTREAM tool. The protocol focuses on three areas: (1) context for observation; (2) learning environment, engagement in learning, and deepening thinking; and (3) subject-specific pedagogy (evaluation of the lesson plan).

Context for Observation Information

Setting: Video ID Observed: _____ OR School Observed: _____ Grade: _____
Instructional Content Focus: _____
Student Learning Activities: _____
Common Core State Standards Connection: _____
IEP Connection: _____

Learning Environment, Engagement in Learning, and Deepening Thinking

For each of the following Learning Environment, Engagement in Learning, and Deepening Thinking characteristics, indicate whether you observed each. Then describe what you observed on the part of the students and teacher in the NOTES section. Complete this section of the protocol by summarizing what you observed.

Characteristic	Yes	No	What evidence from the video/class influenced your answer?
Organization			
Was the classroom well organized for learning?			
Did students know classroom routines?			
Were transitions handled smoothly?			
Affective Quality of the Classroom			
Did you feel students and the teacher had a positive relationship with each other?			
Did students seem to like/enjoy/trust the teacher?			
Student Engagement in Instruction			
Were students attentive and "on task" throughout the lesson?			
Were students focused on what was to be learned?			
Monitoring of Student Performance			
Did the teacher monitor the performance of all students?			

Short Summary of Characteristics Observed

	Observed?		Effective?		What evidence from the video/class influenced your answer?
The Lesson (Special Education)	Yes	No	Yes	No	
Lesson Planning					
Does the teacher appear planned?					
Is there evidence of a behavior management plan?					
Is the lesson socially and emotionally developmentally appropriate?					
Did the teacher plan different ways to present information, engage students, and receive student responses (UDL [universal design for learning])?					
Lesson Goals					
Could you determine lesson goals?					
Could you determine the alignment to the standards?					
Did the teacher share the goals with students?					
Were the goals clearly posted?					
Lesson Introduction					
Is a lesson hook provided to link prior learning and experiences?					
Were alerting cues used?					
Was background knowledge assessed?					
Did the teacher preview the topic?					

Instruction					
Did the teacher give examples?					
Did the teacher model?					
Were students given ways to organize their ideas?					
Were instructional teaching strategies used?					Check strategies observed here: ❑ Organizers ❑ Grouping ❑ Questioning and Review ❑ Concept Learning (examples/nonexamples) ❑ Communication Strategies ❑ Other _____
Is the content (academic or functional) of the lesson relevant to the students?					
Is the lesson differentiated based on the needs of all levels of academic development of students?					
Were instructional technologies used?					
Is positive reinforcement used to manage behaviors?					
Is negative reinforcement used at all?					
Does the classroom reflect respect for diversity?					
Checking for Understanding					
Did the teacher ask questions for understanding?					
Were "why" questions and explanation questions included?					

Guided Practice					
Was there a guided student activity or exercise?					
Did you notice scaffolding in the lesson?					
Did students work together?					
Did the teacher help when needed?					
Independent Practice					
Did the teacher monitor and document student learning?					
Was there an independent student activity or exercise?					
Closure					
At the end of the lesson, was anything done to help students make sense of what was taught (informal assessment)?					
Are the special needs of students met?					
Short Summary of Characteristics Observed					

Appendix B

Structured Observation Protocol Scoring Rubric

	Value: 1.00 Below Proficient	Value: 2.00 Proficient	Value: 3.00 Above Proficient	Score/Level
Completion of Questions	Responses to observation questions are incomplete or brief and fail to demonstrate reflection on the video snippet. Limited examples are provided to clarify responses.	Responses to observation questions are complete and provide adequate evidence of reflection on the video snippet. Adequate examples are provided to clarify responses.	Response to the observation questions are comprehensive and provide clear and consistent evidence of reflection on the video snippet. Detailed examples provide clear illustrations to clarify responses.	