A Comparison and Analysis of Preservice Teachers' Oral and Written Reflections

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Teacher reflection continues to be a key component of many preservice teaching programs across the United States. In Agricultural Education, reflection begins in the early field experience and continues throughout the teacher education program as an important opportunity to assess students' proficiency of teaching concepts, thought process, and growth over time. The purpose of this study was to examine the topics of preservice teachers' reflections and compare the effectiveness of written and reflective interviews. We examined the written and reflective interviews of four preservice teachers over three reflection cycles, comparing themes, levels of reflection, and completeness to determine the benefit of multiple methods of reflection. Applying the theory of preservice teacher concerns, we found participants tended to report more task reflection than self-concerns or impact concerns when given open-ended reflection prompts. Moreover, written reflections tended to be more summative in nature, while reflective interviews provided more support and detail. The findings indicate reflection across multiple methods may provide a more complete assessment of student proficiency. Teacher education programs could benefit from these findings by analyzing their means of facilitating preservice teacher reflection.

Given an increasing amount of research which shows teachers are one of the most crucial components of student learning, some have called for improving our preservice teacher training and certification programs (Cochran-Smith & Zeichner, 2009; Darling-Hammond & Sykes, 2003; Emerick, Hirsch, & Berry, 2004); however, with so many components to a sound preservice teacher education program, where do we focus our efforts? One focus area of preservice teacher training has been reflection on practice, also referred to as teacher reflection.

Originally conceptualized by Dewey (1933) and again by Schön in 1983, reflection is a vital piece of learning, one where practice can be mediated through examining one's own experiences – Dewey referred to this conscious activity as judgment (Kolb, 1984). Grounded in experiential learning, Kolb further explained that knowledge is acquired through a complex social learning process and reflection plays a key role in the meaning making process. Paulo Freire (1970) further examined the concept of reflection, arguing that our world is made up of two dimensions, reflection and action, and each is necessary for the other. To connect these concepts to preservice teachers, the experience or action would represent a classroom teaching experience, and reflection would include a teacher's reflective examination of the experience.

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Hargreaves and Fullan (1992) described reflection as the "kind of writing about professional experience that can profitably be mined for the deeper meaning that constitutes new understanding of self-in-the-world" (p.166). In other words, a deeper understanding of these experiences through reflective activities helped learners, in this case preservice teachers, situate themselves in the world of their new profession.

Teacher reflection could be approached through the lens of participation and reification through practice. Situated in communities of practice, Wenger (1998) described participation as the actual experience; however, for an experience to become meaningful, the process of reification must ensue. Reification refers to giving a thing a certain meaning; including making, designing, representing, naming, encoding, and describing. While participation and reification can be applied to a variety of situations and professions, we may view a teacher conducting a lesson as a form of participation, and through reflection on their practice, teachers reify their teaching experience, giving its nuances, components, pedagogy and discourse meaning. According to Wenger, it is only through a combination of participation and reification, what Wenger calls duality, where our engagement in activities like teaching can become meaningful.

Greiman and Covington (2007) investigated teacher reflection through journaling among preservice agricultural education teachers. Their study helped address the notion of how reflection should be structured. Of the three most common forms of reflection, their data showed verbal reflection, self-reflection, and written reflection (in order of popularity) were the most desirable among the preservice participants. These findings are similar to those of Huang (2010), who found that English as a Second Language students also had preferences among reflection modalities, though Wells (1999) pointed out each modality had its limitations, indicating student choice of only one form of reflection may not engage the student in full reflection. This may also limit the ability of university faculty to accurately assess a student's reflection on practice.

In Agricultural Education, reflection begins early in the undergraduate process. Many Agricultural Education departments require reflection activities within early field experiences (Retallick & Miller, 2007). A study by Epler, Drape, Broyles, and Rudd (2013) compared the depth of teacher reflection among preservice teachers through three different models; a control group that reflected on a written reflection form, a treatment group that reflected collaboratively and on a written reflection form, and a treatment group that reflected individually through a think-aloud process. The study showed significant differences in teachers' depth of reflection existed between all three groups, with the collaborative and think-aloud methods yielding the deepest forms of reflection. The researchers' findings indicated teachers' written reflection as a standalone activity may not capture the same depth as other methods.

Given the importance of student/preservice teacher reflection and its rise in popularity, many have proposed models and made recommendations to help structure the experience (Etscheidt, 2012; Gossman, 2009; Greiman & Covington, 2007; Howard, 2003; Marcos, Sanchez, & Tillema, 2010; Oberg & Underwood, 1992; Ward & McCotter, 2004; Yost, Sentner, & Forenza-Bailey, 2000). Others have proposed teacher reflection activities that emphasize metacognition (Flavell, 1979). Metacognition involves teachers' own self-reflection in real time, where teachers think about their thinking as it occurs in practice (McAlpine, Weston, Beauchamp, Wiseman, & Beauchamp, 1999). While this area of teacher reflection has its place in agricultural education teacher reflection, we chose to focus our investigation on reflection after practice, as one of our primary areas of interest was examining the potential differences between written reflections and interviews. These differences inform the effectiveness and efficiency of our teacher education programs. Are we utilizing the most effective models in the facilitation of students' reflection? Do the approaches we use maximize reflection while informing us with regard to student progress toward more meaningful reflection? Through our study, we hope to add meaningful data which will help teacher education programs.

Framework for the Study

Given so many approaches to a concept widely adopted by the teacher education community, it can be challenging to select a framework that fully addresses the benefits of teacher reflection. Our connection to teacher education led us to adopt a framework offered by Fuller, Parsons and Watkins (1974). Rather than specifically adopting a model that narrowly addressed teacher reflection, we chose a model that we hoped would be beneficial in examining preservice teacher reflection activities while still providing data on teacher development. We believe a stronger tie between teacher reflection and the benefit to preservice teacher development will provide valuable data on teacher improvement.

Fuller et al.'s (1974) model served as the conceptual model for this study. Fuller developed a teaching concerns model in 1969 which focused on the self and the pupils. Fuller's research focused on stages of concern in both preservice and beginning teachers, identifying numerous categories of teaching concerns. Fuller went on to work with Parsons and Watkins in 1974 to group the specific categories into three stages: self-concerns, task concerns, and impact concerns. Self-concerns are related to the teachers' worries about their ability to perform in the school environment (Marshall, 1996). Task concerns focus on daily teaching duties that pertain to the teaching methods and performance of the teacher. Finally, impact concerns describe the teacher's concerns regarding the outcomes of the students and their learning (Srivastava, 2007).

Fuller, Parsons, and Watkins (1974) suggested teachers continuously express concerns regarding classroom instruction. They also indicated these concerns change over time. Initially, teachers express a high level of self-concern regarding their own ability to be successful in the classroom. These concerns must be addressed before teachers can begin to think about the larger scope of teaching. Earlier research by Fuller and Case (1972) developed seven specific categories which were later condensed into three main categories: self, task, and impact (Fuller et al., 1974). Kagan (1992) later confirmed that preservice teachers initially identify more with their students and less with the role of teacher. The second stage focuses on survival, control in the classroom and mastery of the subject matter. The final stage focuses on the teaching situation and the outcomes for students. Burden (1990) verified this by indicating a teacher develops as their concerns move from the self, to the teaching situation, and finally to the pupils.

Later research by Fuller and Bown (1975) described beginning teachers as being concerned primarily with self: believing themselves to be capable of teaching students and becoming a part of the educational environment. As self-concerns are resolved, the teacher shifts from self to task concerns, or fears about developing appropriate instructional materials and working with students. Teachers only become concerned about the final category, known as impact concerns, when self and task concerns have been resolved. Impact concerns regard larger educational decisions and policy and how trends and issues impact students in the classroom.

Purpose and Objectives

Fuller et al.'s (1974) theory of preservice teacher concerns can serve as an effective model for analyzing teacher reflection. Utilizing this model, the purpose of this study is to determine the topics of reflection by preservice teachers as they reflected on their microteaching experience in a methods course. Furthermore, this study aims to determine the effectiveness and practicality of multiple methods of communicating the topics of reflection. The objectives are: (a) on what type of topics do preservice teachers reflect; and (b) how does communication compare across written and oral interview reflections? The second objective was emergent in nature (Creswell, 2012). Though our review of literature indicated potential differences in reflection depending on reflection type, we did not explicitly investigate this phenomenon from the onset of this study. As we initially analyzed the data under the Fuller et al. (1974) model, we found unique differences in the preservice teachers' reflections between the written and oral

interviews. Consequently, the second objective was added, and we continued our analysis of the data with both objectives in mind. This study addresses Priority Area 4 of the American Association for Agricultural Education's National Research Agenda (Doerfert, 2011). Moreover, teacher reflection remains one of the most important aspects of teacher education, and we seek to add to the body of literature to make more informed decisions in our development and enhancement of teacher education programs in Agricultural Education.

Methods and Procedures

In this qualitative study, we utilized a descriptive and interpretive design using a generic approach, the most commonly used approach in Agricultural Education and includes "description, interpretation, and understanding in the form of recurrent patterns, themes or categories" (Merriam, 1998, p. 34). According to Creswell (2008), qualitative research focusses on the perceptions and experiences of participants. In this study, we elicited experiences and perceptions of participants through interviews and written prompts.

Data Collection

Though Fuller et al.'s (1974) model helped us analyze our data, we are careful to note this model did not guide the oral interview or written reflection questions and protocol. The format of teacher reflection in this study was the existing protocol for reflection at the teacher education program in this study. Rather than completely guiding the entire reflection process, the framework we chose served as a means to help us analyze the university's existing teacher reflection practice.

We captured the interpretations of the participants' reflections through the transcription and analysis of three semi-structured interviews called reflective interviews (Trumbull & Slack, 1991) using a set reflective protocol, and through the examination and analysis of written reflections from the preservice teachers. We collected data for each round after they had completed a full clinical teaching experience.

For each clinical teaching experience, the teacher candidates submitted a draft lesson plan, taught the lesson to their peers, and then watched their own performance on DVD. They were instructed to look for things that went well and things that did not. Within one week of teaching their lesson, they brought their self-feedback to a half hour structured reflective interview with the course teaching assistant. To allow these preservice teachers to reflect and share their thoughts about their clinical teaching experiences, we planned and designed eight structured interview questions ahead of time. These questions were based on previous practice with these feedback conferences at this institution, but intentionally structured to spiral their thinking beyond generalities and into higher levels (Whipp, 2003) as the reflective conference proceeded. The predetermined questions included, "What went well?" "What didn't go well?" "If you were going to teach this again, what would you do differently?" "How did what you did in the classroom compare to what you said you were going to do in the plan?" "Do you think the students achieved the lesson's objectives? "What did you learn from this experience that you can use to plan for the future?" "What have you learned about yourself as a teacher?" and "What is the most useful thing that you have taken away from this experience?" Throughout the interviews, the researcher asked follow up questions to obtain additional information on any interesting or unexpected answers that were provided. The lead researcher as well as teaching assistants conducted all of the interviews with the participants.

At the end of the reflective interview, the preservice teachers received copies of their peers' feedback, collected after the clinical teaching experience, and received a form to capture their handwritten reflection. Written reflections consisted of responses to three questions 1) "Do you think your lesson was successful? Why or why not?" 2) "What alternative teaching methods

could you have used on this lesson and how might these have improved the learning process for students, collectively or individually?" and, 3) "What moral and/or ethical concerns occurred / could occur as a result of the lesson. Justify your answer." These questions were chosen from Costa and Garmston's (2002) work in Cognitive Coaching, Pultorak's (1993) reflective thinking work and a handout on cognitive coaching obtained online from University of Pittsburg that is no longer available. Those questions were narrowed down by a panel of experts to the final three questions listed above. The preservice teachers then submitted the written reflections to the course instructor within one week of the reflective interview. There was no requirement as to the length of the written reflections. Submission of the written reflection completed the cycle for one clinical teaching experience. The participants completed this cycle three times during the term.

Each cycle of the clinical teaching experience focused on a different component of lesson delivery. Round one involved delivering an interest approach and teaching the first few minutes of a classroom lesson. Round two was a "stand and deliver" lesson where they taught a full agricultural content lesson to their peers. During round three, these preservice teachers facilitated their peers through a laboratory or other type of engaging activity. We collected data over the course of the semester, including all three rounds.

Trustworthiness is the "degree of confidence that the findings of the study represent the respondents and their context" (Dooley, 2007, p. 38). Trustworthiness can be achieved through credibility, transferability, dependability, and confirmability. Credibility, or internal validity, can be achieved through triangulation (Merriam, 2009). To insure credibility, we used two different types of triangulation (Merriam, 2009) in this study: data triangulation and triangulation through multiple analysts. Maxwell (2005), discussing the benefits of multiple methods of data collection stated that "this strategy reduces the risk of chance associations and of systematic biases due to a specific method, and allows a better assessment of the generality of the explanations that one develops" (p. 112). We triangulated the data through careful analysis of written reflections as well as interview reflections. As researchers, we performed separate analyses of the data. However, we collectively combined each analysis to result in the reported findings. We also utilized constant comparisons of data and field notes to ensure congruence among all researchers. Experts in the field of agricultural education and teacher preparation reviewed the interview and written reflection questions. Furthermore, multiple researchers helped to check biases and ensure that the findings were indeed within the data collected.

Another method we used to insure credibility was the use of quasi-statistics. Maxwell (2005) stated "quasi-statistics not only allow you to test and support claims that are inherently quantitative, but also enable you to assess the amount of evidence in your data that bears on a particular conclusion or threat" (p. 113). Quasi-statistics involve simple counts to make qualitative statements more precise. While not always included, numerical descriptions can be appropriate within a qualitative study, if it lends value to the study (Hammersley, 1992). Additionally, Becker (1990) would argue a researcher should offer the types of generalizations their situation makes possible. In this study, we compared types of reflection by utilizing counting in order to add credibility to the findings.

Lincoln and Guba (1985) argued the decisions regarding transferability lie with those seeking to make application, not the original researcher. However, the researchers are obligated to provide "sufficient descriptive data to make that transferability possible" (Lincoln & Guba, 1985, p. 298). This can be achieved by collecting and describing the context and data in rich details. Additionally, purposive sampling is an effective method to facilitate transferability by increasing the range of data obtained about the context. The context for this research was an undergraduate teacher preparation program. Participants were all enrolled in a full-time teaching methods course during the fall term of their senior year, immediately before their student teaching experience. Although we collected data from all 28 students in the pool of preservice teachers at University of Missouri, we purposefully selected four individuals to analyze and assigned them pseudonyms. We desired a typical sample in which we sought the average person and situation, as prescribed

by Merriam (2009). Selection criteria in which individuals were selected in order to achieve a typical sample included: 1) male and female participants of equal number; 2) varied range of student teaching and academic ability within the cohort; and, 3) varied breadth and depth of reflections. There were two females and two males selected and all were undergraduate Agricultural Education majors seeking high school licensure and were going to be student teaching during the next semester. All of the preservice teachers self-identified as white and were products of a high school agricultural education program in Missouri. Finally, we found only four participants were necessary for the study as data saturation began to occur.

Dependability and confirmability were sought by collecting and documenting all phases and aspects of the research through an audit trail. We recorded the reflective interviews and transcribed them verbatim, and then checked for accuracy by comparing the transcripts to the audio recording. Data was saved in its raw form so that it could be easily traceable. We compiled two separate documents which included one document for the interview transcripts and one for the written transcripts. Individual artifacts were systematically organized and coalesced into one of the two documents for analysis. Finally, we ensured dependability through careful reviews of interview questions and similar probing questions for all participants across all rounds.

Data Analysis

We audio recorded and transcribed the half hour reflective interviews while capturing the data from the written reflections in their raw form. The collected data was analyzed and coded for thematic content. We used coding protocols outlined by Auerbach and Silverstein (2003) to perform the content analysis. We analyzed the data through a coding process which began with an initial reading of all collected data with the research concerns and the Fuller et al. (1974) theoretical framework as the lens. We wrote notes and memos during the process and identified relevant text. After the initial reading we coded the data using the constructs consistent with our theoretical frameworks. Finally, we went back to the literature to find connections from the current data to theories and frameworks in the literature. Findings of interest emerged and similarities and differences were noticed in the data between the written reflections and the reflective interviews.

Additionally, we made simple counts of the frequency of certain themes and codes that emerged. This quasi-statistical analysis provided valuable information in comparing the type and amount of topics on which the preservice teachers reflected. Simple counts were obtained by categorizing reflection topics into the three main teaching concern categories from the theory of preservice concerns (Fuller et al., 1974) and then counting the frequencies of each across both methods of reflection. Percentages were then calculated based on the frequency counts.

Limitations

While quantitative studies look at many cases with few variables, qualitative work is more suited for few cases with many variables (Creswell, 2008). Therefore, this qualitative research study is limited in scope because of the focus on a smaller number of participants in greater depth, and limits the generalizability of the findings (Maxwell, 2005). While this study may have the potential to be transferable to other settings, we make no attempt to generalize further. The findings from this study are limited to the context of the four preservice teachers who participated in the study and should not be interpreted beyond the scope of the participants.

The interview protocol was set in advance, but because the protocol allowed for follow-up questions and conversation around expressed concerns, there were slight differences in the interview rounds. Furthermore, while the questions asked in each of the two reflection methods were based upon the same criteria, the specific questions asked in the interview were different than those prompted in the written reflection. We accounted for this as much as possible in our

analysis of the data and believed this approach would provide more useful data than asking the same questions in two formats. We anticipated doing so would lead to participant fatigue and limit the opportunity to demonstrate growth in their reflection. This study is also limited because it focused on college students in a methods course using peer teaching rather than teachers in the field with secondary students. Three reflection cycles were used because the time for the study was limited to a semester. As researchers serving as the research instrument, we acknowledge the inherent bias that may have influenced the collection of data and its analysis.

Findings

The first objective was to characterize how preservice teachers reflect across three major topics regarding their clinical teaching experience: teaching tasks, self as teachers, and impact concerns. We characterized concerns regarding teaching tasks as statements dealing with actions or activities a teacher does. The statement "I ended up not using the small whiteboard" was an example of teacher task. Verbs such as did, used, said, saw, and wrote when referring to the teacher were usually coded as teaching tasks. Concerns about self as teachers were described by statements such as "I was enthusiastic" and "I didn't feel like I was being clear." The past tense form of the verb *to be* was an indicator for coding self as teachers. We characterized impact concerns as statements focused on the student's actions or learning and not on the teacher. Statements such as "The students were engaged and seemed to be learning" and "They were motivated to learn" were examples of impact concerns.

The preservice teachers discussed many different topics of concern in their reflections both in writing and during the interviews. For example, when reflecting about self as teacher, the preservice teachers discussed concerns about their ability to be enthusiastic, interesting, motivating, and sincere. "I have trouble giving directions…when I'm standing up there and looking at them...they just keep giving me confused looks." They also shared concerns about their abilities, and lack thereof, to be a good teacher and a presenter who asks good questions, answers students' questions, helps students learn, and plans effective lessons. "I try to be semi-enthusiastic. I don't want to be too over the top…but enough to keep them interested… Because that's how I am, I'm actually pretty laid back." When reflecting about teaching tasks, the preservice teachers commonly shared topics about lesson organization, movement around the classroom, the use of technology in their lessons, conducting activities that meet lesson objectives, managing student behavior, and asking appropriate questions. "I should have used the whiteboard more. I didn't even think about putting the worksheet up on the ELMO." Preservice teachers commonly shared concerns about understanding, motivation, learning, and safety when reflecting about students, but also shared what they thought was happening within the students. "They were motivated to learn" or "They just didn't seem to get what I was asking."

All of the participants reflected about all three themes in all of the rounds and across both written reflections and reflective interviews (see Table 1). In all three rounds and across written and interview reflections combined, the participants reflected most often about tasks (62.50%), followed by self as teachers (19.80%), and the least about impacts (17.70%). This was also true of the reflective interviews as participants reflected most often on teaching tasks (64.30%) followed by self as teacher (21.50%) and then impacts (14.20%). However, in the written reflections, participants reflected more about impacts (30.40%) than about self as teacher (13.70%); but overall they still reflected the most about tasks (55.90%). These percentages were obtained by identifying and listing all of the topics of reflection, grouping them into categories based on Fuller et al.'s (1974) theory of teacher concerns, and then calculating the frequency of reflection for each category. We claim there are possible differences across both written reflections and reflective interviews, which is an inherently quantitative claim. Maxwell (2005) argued any claim of a particular phenomenon that is inherently quantitative should be quantitatively supported. Becker (1970, p. 81-82) stated "One of the greatest faults in most

observational case studies has been their failure to make explicit the quasi-statistical basis of their conclusions." By explicating the quantitative basis of our claim, we intended to add value, credibility, explicitness, and thoroughness to our conclusions. Quantification of this data is valuable because it helped to expose the propensity and trends of reflection themes across different modes of reflection, which is directly tied to the phenomena of teacher reflections.

Table 1

Comparison of Reflection Categories of Preservice Teachers' Written and Interview Reflections

Reflection Category	Interview Reflections		Written Reflections		Combined	
	f	%	f	%	f	%
Self as Teacher	79	21.50	14	13.70	93	19.80
Teaching Tasks	236	64.30	57	55.90	293	62.50
Impact Concerns	52	14.20	31	30.40	83	17.70

The data also show that preservice teachers, when given more open-ended prompts, tend to reflect more on teacher tasks. However, purposeful questioning which elicits reflection on students is possible by design. In the written reflection rounds, teachers were prompted with questions that tended to capture more reflection on their impact (30.40%) as compared to 14.20% of the time during the reflective interview rounds. For example, in the written reflection rounds, the questions, "Do you think your lesson was successful? Why or why not?" elicited responses from teachers that seemed to focus on teacher tasks and their relation to students. They seemed to talk about their tasks in terms of impacting student learning. Statements like, "The class understood each type…", "Students stayed engaged", and "The students were successful" were common examples of impact statements from the written reflections in conjunction with the task that accompanied that statement of concern for students. When teachers were asked in the reflection rounds, "What went well?" or "What didn't go well?", they seemed to focus their responses much more on their teaching tasks and less on the impact of those tasks on students. They elaborated much more on the actual task, but did not seem to connect it to student concerns or learning as much as the written format.

The second objective was to compare how preservice teachers communicate across written and reflective interviews. We found preservice teachers in the study did communicate differently across written and reflective interviews. First, the participants used more supporting statements in the interviews, but used more summary statements in the written reflections. The reflective interviews contained some reflection on their thoughts and some rationale for their actions while teaching, but the written reflections did not. Rather, the written reflections were mostly summary statements with very little reference to the participants' thoughts or rationale for their actions while teaching. During the interviews, the participants referred to specific students and specific examples from their clinical teaching experience when discussing and reflecting. Examples of supporting statements included, "I forgot to have the students point out the actual parts of the fruit which would have been helpful when I brought it up..." and "I was hoping the first one that Torres would talk about it. That's why I called on him first." Seldom in the written reflections did the preservice teachers refer to any specific events or students; instead, they used only general summary statements. Examples of summary statements were "Everyone stayed on task and seemed to be engaged in the application" and "I thought my variability, enthusiasm, and task-oriented behaviors were definitely there."

Additionally, there seemed to be more breadth of reflection in the reflective interviews than in the written reflections as the amount of time spent discussing topics was greater in the interviews. In a female participant's written reflection, when asked how the lesson went, she wrote "I added variability by breaking the class into pairs and having them design a poster." That

was the last mention of breaking the class into pairs to work on a poster in her written reflection. However, when discussing how the class went in the reflective interview, she spends much more time and elaborates in more detail about breaking the class into pairs, and working with a poster:

> They really seemed to get into the project. The poster that they did was pretty elaborate and they thought through the process. They were being really creative which meant they were interested. And I know that Sheryl and her group came up with Tat the rabbit because they were going to tattoo the rabbit. They were just having fun with it so that meant to me that they were going to learn more because it meant something to them. Let me think. I guess at the end when they really wanted to present - as in they wanted to share what they had - and learn something from it and it was applicable to them.

Later, when discussing things that didn't go so well she recounts:

> I just numbered them off in pairs from one to seven. When I was asking questions on some of the check it part, some of them didn't even have a clue to it. Like, okay, we just went over this twice now. So I don't know if I need to go over it for a third time or maybe specifically write out that I had the steps written on the poster board if I needed to do everything just to make it more clear. The students were crazy, but that was the whole day. I forgot to assign a scribe when I did the posters.

The preservice teachers seemed more willing to verbalize their reflections than to put them in writing. The participants never utilized the entire space provided on the written reflection form, but all of the reflective interviews lasted the full half hour allotted. The written reflections seemed to be very concise without elaborations or examples. Conversely, in the interviews, the participants spent more time elaborating on main points as demonstrated in the example above. It is perhaps also notable that the female participants wrote more words per answer in the written reflections than males.

Finally, although the participants shared much of the same information in their written reflection they had previously shared in their reflective interview, there were still new reflection topics that appeared in the written reflections. For example, in his first round written reflection, one male wrote "I could have asked the students to get in groups, provided each group a different scenario, and had them report to the class which container they would use and why." This idea about group work was never discussed in the interview, even when prompted by the interviewer what he would do differently if given the chance. Similarly in round three, he again wrote about an alternative teaching method that was never discussed in the interview, even when prompted. He wrote "It would have been nice to have a live piglet so they could see how small their ears are when they are notched and what the notches look like on the real thing."

In round one and two of the written reflection, one female wrote about guest speakers as well as using better group work. These topics were not discussed in the interview. She also wrote "I presented a clear and organized lesson." Again in round three she shared this similar idea. In both rounds two and three of the reflective interviews with this participant, the topic of clarity and organization of the lesson was not mentioned, even when prompted to discuss the strengths of their lesson. The other male wrote "The content was organized, but I don't know how much everyone understood." However, in the interview, nothing was discussed pertaining to organization of content or focusing on what students' understood. It is also interesting to note that while no requirements were imposed regarding the length of responses, this female appeared to write more than either male across all rounds, indicating perhaps there is some connection to participant sex and their desire to capture their reflective thoughts in writing.

While we have made every attempt at carefully collecting and analyzing the data, alternative findings were possible. It is possible the teaching and instruction at the institution resulted in the preservice teachers' predominant reflection type. Additionally, the variance in reflection type may have been due to the order of reflective interview followed by written. We also could not control for external factors such as participants reflecting with each other outside

of the study. We believe our results to be sound, though further study, as recommended in the following section, will help address the questions not fully addressed by this study.

Conclusions, Implications, and Recommendations

Preservice teachers reflect about self as teachers, teaching tasks, and impact concerns. This finding is consistent with the Fuller et al. (1974) framework on preservice teacher concerns with self-concerns, task concerns, and impact concerns as the central focus. The finding that participants reflected in all three areas of Fuller's framework supports teacher development and should be a goal of preservice teacher reflection activities. However, these data raise some interesting questions about teacher education with regard to preservice teacher reflection. Should teacher educators ask questions in each of the three reflection areas or simply ask broad questions to determine what areas of the framework emerge naturally? Furthermore, should teacher educators be forcing the connection to student learning or is this a natural piece of development as the preservice teachers begin to develop and master the process of reflection? For this current study, it is important to know that some of the interviews were more open-ended and some of the questions and follow-up discussions were designed to force their thoughts into other levels of reflection. Teacher educators should give thought to the kinds of questions they ask in order to elicit responses and reflection in all three areas.

A further conclusion is preservice teachers communicate differently across written reflections and reflective interviews. Interviews tended to yield supporting statements while the written reflections provoked mostly summary statements. The interviews provided support for the written reflections because preservice teachers were more apt to share details verbally than through writing. This finding is consistent with other studies, where verbal reflections were preferred over written by the preservice teachers (Greiman & Covington, 2007; Huang, 2010), and tended to be deeper than writing alone (Epler et al., 2013). Is it possible attaining the information we seek out of the preservice teacher's reflections is a question of quantity versus quality? The average transcribed interview was just under ten pages, but when given an entire page for their written reflections, preservice teachers on average handwrote less than half of a page. Teacher education programs utilizing only one form of reflection may not be structuring reflection in a way to elicit students' full reflective potential. Perhaps teacher educators are not interested in the supporting statements or the thought process, but only the end output. However, if the desire is to understand how preservice teachers are reaching their conclusions and forming the summary statements in their written reflections, a reflective interview provides that perspective. Based on our results, we recommend both modes of communication be utilized for teacher reflection activities in order to paint a more complete picture of the development.

Furthermore, due to the interactive nature of the reflective interviews, preservice teachers received feedback on their thoughts while the written reflections were never responded to by the instructor. Perhaps the written reflections should offer more opportunities for written dialog, with the instructor responding to the questions and thoughts posed by the preservice teachers in their reflections. The expertise of the instructor would help maximize the reflection (Cruickshank & Metcalf, 1993; Frager, 1985; Spalding & Wilson, 2002). Simmons and Schuette (1988) would indicate scoring reflections is not appropriate, but attaching incentives would or could encourage preservice teachers to truly communicate their reflections through writing rather than making summary statements only. Traditionally, instructors, teaching assistants, or supervisors are those providing responses and feedback. However, classmates, colleagues, or other students could also serve to validate or question the preservice teachers' reflective thoughts. In fact, Bain, Ballantyne, Packer and Mills (2009) found that even when a formal process for reflection was not established, many of the participants reported talking with others about their teaching. We should be mindful as teacher educators that we are not necessarily the agent of all reflection, and it may be beneficial to tap into the avenues of reflection teacher candidates choose to engage in

autonomously. Moreover, online forums, discussion boards, or journals might be a more efficient venue to create teacher-student dialog as well as student-classmate dialog and could be more interactive and effective in attaining detailed reflections than conventional pencil-paper written reflections. However, Gilstrap and Dupree (2008) found female students were more reflective than males, and Bolin (1990) found not all students benefit from reflective journal writing.

Additionally, we conclude preservice teachers will continue to make new conclusions and observations each time they are given a chance to reflect. Even after a thirty minute interview to reflect about their teaching practicum, the participants in this study still reflected on new ideas and topics in their written reflections. This phenomenon is supported by Kolb's (1984) reflective cycle theory which explains how students have a concrete experience (clinical teaching experience), review and reflect on the experience (interview reflection), and then form abstract conclusions and generalizations. These abstract conclusions and generalizations offer a possible explanation as to why new ideas and conclusions are being made even days after the reflective interview. Furthermore, it makes sense the preservice teachers' written reflections consisted primarily of summary statements because they had the chance, after the reflective interview, to form abstract conclusions and generalizations, which were then communicated as summary statements in their written reflection. The order of the reflection methods remained constant through all three reflection rounds. The preservice teachers always completed the reflective interview, and then proceeded with the written reflection. It is possible that varying the order of the reflection methods may have provided us with different results.

Finally, varying the structure of reflection, through questioning, tends to result in varied responses and breadth of reflection. Perhaps the structured nature of the reflective interviews did not allow these preservice teachers to take the conversation in the direction they desired, and therefore, details were omitted that were later expressed in written form. It is logical to assume the structured nature of the clinical teaching experiences did not allow them to flex their teaching style in all manners possible. Being able to reflect in the unstructured written environment allowed them to envision a different teaching style they could employ in alternate settings. This is important, as these future teachers will likely have less structure when they begin their careers and may not have access to facilitated reflection activities. Recommendations for teacher educators include using multiple modes and multiple rounds of reflection to elicit a greater breadth of reflection as well as allowing students the opportunity to draw on previous reflections to form new conclusions. Each program should determine whether the effort and time invested in each round creates enough value to be warranted. Moreover, preservice teachers should be provided with the tools and skills necessary to continue their reflection activities after they leave the structure a teacher education program provides.

Recommendations for Future Research

We believe this line of research requires further study, as many questions still remain. First, our study was limited in part by the protocols of the institution where the study took place. Moreover, we found that much of the cited research took place in college microteaching experiences rather than authentic high school classrooms. With this in mind, we believe that more research is necessary that addresses teacher reflection in authentic settings utilizing a variety of reflection frameworks, including metacognitive approaches. While many frameworks have been noted in the education literature, what are the affordances and limitations of each type of framework in Agricultural Education? Finally, we believe similar studies should be conducted on early career teachers in the field to determine their reflective practice in addition to longitudinal studies of teacher reflection from the preservice level through year five -- as this may shed light on the long term efficacy of teacher reflection practices implemented in preservice programs.

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