A Case Study of Technology Mediated Observation in Pre-Service Teaching Experiences for edTPA Implementation

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**Abstract**

Agricultural education teacher preparation programs across the United States are implementing high-stakes teacher performance assessments to better prepare pre-service teachers for the rigors of classroom teaching. During pilot implementation of edTPA, a standardized teacher performance-based assessment, University of Georgia (UGA) teacher preparation unit implemented a technology mediated observation (TMO) protocol to replace one of three face-to-face observations conducted by university supervisors. The instrumental case study reported here explores the outcomes of the TMO experience from the emic perspective of the pre-service teachers, their cooperating teachers, and university supervisors. Findings indicate that TMO overall was a positive experience for pre-service teachers because they engaged in self-monitoring, reflexive teaching practices, and it created opportunities for participants to collaborate with other professionals in their placement sites. We conclude that the use of TMO was overall beneficial to the pre-service teaching experience by enhancing reflective behavior among participants to improve teaching practice. To improve the practice of using TMO, teacher educators should provide well-planned processes for the pre-service teaching cohort. Future research should focus on how TMO can be used to improve quality instruction in the student teaching experience.

**Keywords:** agricultural education, pre-service teacher, edTPA, technology mediated observation, pre-service teacher performance assessment

**Introduction**

The experiential learning component of the total student teaching experience is a critical time for pre-service teacher development (Borne and Moss, 1990; Bruce and Ewing, 2012; Covington and Dobbins, 2004; Darling-Hammond, 2010; Torres and Ulmer, 2007). Pre-service teachers are assessed by cooperating teachers and university supervisors after being placed in a cooperating school. Assessments typically measure the pre-service teachers’ teaching behaviors including the “frequency of specified teacher actions or interactions with students” (Jaeger, 1993, p. 2.), through a series of instruments and observation techniques unique to each teacher preparation program and discipline. University-supervised teaching observations at the student teaching site are a hallmark of preparing pre-service teachers as they provide valuable feedback to the pre-service teacher.

While the ideal number of observations has not been established in the literature, traditionally agricultural education university supervisors complete three on-site observations at approximately five hours a piece to assess the pre-service teacher’s progress and completion of necessary tasks (Borne and Moss, 1990; Fritz and Miller, 2003). University-supervised observations combined with completed coursework and a content-based knowledge exam result in teacher certification and completion of a teacher preparation program. The graduate is then credentialed and eligible for employment as an agriculture teacher.

In recent years, many states have implemented additional requirements to increase teacher account-
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ability. These requirements often include an addition of output measurements such as a teacher performance assessment (Caughlan and Jiang, 2014). Caughlan and Jiang (2014) identified several types of teacher performance assessments, including the Christopher Newport University Student Teacher Observation Form (CNU), the Michigan State University Field Instructor Feedback Form (FIFF), and the Performance Assessment for California Teachers and Pre-service Teachers (PACT).

The focus of the research reported here is on the teacher performance assessment edTPA. The Stanford Center for Assessment, Learning and Equity (SCALE) (2013) defined edTPA as “the first nationally available, educator-designed performance assessment for new teachers entering the profession” (p. 4). Although edTPA is subject-specific with an assessment explicitly designed for agricultural education, all subject areas share a similar structure when evaluating the pre-service teacher’s ability to plan for instruction and assessment, instruct and engage students in learning, and assess student learning outcomes (SCALE, 2013). Under the rubric for edTPA, teacher candidates are responsible for submitting artifacts demonstrating competency in each of the aforementioned areas and providing written commentaries to explain the artifacts, and engage in reflective analyze of their professional learning through the act of teaching (SCALE, 2013). Artifacts take the form of lesson plans, copies of instructional and assessment materials, unedited video recording(s) of the candidate teaching, and pupil work samples (SCALE, 2013).

The Georgia Professional Standards Commission (2014) adopted new certification criteria that require pre-service teachers to successfully complete the edTPA assessment, in addition to completing university program requirements and passing the state-approved educator certification assessment, to achieve certification. The University of Georgia pilot tested the implementation of edTPA in spring 2014 to better prepare university supervisors, pre-service teachers, and cooperating teachers for full implementation of edTPA in 2015. The agricultural education teacher preparation faculty found pre-service teachers were adequately prepared for all of the edTPA requirements through coursework, with the exception of recording and reflecting on their instruction at the student teaching site. After considering ways to prepare pre-service teachers for this particular edTPA requirement, the agricultural education faculty instituted one technology mediated observation (TMO) to replace one of the three traditional face-to-face observations.

The use of TMO’s in teacher preparation is not new, though the technology itself and how it is implemented can vary from program to program. A study conducted by Dymond et al. (2008) used two-way videoconferencing software that allowed for live viewing of the pre-service teachers’ lesson via internet connection and gave the university supervisor capability to control the camera. Other studies involved a simpler technique in which the pre-service teacher recorded themselves using video recording equipment and then downloaded the recordings to a computer for future examination by the university supervisor (Alexander et al., 2012).

For the university in the research reported here, the TMO consisted of pre-service teachers recording their lesson via video, uploading the recording to a university storage platform, and engaging in a post-conference debriefing session with the university supervisor over telecommunication software. Having the pre-service teachers record themselves and then upload to a university storage platform mimicked the process and requirements for edTPA. However, the addition of the telecommunication software guided debriefing session between the university supervisor and pre-service teacher allowed for the process to become a reflective assessment technique by providing an opportunity for dialogue regarding the observation.

Studies using video recordings have been conducted in many educational fields to observe and assess benchmarks of pre-service teacher readiness (Alexander et al., 2012; Dymond et al., 2008; Lofthouse and Birmingham, 2010; Rock et al., 2009). The majority of the findings from these studies report positive outcomes (Alexander et al., 2012; Dymond et al., 2008; Lofthouse and Birmingham, 2010). Specially, Alexander et al. (2012) suggested video observation, when combined with self-monitoring, was effective in positively changing the behavior of pre-service teachers during the student teaching experience. Lofthouse and Birmingham (2010) reported that both pre-service teachers and their mentors perceived a heightened sense of reflection utilizing video footage, claiming the video helped the pre-service teacher to look at their lesson more objectively, thus, reflect more critically. The video was treated as evidence of teaching by the participants and was treated as such, often increasing the confidence of pre-service teachers in their teaching abilities (Lofthouse and Birmingham, 2010).

Agricultural education is a specialized education discipline, often with only one teacher employed per school district. TMO’s allow university supervisors to be less restricted by proximity to the university when establishing student teaching sites and instead focus on securing the best placement sites for pre-service teacher development. Reducing the number of on-site visits from the university is particularly advantageous for agricultural education compared to other disciplines that may have more teachers and programs in closer proximity to the university such as math and science education.

Despite advantages, there are weaknesses of TMO’s found in the literature. Pickering and Walsh (2011) explored using videoconferencing for pre-service teacher’s classroom observation and claimed students expressed frustration because they felt they were not able to capture all the behaviors of the classroom on video. Dymond et al. (2008) reported limitations related to technology including cost, experience with equipment, variable quality, and internet issues. Potential weaknesses of TMO’s in this study were addressed by
having two university-supervised observations remain face-to-face. The two face-to-face observations in this study consisted of the university supervisor visiting the pre-service teachers’ site location, observing classroom instruction, and completing a post-conference with the pre-service teacher at the end of the observation to debrief the pre-service teacher’s performance and explore areas for growth.

Other teacher preparation programs used video recordings during microteaching lessons prior to the student teaching experience; however, there was a dearth of literature in the agricultural education literature base to inform us about the process of preparing agricultural education pre-service teachers by using video recordings of classroom teaching during their student teaching experiences. Due to limited literature, we posited video recordings were underused in agricultural education teacher preparation programs during the student teaching experience and should be studied to report the process and inform practice as additional states adopted TPA across the nation. Although agricultural education teacher preparation teams can generalize from other educational fields’ findings in video observation, the emphasis on edTPA in our state led an exploration of video recordings as observation in the agricultural education student teaching experience so future teacher candidates would be better prepared for teacher performance assessments.

Focusing the Case
The purpose of the instrumental case study (Stake, 1995) reported here was to describe participants’ experiences related to the process of completing a TMO during the student teaching experience in an agricultural education teacher preparation program at a land-grant university. The spring 2014 pre-service teaching cohort, their cooperating teachers, and their university supervisors made up the sample frame. The case was bound by the context of pre-service teaching experience and length of one semester. We report 1) the steps required to prepare for and complete a TMO in school-based agricultural education, and 2) the progression of the pre-service teacher’s experiences as participants using TMO to fulfill requirements for the student teaching experience and certification.

Methods
Research Design
The TMO phenomenon was viewed through the lens of a qualitative, instrumental case study (Merriam, 1998) to collect rich, thick descriptions of participants’ experiences and other data to describe the entirety of the experience. Merriam (1998) described a case study as “an empirical inquiry that investigates a contemporary phenomenon within its real-life context” (p. 27). Describing participants’ experience in a case study format allows the reader to better understand individuals and their experiences from an emic (lived by participants) perspective. Specifically, an instrumental case study was chosen because it provided valuable insight into our issue. The case itself was not the focus of this study, rather the case assists in investigating our understanding of TMO use during the student teaching experience (Stake, 1995).

Research Participants
The sample frame for the study derived from a census of the spring 2014 cohort of pre-service teachers (N=20), their cooperating teachers (N=15), and their university supervisors (N=3). All were invited to participate in the study. A total of 17 individuals agreed to participate creating a convenience sample of 17 individuals including: nine pre-service teachers, five cooperating teachers, and three university supervisors. There were no incentives offered for participation. This particular cohort was selected because they were the first to participate in the new observation technique for the pilot study. The three university supervisors consisted of one adjunct instructor and two university tenure-track faculty from the agricultural education teacher education program at the land-grant university. The pre-service and cooperating teachers were matched prior to entering the student teaching experience. Since “a very large pool of potentially information-rich cases and no obvious reason to choose one case over another” existed, all participants who submitted a consent form provided data for the study (Sandelowski, 2000, p. 249). The University of Georgia Institutional Review Board approved the study protocol and all participants provided written informed consent prior to participation in the study.

Data Collection
Seventeen semi-structured interviews with nine pre-service teachers, five cooperating teachers and three university supervisors provided the primary data source. A list of interview questions can be found in Table 1. Merriam (1998) noted case studies could include all or a combination of the three main types of qualitative data, which are interviews, observations, and examination of documents. Additional data was obtained from the primary investigator’s involvement in the TMO process as a graduate teaching assistant.

After the pre-service teacher completed the TMO and post-conference with their cooperating teacher and university supervisor, we conducted semi-structured interviews with each pre-service teacher, cooperating teacher and university supervisor separately. The interview questions (Table 1) were developed to guide participants through explaining the TMO experience from start to finish to gain a deep understanding of how participants experienced the phenomena. The interview protocol followed a semi-structured format and allowed for probing questions to explore deeper into the meaning of the participants’ ideas (Merriam, 1998). Additionally, questions were developed to capture participants’ reflections of their pre-conceived notions of using technology as a form of teacher supervision.
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Data Analysis
Merriam (1998) suggested the best way to analyze case study data was “simultaneously with data collection” (p. 162). The interview data was analyzed and conveyed following Creswell’s (1998) four procedures of organizing data and consisted of categorizing data, interpreting data, identifying patterns, and synthesizing the data. Following each interview, the audiotape was replayed and transcribed verbatim to carry learned knowledge to the next participant interview. To help improve the quality of the research, data from cooperating teachers and university supervisors was used to triangulate the pre-service teacher data to verify claims (Stake, 2010). Triangulating the three data sources led to a cross point of establishment quality data and encouraged “consistent interpretation” (Tracy, 2010, p. 843). The data are reported primarily from the perspective of the pre-service teachers. Cooperating teachers and university supervisors’ perspectives were used as supporting narrative.

After the data was transcribed, it was loaded into a qualitative data analysis software program, ATLAS.ti® and coded line-by-line. The seventeen verbatim transcripts provided the structure of TMO as experienced by participants and resulted in 251 significant statements. These statements were then examined for relationships and grouped accordingly. The statements were then further collapsed into three emergent primary themes that formed the basis for conclusions, recommendations, and directions for future research.

Trustworthiness and Credibility
Merriam (1998) discussed various strategies for promoting validity and reliability in qualitative research that were used in this case study including triangulation, member checks, rich, thick descriptions, and researcher reflexivity. Triangulation of data (utilizing the three different participant groups: pre-service teachers, cooperating teachers, and university supervisors) during collection was used to confirm findings. Member checking was also used throughout data collection and analysis. We asked each participant to review their interview transcripts for accuracy in addition to sharing the final report with them to enhance validity. The review permitted a time for reflection on their statements and to approve, edit, or disapprove the transcription. Tracy’s eight criteria for rigorous qualitative research (2010) suggested being ethically self-conscience and to avoid “co-opting” participants just to get a good story. According to Tracy (2010), using participants’ quotations in context allowed for a clear interpretation of the data and helped build the case for the reader. It was our responsibility to provide adequate information, so readers are able to make their own assumptions about the case (Tracy, 2010).

The recent emphasis on teacher performance assessment made the study relevant and timely (Tracy, 2010). To reach a “rich complexity of abundance” we spent time in the field collecting data, writing field notes and journaling about our experiences as qualitative researchers in the situation to build “meaningful and significant claims” (Tracy, 2010, p. 841). Finally, we engaged in researcher reflexivity throughout the process. As qualitative researchers, it is our responsibility to address our experiences and biases as graduate student and faculty members, educators, and as subjective beings. Throughout the study to help harness bias, reflexive journal entries were bracketed.

Description of the Technology Mediated Observation Experience
A meeting was held with pre-service teachers, cooperating teachers, and university supervisors in January 2014 to discuss the student teaching experience and give a detailed explanation about TMO and its requirements. A question and answer session was held to alleviate misconceptions of the TMO process. Many of the pre-service teachers and cooperating teachers expressed concerns with the new method. The most emergent concern was procuring signed consent forms from their students for the use of video recording with minors. After the meeting commenced, we sent out three documents needed for completing the TMO: an in-depth TMO procedure form, a school consent form, and a parent/guardian consent form. The TMO procedure form detailed the process the pre-service teachers should follow to complete the TMO observation. Figure 1 outlines the five-step process. Below we describe the five-step process in more detail for the purposes of replicating the TMO method and to shed light on the challenges that occurred throughout the process.

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Collaboration with the video broadcasting class provided the school’s video broadcasting teacher and students. Four of the six who borrowed a device from the university department, thus, cooperating teacher’s video device, or a borrowed video recording devices including a personal tablet, their for videoing.

Step 2: Establish production specifications

Pre-service teachers used a variety of video recording devices including a personal tablet, their cooperating teacher’s video device, or a borrowed video device from their student teaching site. None borrowed equipment from the university department, thus, purchasing equipment is not necessary to implement edTPA. Four of the six who borrowed a device from their student teaching experience site collaborated with the school’s video broadcasting teacher and students. Collaboration with the video broadcasting class provided a unique experience for the pre-service teacher to work with another school professional to address their video needs. In one instance, the pre-service teacher referred to the TMO as “so easy” after inviting the video broadcasting class to video her lesson. She stated, “…just went and talked to the teacher. He was really excited. He sent me two kids that brought me everything down there. Brought me the microphone, set everything up, came back at the end of class took everything away, and put my video together and sent it to me. It was so easy” (P5, 65).

Step 3: Capture one complete lesson on video

Pre-service teachers were given one rule for the video recording portion of the TMO: the lesson was to be video recorded in its entirety and not edited. Classes ranged from 50 to 90 minutes and pre-service teachers were expected to video from the beginning to the end, so university supervisors could observe a complete lesson. The pre-service teachers interpreted the directions differently. Seven of the nine used their cooperating teacher to capture the lesson, while two used the video broadcasting class to record the lesson. Those two pre-service teachers had different perspectives on using video broadcasting students to record their video after completion. One of the two pre-service teachers had a very positive experience and the other warned against allowing video broadcasting students to capture the video because they arrived late to the class period. The pre-service teacher had to start class without them, so his video recording began after the class started.

Because the university supervisors did not specify if the video recording device should stay stationary or be moved, the pre-service teachers used the option they thought would best show their teaching behaviors and interaction with students. Four of the nine pre-service teachers asked the individual videoing to move around with them. The other five stayed in one area with a wide frame to capture the entire classroom. Although all the pre-service teachers were concerned about the recording’s ability to capture their teaching behaviors, the three university supervisors said they were able to adequately assess all the pre-service teachers by watching their video recordings. One university supervisor called it a “suitable option” because she “didn’t see much difference between when I was in the classroom watching them face-to-face versus watching their actions on camera” (P13, 07). The university supervisors’ remarks indicate it did not matter the type of video device or where the individual is placed during the class recording because the supervisor was familiar with the pre-service teacher’s ability from the first on-site observation.

Step 4: Upload video to university storage platform

The video recording was uploaded to the university-operated podcasting website where university supervisors watched the video recording of the pre-service
teacher teaching a lesson of their choice. Pre-service teachers were expected to upload the video as soon as possible after the recording was completed. The free-of-charge university-operated podcasting website allowed the following file formats: .aif, .aiff, .mp3, .wav, .m4a, .m4b, .mov, .mp4, .m4p, .aac, .m4v, or .pdf. Because pre-service teachers used a variety of video recording devices, some files had to be converted prior to uploading. Out of the nine pre-service teachers, one uploaded his video recording without assistance from a cooperating teacher, librarian, pre-service teaching partner, or video broadcasting teacher. The other eight pre-service teachers required assistance.

The podcasting website caused some distress to the university supervisors as well. One university supervisor suggested training to demonstrate detailed operating directions for the podcasting platform.

**Step 5: Post-conference with university supervisor via web conferencing platform**

Prior to watching the video recording, the university supervisors used the Lesson Plan Evaluation rubric used in all three observations to evaluate the pre-service teacher’s lesson plan preparation. While watching the video recording, the university supervisor used the Assessment of Teaching Evaluation rubric (the same rubric used in the face-to-face observations) to assess the pre-service teacher’s teaching ability. It was suggested that in the future university supervisors request pre-service teachers evaluate their own lesson plan with the Lesson Plan Evaluation rubric and reflect on their work using the Assessment of Teaching Evaluation rubric prior to post-conference with their university supervisor. Only five of the nine pre-service teachers reviewed their video before the post-conference with their university supervisors.

The post-conference debriefing session of the video was originally supposed to occur in the university’s web conferencing platform, Blackboard Collaborate. However, due to technology problems, no pre-service teachers used the video, audio, and chat capabilities of Blackboard. For those who completed the post-conference with their university supervisors before the interview, two (P5 and P6) pre-service teachers debriefed over a telephone call and the other seven debriefed at the next face-to-face observation. P5 and P6 had the same university supervisor but expressed different opinions of the technology mediated post-conference in comparison to the face-to-face observation. P6 “liked it better right after (face-to-face) because you are able to improve the next day” (P6, 42). On the other hand, P5 thought the post-conference process was just as beneficial as the immediate post-conference concluding the face-to-face observation. She said she had time to think about questions while watching her video and asked them during the technology mediated post-conference session.

Additionally, P5 said she did not feel like the university supervisor had to run to another school. “I think if anything it might have been better because she [university supervisor] wasn’t rushed.” Although there was no official deadline to complete the TMO, university supervisors expected pre-service teachers to complete the TMO by the end of March. Some pre-service teachers completed it later in the semester and subsequently could not take advantage of time in their student teaching experience to implement suggestions offered by the university supervisor. It is recommended that in the future TMO debrief conferences between the pre-service teacher and university supervisor have a set deadline that occurs soon after the lesson is taught to allow ample opportunities for the pre-service teacher to implement changes into their teaching.

**Findings**

The previous section described how the TMO was implemented in our pilot study with pre-service teachers and their cooperating teachers. We also described how the participants experienced the process of obtaining informed consent for videotaping the lesson with minors present, how the video was processed, and the subsequent post-conference session that comprised one of three university supervised observations.

The following section presents a synthesis of the data in terms of the participants’ reflections and evaluation of the experience from an emic perspective, or their lived experience of the TMO. While interviewing the seventeen participants about the process of the TMO, they were transparent about the impact of the TMO on their student teaching experience and the usefulness of the practice for future application.

**Theme 1: Pre-Service Teachers Reported a Positive Experience with TMO**

After completing the TMO, pre-service teachers were generally positive overall about their experience. After observing the initial dissatisfaction at the meeting in January where pre-service and cooperating teachers were notified about the change in the observational protocol to include one TMO, we were unsure if their attitude would improve. Although some apprehension was still present at the time of the interview, all participants expressed positive sentiments about the inclusion of a TMO in the student teaching experience. When P3 was asked about his final thoughts on the process, he said, “I think it worked out really well. It was a lot easier than what I thought it was originally going to be. I thought it was going to be almost an act of Congress to get everything done but really it flowed a lot smoother than I thought it would” (P3, 39).

The positive comments included remarks about the consent process, videoing, uploading the files, post-conference, and the overall TMO experience. The pre-service teachers were asked if there was a difference between having the university supervisor present compared to sharing a video clip. Three of the nine pre-service teachers felt there was less pressure with the TMO compared to a face-to-face observation. P8
said, “I feel like when my supervising professor came in it would always make me a little bit more anxious because they’re right there but with a video it’s just sort of a distant connection and, so I feel like you are more relaxed about it” (P8, 16). There was also the ease of being able to return to a particular video later because it was permanently recorded. P6 commented, “It’s nice to have it so you can play it back to your supervising teacher and I know we were both in here but also, let’s look at it again.”

P5 discussed how their video reflection took place over the phone, “She still sent me my papers of how it looked, what I did right, what I could improve. It was just like having her there. I just talked to her on the phone instead of in person.” P1 stated that the delayed feedback did not influence the quality of the teaching debrief session, stating “it was pretty much the same”.

Theme 2: TMO Encouraged Self-Monitoring and Reflexive Practice

The TMO process provided pre-service teachers with the opportunity to self-monitor behaviors during the student teaching experience and increased opportunity for reflexive practice. Our finding is consistent with Kopcha and Alger (2006) and Lofthouse and Birmingham (2010) who found participants reported their teaching efficacy increased because they were able to observe themselves via video recording. Our participants were able to watch their videos and assessed their teaching abilities.

P2 said, ‘With a video you can look back and be like, ‘Oh, ok. I see that now’, so the video is a whole lot of help when you are trying to learn something different or change a bad habit” (P2, 61). Pre-service teachers engaged in self-assessment of their teaching. Traditionally, they were expected to debrief with university supervisors or cooperating teachers directly after the lesson was taught face-to-face when details were fresh. TMO allowed for more flexibility and continuous improvement via reflection time to process events. “A week later I can go back to that video and say I should probably change that” (P4, 45). Our findings mirror Hager’s (2012) case study of using video recordings in student teaching to encourage pre-service teachers self-monitoring for the adoption of desired teaching behaviors. In describing the ability to go back and watch the video P5 said, “I feel like it’s something that can definitely benefit a lot of people.”

Theme 3: TMO Provides Opportunity to Work with Other Professionals

TMO provided pre-service teachers with the opportunity to work with other professionals. Since the pre-service teachers were not given direct instructions on how to proceed throughout the TMO process, each developed their own plan to complete the task. Three of the nine pre-service teachers invited the video broadcasting teacher and students into the classroom to film and prepare the file for upload. Others borrowed video devices from pre-service teaching partners, cooperating teachers or librarians. P5 worked with another school professional, “I went and talked to the journalism teacher. He was really excited. He sent two kids that brought everything, brought me the microphone set up, came back at the end of class, put my video together and sent it to me.” Agriculture teachers are advised to work with other faculty, staff and administration in their schools. TMO experience provided an opportunity for pre-service teachers to engage in collegial behaviors at their cooperating school.

Discussion

Theme 1: We were initially concerned the participants would feel negatively about the TMO because it was a new protocol and change is often resisted. All the pre-service teachers had experience with recording one microteaching in an agricultural education courses during their preparation work. The course required the pre-service teachers to assess their teaching abilities by watching their microteaching video. When asked about their feelings of being recorded during their microteaching, participants did express some dread for re-watching themselves on video, but all agreed it had a positive impact on reflexive practice. After participating in the TMO process, pre-service teachers, cooperating teachers and university supervisors were positive about the overall experience. These comments echo findings from previous studies that report positive experiences with TMO’s in both pre-service coursework and the student teaching experience (Alexander et al., 2012; Dymond et al., 2008; Lofthouse and Birmingham, 2010).

Since it was the pilot year of TMO implementation at UGA, there was a learning curve for all involved; however, the pre-service teachers were resilient. They solved problems and completed the new observation method along with additional student teaching requirements with little difficulty. The pre-service teachers in this study were passionate about their field, willing to work hard, dedicated themselves to finishing the job, and had a clear end goal in mind at all times. In this case, the goal was completing the program, including completion of the TMO, and earning certification.

Camp and Bailey (1998) and Covington and Dobbins (2004) described proponents of national agricultural education certification programs but neither offered an ideal number of observations or the specifics of pre-service teachers site locations. As university faculty time demands increase with rising expectations for scholarship nationally, 33% of travel time was reduced by implementing TMO as university supervisors travelled to the school sites twice versus three times during the semester. The implementation of TMO offered pre-service teachers’ a positive experience while saving faculty time and travel expenses.

Theme 2: Introducing TMO offered pre-service teachers a unique look into their teaching performance. In a face-to-face observation, pre-service teachers do not have the opportunity to return to the lesson and
assess behaviors and interactions with students. A face-to-face observation requires pre-service teachers to recall all information directly after the lesson, which could be difficult for some pre-service teachers. With the ability to watch a video of the complete lesson, pre-service teachers can dissect positive and negative behaviors with the cooperating teacher or university supervisor. Pre-service teachers were encouraged by the self-monitoring opportunity available with TMO, increasing their reflexive practice.

Theme 3: Roberts and Dyer (2004) emphasized the importance of working with other teachers as a characteristic of effective agriculture teachers. The student teaching experience should be a compilation of a variety of tasks, including working with other professionals. Professionals could include other teachers in various disciplines, library staff, cooperating teachers, university supervisors, and/or pre-service teaching partners. The TMO provided opportunities for professionals to work together.

Traditionally, a face-to-face observation is scheduled between the cooperating teacher, university supervisor, and pre-service teacher. It is completed in the cooperating teacher’s classroom with minimal interaction with other teachers and professionals. In comparison, the participants from this study completed the TMO by reaching out to other professionals to collaborate to execute the recording, uploading, and debriefing process. Roberts and Dyer (2004) and Jenkins et al. (2010) stated an effective agriculture teacher has “a healthy relationship with others”, “a supportive administration”, and “instruction helps to build multiple relationships” (p. 59-60). This theme highlighted an unexpected outcome of the pre-service teachers engaging in the TMO process.

Recommendations

Based on these findings, TMO is suitable for adoption in other teacher certification units. The benefits include an overall positive experience among all participants and conservation of university faculty travel time by 33%. Even though the observational method was novel, all of the pre-service and cooperating teachers completed the process without major complications.

To take advantage of self-monitoring in the TMO, teacher preparation teams are advised to require pre-service teachers to watch their video recording and evaluate desired qualities before participating in the post-conference with the university supervisor. Kopcha and Alger (2006) and Hager (2012) conclude self-monitoring can improve pre-service teacher’s experience and build desirable teaching skills. Pre-service teachers should be trained in how to most effectively engage in self-reflection, perhaps during their coursework prior to student teaching. Elaboration on techniques to utilize, what to look for, and reflection forms to complete could further enrich the self-monitoring experience.

University teacher preparation teams are advised to encourage pre-service teachers to collaborate with other professionals at their student teaching sites to create the required videos for edTPA. TMOs are difficult to complete with one person, providing an opportunity to reach out to other professionals throughout the semester and ask for assistance. Through this process, pre-service teachers saw the usefulness of networking with other professionals and may carry this skill into their teaching careers. Using the list of effective characteristics from Jenkins et al. (2010), TMO can serve the purpose of observation for the university supervisor as well as add a new dimension to the pre-service teacher’s student teaching practice that has not been available in the past.

Conclusions

Overall, using TMO in the pre-service teaching experience was a success. The use of TMO’s were viewed as a positive experience by all participants, fostered self-monitoring and reflection in teaching, allowed for collaboration with other professionals in the school, and relieved 33% of travel for university supervisors.

Myers and Dyer (2004) posit that the agricultural education literature base is remiss in evaluating the teacher education program model. The research reported here describes advancements in one university’s teacher education program and contributes to the literature by describing the process of conducting TMO to replace a face-to-face observation in an agriculture education student teaching experience. Findings support the need for a well-planned and executed TMO process during the student teaching experience. Participants suggested more information about the TMO process should be shared during the semester leading up to the clinical practice teaching experience so pre-service teachers, cooperating teachers and university supervisors can form a good working relationship prior to the first official student teaching meeting.

Some participants stated TMO spurred positive reflexive practice as they were curious about the new technology much like how students’ behaviors change when a university supervisor, or other professional visits their familiar classroom surroundings during a face-to-face observation. Participants’ experience with TMO supported development of effective teaching behaviors (Jenkins et al., 2010). Based on the findings from this case study, teacher preparation units should benefit from implementing a TMO into the student teaching practice as participants increased self-monitoring and working with other professionals.

Future Research

As research related to TMO in the agriculture education context is minimal, future research should examine the impact of TMO on desired teacher attributes. Future research should examine what specifically the pre-service teachers are discovering about themselves as teachers when engaging in self-reflection aided by TMO. How did revelations about their teaching affect future practice in both the student teaching experience
and into their first few years in service? Did engaging in reflection early in the student teaching experience encourage a habit of reflection that pre-service teachers carried into their first few years of teaching?

Future research should be conducted to compare the effectiveness of the TMO to the traditional face-to-face observation to discover any differences, major benefits, or drawbacks between the two methods.

Future research could explore the best professionals to collaborate with regarding TMOs and a follow-up of pre-service teachers to see if they carry the habit of collaboration into their careers. While the results of this study cannot be generalized beyond the participants, we are confident the outcomes from using TMO will support the development of highly qualified agriculture educators.

**Literature Cited**


A Case Study of Technology Mediated


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