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Engagement, Capacity, And Continuity: A Study Of The Impact Of Participation In Alternative Pre-Student Teaching Placements

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ENGAGEMENT, CAPACITY, AND CONTINUITY: A STUDY OF THE IMPACT OF PARTICIPATION IN ALTERNATIVE PRE-STUDENT TEACHING PLACEMENTS

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DEDICATION

I dedicate this to Anna and Sophia.

A mom couldn’t ask for two greater sources of inspiration to keep on trying.

And to those who helped me keep my bubble of joy firmly intact

through everything.

I cannot thank you enough.

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Chapter 1

Teaching and learning are complex endeavors that are inextricably intertwined. Being a teacher requires a continuing commitment. Preparing teacher candidates to become productive members of the teaching profession is a significant task. Teacher preparation programs are only the beginning step in the journey. This study will examine not only the best practices during the teacher preparation program but also examine how teacher candidates view their needs for continuing development. In order to better understand how to prepare teacher candidates this research will investigate the process using a particular theoretical framework. This research is based on a theoretical framework articulated by Campbell, Jolly and Perlman (Campbell, Jolly & Perlman, 2004) for K-12 students, a theory based on engagement, capacity and continuity. The authors of *Engagement, Capacity and Continuity: A Trilogy for Success*, posit that in order to achieve success in content areas such as mathematics and science, students need to have opportunities where they will experience engagement, opportunities where they can develop capacity, and opportunities to establish continuity (Campbell, Jolly & Perlman, 2004). This study will adapt this theory and apply the authors' framework to the preparation of teacher candidates. In this study, the term student will be used exclusively to refer to learners in the K-12 school range. Pre-student teachers or prospective teachers will be used to define those involved in the process of learning about the profession of teaching.

A Triad for Success

Engagement is crucial because it is "that which draws the learner to study" (Campbell, et al, 2004, p. 5). Students need to be motivated to pursue learning tasks. Students also need to have the opportunity to develop the capacity and increase in their knowledge of the subject

they are studying. Oftentimes, this is best accomplished "through hands-on projects and real-world application" rather "than through classroom or textbook instruction" (Campbell, et al, 2004, p. 7). And finally, students need to see a path for continuing to build on what they have learned in order to become increasingly proficient. This trilogy offers a good model not only for K-12 students but also for teacher preparation.

The purpose of this study is to observe pre-student teachers in the midst of transforming from learners into teachers. The study will use the lenses of engagement, capacity and continuity to look for critical events and activities that affect this transition in individuals in the midst of pre-student teaching experiences.

For teacher candidates, the pre-student teaching experiences represent a critical phase in their development. Individuals who seek to become teachers have had the influence of being part of their own educations. They have been observing others in the act of teaching for many years. This lifelong set of experiences can lead to a deceptive belief in prospective teachers that they already possess the knowledge necessary to be a master teacher. During pre-service teaching experiences, most teacher candidates have their first experiences that challenge the notion that they are already fully prepared. At this stage, engagement, capacity and continuity become significant to teacher candidates.

Engagement for pre-student teachers means that they are actively examining the aspects that will lead them to becoming qualified teachers. For example, when pre-student teachers are engaged in looking at a lesson plan, they are not simply thinking of the materials they need to copy or reading it through to make sure that they know what the lesson says to do. When pre-student teachers are engaged in looking at a lesson plan they are thinking

about why certain methods of delivery might be more appropriate than others, based on the objectives that need to be met. They are considering the needs of their individual students and how they will tailor pacing and vocabulary and examples to meet the needs of their students. Engagement suggests an active role in questioning their practice, and what they need to do to ensure that their students learn.

The importance of capacity becomes evident during the pre-student teacher experience as well. As pre-student teachers deliver lessons they begin to recognize, often for the first time, that they need to understand subject matter with a depth beyond what they needed when they were the learners. Subject matter capacity, for a teacher, means being able to understand the subject matter in a way that allows a teacher to assist their students to build that same knowledge in themselves. In order to do this effectively, teachers need to have knowledge of subject matter that includes familiarity with the ideas and principles at the core of the subject. In mathematics, Ma (1999) refers to this as a Profound Understanding of Fundamental Mathematics (PUFM). For pre-service teachers this requires them to synthesize the material they have learned in subject matter as well as methodology they have learned for teaching. They need to marry these aspects of their own knowledge in order to teach effectively.

The pre-student teaching experience presents an opportunity to be awakened to the realities of teaching. This means that it can be an opportunity to develop a sense of what more is personally needed to become masterful. Continuity for pre-student teachers means reflecting on the new experiences they are having as teachers and considering areas that need growth and development.

Engagement

Engagement is critical to engender learning. Constructivist learning theory tells us this. Piaget instructs us that learners need to be engaged in the learning process and cannot be passive recipients of knowledge. They must actively confront discontinuities with previously known concepts in order to construct and internalize new knowledge (Piaget, 2000). Vygotsky also stresses the importance of engagement. Learners must be engaged with objects and people in order to transform new experiences into internalized speech and understanding (Vygotsky, 1978). Bruner discusses the importance of motivation (Bruner, 1977). He emphasizes that we need to provide a clear vision that will give learners something to strive for, but that is not rigid. Learners need to see the value of what they are learning. We need to make knowledge appear worth knowing. If learners are to engage in the process of altering their perspective to contain new knowledge, they need to believe that their efforts are worthwhile. This is also true of prospective teachers who are learning their role as teacher.

There are avenues of engagement suggested by the literature that provide support for its inclusion as a framework for study of pre-student teacher development. First the literature would suggest that a focus on student thinking could provide a powerful motivation to pre-student teachers for engaging in the process of development. The process of transitioning from learner to teacher takes a great deal of effort and practice. While engaged in teacher education courses, it can be difficult to see the value of learning how to teach topics that a prospective teacher is already competent in as a learner. (Hiebert, Morris, & Spitzer, 2009). However, when faced with the responsibility of teaching students, the significance becomes clear. A teacher who is attending to whether or not her students are actually learning the

material she or he is teaching, is engaged in the process of teaching. Ambrose and colleagues refer to this as motivation of caring (Ambrose, Chauvot, Lamb, Philip, Schappelle, Sowder, Sowder, & Thanheiser, 2007). The difference between a teacher delivering a lesson with little awareness of students and student learning and a teacher who modifies their lesson prior to or during teaching and then writes their follow up lesson plan based on their reflections, exemplifies this type of engagement. Therefore, during this study, it will be important to attend to if and how pre-student teachers consider student thinking. Pre-student teacher considerations of student thinking will impact their preparation for instruction, their enactment of lessons and their reflections after having taught. Attention will be paid to how pre-student teachers utilize their awareness of the student experience to make decisions during the each phase of instruction.

Another factor that can influence engagement is the environment that the pre-student teaching experience occurs in. This environment can have an impact on the developing professional The pre-student teaching experience requires a level of responsibility for classroom activities and student learning that is either greater than most have experienced before or completely novel to the prospective teacher. Research by Ambrose et al. (2007) as well as by Beswick and Muir (2006) suggests that the environment can have an impact on the beliefs of pre-student teachers at the conclusion of their experience. In the work of both Ma (1999) and Darling-Hammond (1996), mentoring and collegial relationships are emphasized. During the pre-student teaching experience, pre-student teachers interact with others in the educational community. Pre-student teachers interact with cooperating teachers in the schools and places where their pre-student teaching occurs. They interact with university supervisors responsible for overseeing their experience. And they interact with fellow pre-

student teachers. Research by Franzak (2002), Singer and Zeni (2004) as well as Scherff and Singer (2008) support the concept that these relationships are influential on the prospective teacher and his or her development during the preservice teaching experiences. During this study, attention will be paid to how those relationships impact the transition from learner to teacher in the pre-student teachers.

Capacity

Another significant area of development for the prospective teacher pertains to the topic being taught and the literature supports this. A teacher's personal enjoyment of the topic can provide motivation to want to share this feeling with their students. For some, their own experiences with mathematics were positive. They had inspirational mathematics teachers and want to ensure that their own students have similar experiences. Others are motivated to provide their students with a positive experience in contrast to their own, which was negative (Swars, 2005). They do so with the powerful desire to give others a different, better experience. Teacher capacity in subject-matter knowledge is unquestionably important. Historically, that has entailed preparing teachers to have capacity in their content area. For example, elementary teachers needed to prove their capability in mathematics. They have often demonstrated this by being able to perform mathematics to a certain level of difficulty, depending on the grade level they were teaching. This view has changed. The current belief is that teachers must also have pedagogical content knowledge (Shulman, 1986; Shulman, 1987). This means that teachers are expected to know the best way to teach mathematics to learners. They need to understand the material in such a way that they could convey why certain steps were necessary. It means that teachers should be able to predict common misconceptions and attempt to overcome them through teaching designed to develop

understanding. Additionally, teachers ought to have the kind of knowledge that would allow them to skillfully sequence lessons in order to maximize learning. This view is supported by research (Ball, Hill, Lewis, and Sleep, as found in Lester, 2007; Philipp, 2007) and by national teacher organizations such as the National Council of Teachers of Mathematics (National Council of Teachers of Mathematics, 1989; National Council of Teachers of Mathematics, 1991; National Council of Teachers of Mathematics, 2000). Teacher preparation includes coursework in subject matter material. And currently many methods courses include instruction inline with improving capacity in content knowledge and pedagogical content knowledge (Beswick & Muir, 2006; Graeber, Kramer, McGinnis, Parker, Shama & Watanabe, 2002; Gresham, 2007; Matthews & Seaman, 2007; Taylor, 2002). Some research suggests that despite these endeavors, pre-student teachers often still lack sufficient content knowledge to be effective teachers (Hill, 2010; Ma, 1999). Therefore, it is important to consider how the pre-student teaching experience can have an impact on the development of capacity. The pre-student teaching experience incorporates experiences of teaching content along with opportunities to receive feedback from professionals in the field, such as teacher education university supervisors. Pre-student teachers prepare to teach lessons, and then carry out the teaching. Following teaching experiences, pre-student teachers will reflect upon these experiences alone and with the guidance of education professionals. A focus of this study will be to examine if, and how, these experiences impact capacity with content knowledge. Of particular interest will be prospective elementary teachers. The study will attempt to determine how they perceive the significance of mathematics content knowledge. The study will seek to ascertain whether that view changes as a result of the pre-student teaching experience. The study will also seek to ascertain if

elementary vs. secondary teachers undergo a different type of evolution in regards to how they view the significance of mathematics content knowledge. For example, will a pre-student teacher who feels strongly, positively or negatively, about mathematics attend more closely to the preparation and delivery of a mathematics lesson? Attention will be paid not just to how subject matter is considered during lesson development, but also if and how it is considered during delivery.

Continuity

Research also suggests that any approach to changing beliefs and fostering growth ought to include consideration of long-term growth. Both Ma (1999) and Darling-Hammond (1996) present evidence to suggest that master teachers pursue deliberate development of their teaching skills over the course of their teaching career. Pre-service teachers need to be given an opportunity to develop an understanding of the value of continual growth and development. And it is important that they see the need for purposeful development to address needs, not just enhance strengths. During the pre-student teaching experience, pre-student teachers are given opportunities to determine where they struggle as teachers. This provides opportunities for the professional experts they work with to guide them on a path of future professional development that will be most effective. During this study it will be of interest to note how pre-student teachers respond to struggles in their own teaching and how they anticipate they will endeavor to improve beyond their pre-student teaching experiences. Pre-student teachers will be observed and, interviewed, and their reflective writing pieces will be examined, all with a mind to attend to their conceptualization of the need for continued growth in their craft. The study will attempt to discover how pre-student teachers perceive themselves as teachers now and how they anticipate they will evolve as a result of

their pre-student teaching experiences. The study will try to determine how they anticipate the need to develop themselves as they continue on in their profession.

The following research questions guide the study.

- What kind of teacher education practices experienced during pre-student teaching lead to more engagement, in the process of transitioning from learner to teacher?
- What kind of teacher education practices experienced during pre-student teaching lead to changes in their self-perceptions about their capacity to teach subject matter?
- What kind of teacher education practices experienced during pre-student teaching lead to more consideration from pre-student teachers about their needs for ongoing professional development?
- What aspects of involvement in an alternative pre-student teaching placement lead to a different evolution of the practice of pre-student teachers from the evolution of practice of pre-student teachers in a traditional pre-student teaching program?

There are limitations to this research project. The sample size is small and so findings cannot be generalized to a larger population. Participants will be interviewed to determine the self-perceived origins of evolution. But there can be no certainty that the evolution wouldn't have taken place in any pre-student teacher program. Also, this study encompasses a semester of pre-student teaching. This means that there is no way to accurately gauge whether changes in attitude or beliefs will be sustained over a long period of time. Follow-up questioning can be utilized in the future to determine if pre-student

teachers maintain their evolved positions. But such questioning is not part of the scope of the current study.

Chapter 2

In examining the instructional triad of engagement, capacity and continuity, there is significant support in the literature for all three being important to developing strong teacher candidates. The literature review will be divided into three sections dealing with engagement, capacity and continuity respectively.

Engagement

Campbell, Jolly and Perlman describe several different types of engagement that can be useful for motivating students to glean the most out of their learning experiences (2004). Behavioral engagement includes "positive conduct and involvement in academia" (p. 6), emotional engagement includes "positive reactions to people, content and environment" (p. 6), cognitive engagement includes "willingness to master complex concepts" (p.6), and vocational engagement is geared toward improvement with future the professions the K-12 students have in mind. Their discussion is in line with a summary of the concept by Fredricks, Blumenfeld, and Paris (2004). They categorize engagement in a similar fashion. They also discuss the importance of how motivation for competence is entwined with engagement and academic success (p. 81).

In *The Process of Education* (1977), Bruner discusses the importance of being mindful of the motives of learning. Engagement is a hallmark of constructivism. Students are more than mere vessels waiting to be filled with knowledge. Constructivists stress that students need to be actively engaged in the education process in order to truly develop new knowledge. But Bruner distinguishes what that motivation might entail. He suggests that motivation ought to be the type that seeks to awaken a "sense of excitement about discovery-discovery of regularities of previously unrecognized relations and similarities between ideas,

with a resulting sense of self-confidence in one's abilities" (Bruner, 1977, p. 20). He acknowledges that some students have a level of engagement and motivation already present. These highly motivated students are those that we think of as high achievers. But he urges the belief that it is important to try to awaken that sense of engagement in students. He distinguishes this engagement from presenting learning activities that are merely fun for the sake of being fun. Those types of activities can be good for short-term engagement but will not likely awaken a deeper desire to learn that will last in the long-term. Instead, he believes that it is important to make a subject or topic significant to students. He says, "if teaching is done well and what we teach is worth learning, there are forces at work in our contemporary society that will provide the external prod that will get children more involved in the process of learning than they have been in the past" (Bruner, 1977, p. 73). It is this act of making a subject worth learning that is at the core of motivation and engagement for young students and also for prospective teachers.

In *The Case for Constructivist Classrooms* (1993), Brooks and Brooks support the importance of relevance for motivating students to be engaged. They emphasize that students do not need to come to a topic or subject with a predisposed heightened enthusiasm. However, good instruction can raise this level of engagement through relevance. They say, "as we studied this principle, we realized that the nature of questions posed to students greatly influences the depth to which the students search for answers" (Brooks & Brooks, 1993, p. 44).

In research conducted by Finn and Rock, (1991) engagement is cited as one of the key factors that can distinguish between success and failure between similar groups of students. One feature of engagement that is particularly appealing is that it is "manipulable"

(p. 221). Unlike many other factors that may impact success, engagement can be impacted by decisions of the instructor. Research supports work by Connell, Spencer and Aber (1994). In their research, Connell et al. discovered that levels of engagement impacted the sense of self. Identity as a learner was related to levels of engagement and engagement was a strong predictor of school performance and success. In a separate study investigating class size and why smaller class sizes have a positive impact on learning, the researchers found that the critical feature was level of engagement (Achilles, Finn, & Pannozzo, 2003). They found that in smaller classes, students felt more encouragement to be engaged. They theorize that it is because in a smaller crowd it is harder for students to avoid notice. But the higher levels of engagement is what they felt led to higher levels of accomplishment.

In work by Marks (2000), engagement was also cited as being significant to both a student's successful performance. Engagement also was part of the cycle where success leads to further success. As students engage and experience success in one area, it can impact their desire to want to achieve success in other areas and so impact engagement in a broader picture (p. 155). One significant finding in this research relates to engagement in subject specific work. "Students consider themselves more teacher dependent in mathematics, where the teacher is the 'source' of knowledge, compared with social studies, where the teacher is the 'elaborator' of knowledge" (Stodolsky, Salk & Glaessner, 1991) as found in (Marks, 2000). This has powerful implications for the significance of mathematics teachers on their own students' engagement, and provides powerful incentive to try to motivate prospective elementary teachers to seriously engage in their own learning so that they can best instruct students of their own. Positively impacting the level of engagement and motivation to improve in the prospective teacher, will positively impact the level of

engagement and motivation of future students. The research cited, thus far, has focused on engagement in the K-12 student. But this position, as it relates to prospective teachers, is supported by research as well. Beswick and Muir (2006) conducted a study in which pre-student teachers are the focus. In their study they found that pre-student teachers highly valued aspects of their training that "focused most directly on practical classroom issues and, … valued hands-on tutorial activities and discussions in these contexts above all else" (Beswick & Muir, 2006, p. 46). In other words, they valued what they felt would be relevant to their future role as classroom teacher. The course piqued their vocational motivation and gave them good reason to be engaged. There is reason to believe that engagement in the process of transitioning from learner to teacher would have benefits for the pre-student teacher.

But how can this be accomplished? Discussions about teacher beliefs in the *First and Second Handbook of Research on Mathematics Teaching and Learning* (1992, 2009) suggest motivating teachers through drawing their attention to student thinking. Emotional engagement is activated through experiences with students. Pre-student teachers develop positive relationships with their students and feel motivated to achieve success in their training that will help them become effective educators.

Research conducted by Ambrose et al. (2007) describes a construct called the "circle of caring" (p. 441). They suggest that teachers are drawn to the profession because they care about students. This caring suggests that teachers want what is best for their students. At times this can result in teachers not wanting students to experience the same frustrations as they had, and so they do not challenge their students (p. 440). However, the authors posit that the same sense of caring could be utilized to encourage pre-student teachers to engage

more fully in their learning experiences. They used a variety of approaches, including video and in-person mentoring situations, in order to provide pre-student teachers with an opportunity to experience student thinking. They determined that when pre-student teachers had an opportunity to experience student thinking, often their beliefs underwent a change. These pre-student teachers were more inclined to see the importance of adopting teaching practices that focus more on conceptual understanding, rather than relying on a more traditional skills-oriented form of teaching. Many of the pre-student teachers "spoke of important changes" and said, "working with children was the most compelling aspect of the course" (Ambrose, et al, 2007, p. 461). The changes were not universal. Not all pre-student teachers altered as a result of the experiences, but it seems that it is a powerful motivator for many. Also, it is interesting to note that self-reported change did not manifest itself in a corresponding increase in subject-matter capacity. These same pre-student teachers also were taking a course in mathematics for elementary teachers. The authors had theorized that this intervention could also provide incentive that would propel teachers to invest in the course and achieve greater success in improving their content knowledge. However, this was a short-term intervention. It is possible that the experience could motivate these prospective teachers to continue to try to improve their skills. It is possible that this experience could motivate these pre-student teachers to seek out and engage in professional development opportunities. The authors sought to induce change before it was too late, meaning before they had completed their coursework (Ambrose, et al, 2007, p. 440). However, given the necessity of continuing development in order to retain certification, it is possible that the experiences could be the beginning of the desire to improve subject-matter capacity on the part of these pre-student teachers.

In research that draws upon similar themes, Levin and Rock suggest that when pre-student teachers are engaged in action research in classrooms with students that they can experience professional growth (Rock, 1999; Levin, B. & Rock, T. C., 2002; Levin, B. & Rock, T. C., 2003). Their research had pre-student teachers researching a professional concept as part of their experiences with students. Pre-student teachers developed questions based on research and then determined the answers to their questions while working with students in classrooms. The results indicated that pre-student teachers developed a strong sense of student thinking and that they had a better understanding of the "value of persistent questioning, reflection, action and change" (Levin, B. & Rock, T. C. 2002, p. 17).

There is a good deal of research to support the use of student thinking to motivate. Several other research studies use video excerpts to motivate teachers or pre-student teachers to attend to student thinking, with positive results. Sherin and van Es (2002, 2005) use video to activate prospective teacher engagement in the process of becoming teachers. Their goals are geared toward encouraging pre-student teachers to engage in the learning experiences by attending to matters beyond management concerns. Through the use of video pre-student teachers are able to observe and notice features about teaching that help them improve at their craft. Essays on their observations written by the pre-student teachers show a growth in the sophistication about their thinking in regards to classroom teaching over the course of exposure to video excerpts of teaching episodes. Beswick and Muir (2009) also used video excerpts to engage pre-student teachers in reflection on their practice, with mixed results. Their study showed that pre-student teachers were, in fact, motivated to think about teaching in relation to student thinking. However, their findings also showed that the pre-student teachers often struggled to specify what features of student thinking or instruction they were

noticing. Their lack of experience and strong mathematics capacity limited their ability to fully utilize the tools. A study by Hollebrands, Stohl Lee and Wilson (2011), combined building capacity in use of technology in the classroom with video exceprts of students engaged using the technology. They theorized that because pre-student teachers lack practical experience of working with students, they will not attend to all of the salient features of the technology because they do not know how it will be significant. By experiencing episodes of student thinking, they will be able to gain greater insight into how the technology will be used. Their hypothesis proved accurate. Pre-student teachers were able to notice significant aspects of student thinking that impact how students will use the technology. Their observations impacted their own thinking about how the technology could be used.

Other methods have been employed to focus attention on student thinking in order to motivate pre-student or inservice elementary teachers to glean as much as possible from their educational experiences with mathematics. One common type of intervention includes the use of individualized instructional experiences between a teacher and a student. Studies by Clarke, Clarke and McDonough (2002) and Ambrose (2004), in research that was preliminary for her later 2007 collaborative study (Ambrose et al, 2007), both utilized one-on-one, student-with-teacher experiences to motivate engagement in learning better practices and greater capacity in mathematics teaching. Both studies theorize that the exposure to student thinking will lead to greater insights and more profound development. Clarke et al. report favorable results. Their work indicates that pre-student teachers were able to see the importance of using accurate mathematical language when working with students. They were able to see that when they utilized the correct language with students that students were

able to make more sense of the learning experience (Clarke et al, 2002, p. 220). Further, they felt that pre-student teachers experiences were

> enhanced in the following ways: Prestudent teachers are more aware of the kinds of strategies that children use, including their variety and relative level of sophistication. Preservice teachers have seen the power of giving children one-to-one attention and time, without the distraction and influence of their peers. The interview provides a model of the kinds of questions and tasks that are powerful in eliciting children's understandings. The interview and subsequent discussion stimulate preservice teachers to reflect upon appropriate classroom experiences for young mathematics learners (Clarke, et al, 2002, p. 223).

The Ambrose study also reported positive effects of the intervention. They state that the "experience affected the ways that many of the prospective teachers viewed teaching mathematics. They began to recognize that teaching requires more than simply presenting information to students" (Ambrose, 2004, p. 108). They also reported a greater understanding of the importance of having multiple strategies that they could employ to teach a given topic. There was also an increase in recognition of the importance of developing strong personal content knowledge in order to teach effectively (Ambrose, 2004, p. 114). In addition, the preservice teachers reported being very enthused about their experiences. This state of enthusiasm can contribute to motivation to achieve greater competency as a future professional educator.

Yet another approach to increase engagement in the process of developing effective educators through the use of student thinking focuses on studying the research on children's

thinking. This evolution of the approach focuses on a research perspective. In a study conducted by Campos and D'Ambrosio (1992), pre-student teachers were engaged in a research project about student thinking. Pre-student teachers selected a topic of focus, students thinking about fractions, researched relevant literature and collected student work and conducted student interviews in order to gain understanding about their topic. The results demonstrated that as pre-student teachers encountered conflicts in expectations compared to actual evidence of student work, they were able to research why and develop conjectures about ways to improve instruction to remedy these conflicts. The exposure to student thinking motivated pre-student teachers "to research reports which are relevant to the question studied" (Campos & D'Ambrosio, 1992, p. 227). Through their research, pre-student teachers were "led to question normally accepted instructional practices" (Campos & D'Ambrosio, 1992, p. 227). Their experiences motivated the pre-student teachers to improve their understanding of student thinking leading to greater capacity in developing good teaching practice. In a related study conducted by Carpenter, Chi-pang, Fennema, Loef and Peterson (1989), teachers were explicitly given information about children's thinking based upon research in the field. In comparison to those in a control group, those teachers in the study had a greater tendency to teach problem solving and less to teaching addition and subtraction as number facts solely. The teachers in the research group also taught students using a greater variety of approaches and understood more about the approaches their students were taking in the problem-solving process (Carpenter, Chi-pang, Fennema, Loef & Peterson, 1989, pp. 526-529). In addition, while there was not a large difference in performance of students in the two groups, the students of the teachers in the research group

consistently performed at higher levels than students of the teachers in the control group, and students in the intervention group also had a greater understanding of problem-solving work.

During initial pre-student teaching experiences, it is natural for the preservice teacher to consider how they are developing as professionals. As they are going through these initial experiences, pre-student teachers do so amongst other pre-student teachers as well as educational professionals. There is research that supports the notion that these relationships can have an impact on the engagement of the pre-student teacher in their experiences. Research has been conducted on the relationships between peer preservice teachers and how they can influence the experiences during the internships (Singer & Zeni, 2004; Scherff & Singer, 2008.) In this research, preservice teachers participate in online communities to discuss their experiences. This venue provided the preservice teachers with a valuable resource during their transitional experience. "The listserv isn't just 'talk'. It also vividly portrays the 'walk'- the journey of becoming a teacher" (Singer & Zeni, 2004, p. 42). Their research illustrated that peers can hold a valuable role in the world of the preservice teacher in an internship experience. Their research demonstrated that peers can provide emotional support to sustain each other through difficulties and encourage each other through accomplishments. "Through the online venue student teachers may garner the emotional support they need to successfully navigate the tumultuous student teaching semester… Many students tell us they found the online forum a 'safe' place to show their vulnerability knowing that someone on the other end would care and respond" (Singer & Zeni, 2008, p. 43). In addition, the peer network provided the preservice teachers with a useful resource during their internship experiences. "They had learned that teaching is not an exact science; as teachers none of us knows how to address every student's needs just because we have a

license to teach. They had also learned that in order to gain perspective and insight, sometimes we have to seek the advice of others" (Singer & Zeni, 2004, p. 30). In related research conducted by Franzak (2002), the use of peers and mentors was utilized to enhance the internship experiences of preservice teachers. In this research, groups of peers, called Critical Friends Group (CFG), met to discuss professional issues. There were two levels to the experiment. One group consisted of pre-service teachers in a CFG as part of the seminar course that accompanied an internship experience. Another level had preservice teachers meeting in a CFG with practicing teachers in the school that they were assigned to as part of their internship. The research was conducted as a case study where a single preservice teacher was the focus of the dual-level study. Research results showed that the experience was influential on the experience of the preservice teacher. One quote from the case study individual highlights this influence, "I believe that teachers are professionals. As such, teachers should collaborate with peers in study groups, share research and seek opportunities for professional development in order to improve their practice and, hence, enhance student learning" (Franzak, 2002, p. 273). The conclusion of the research was that the experiences of collaborating with others enhanced the experience for the individual under study.

> Rebecca's professional identity at this point in her career is clearly tied to her CFG experiences, which suggests that formal collaborative practice can enhance the preservice teacher's conception of the profession, as well as function as a psychological safety net (Franzak, 2002, p. 277).

The work of both Ma (1999) and Darling-Hammond (1996), focuses more on the practicing educator, not the preservice teacher. However, their work also supports the belief that collegial relationships are useful and necessary to for teachers to fully engage in their

practice as professionals. Research by Beswick and Muir (2006) as well as Ambrose et al. (2007) suggest that the influence of the preservice internship environment and the individuals there is not always predictably positive. In fact, their research would suggest that sometimes that influence can encourage a more traditional, skills-based practice, counter to the instruction received in educational coursework.

In summary, the research on engagement leaves little doubt as to its importance in the learning process. The specific approaches may vary, but the student experience can provide motivation for pre-student teachers to strive for greater development is consistent and produces results. This is attributable to the importance of relevance and the desire to develop competence in one's future pursuits. Teachers care about their students. Therefore the student experience is relevant to them in their learning. Additionally, learning about the student experience can motivate pre-student teachers to develop teaching approaches and beliefs about topics that will allow them to best address the needs of their students. In addition, the pre-student teaching experience is one where it is natural for a pre-student teacher to consider their transition into the profession. These considerations can influence how they engage in the internship experience. And research has demonstrated that peers and professional educators acting as mentors to the pre-student teacher can influence this entire process. Research also shows that this influence is not always predictably positive. This is why it is important to consider the role that these individuals play in the engagement of pre-student teachers. Also, focus on engagement through considerations of the student experience is not without its shortcomings. Pre-student teachers are not always profoundly impacted. Their change in awareness does not always immediately translate into

improvement in capacity in a subject. This is why it is important to view engagement in the context of a triad that also includes capacity and continuity.

Capacity

For a teacher to have capacity would suggest that he or she has an ability to successfully foster student learning. Campbell, Jolly and Perlman say that an "underlying assumption of Capacity is that there is a fundamental knowledge that is necessary to advance to more rigorous or advanced levels" (Campbell, et al, 2004, p. 6). This would indicate that for pre-student teachers to have capacity, they must have the requisite knowledge and skills to advance to being effective teachers.

That teachers need to be effective in order to foster student success is agreed upon. According to Ball, Hill, Lewis and Sleep in the *Second Handbook of Research on Mathematics Teaching and Learning*, research shows that teacher knowledge of mathematics is positively correlated with student achievement (Ball, et al, 2007, p. 122). Ball, Hill and Rowan used an assessment designed to measure teachers' content knowledge for teaching (Ball, et al, 2005). Their study found that there is a direct relationship between the level of content knowledge of teachers and the achievement of their students. Bruner provides a beginning point for our discussion of the significance of teacher competence in the learning process by saying that "not teaching devices but teachers were the principal agents of instruction" (Bruner, 1977, p. 15). He then goes on to illuminate one source of contention in the field of teacher education at the time. There were some who suggested that teachers should be the source of expert knowledge on a subject being taught, while others suggested that a solid curriculum supported by quality texts and teaching materials is a sufficient source of content knowledge when paired with expertise on delivery methods. The latter would

have the expert teacher as proficient when they are skilled at delivering content originating from an outside source, like a textbook, for example.

In the mathematics content area, this pair of differing views was the focus of academic research and discussion for a number of decades. In the mid 1980s the tone of the conversation evolved into a discussion of exactly what sort of content knowledge was necessary in order to be an effective educator of mathematics. It no longer seemed to be a question that teachers needed to have a certain level of content knowledge to be considered properly prepared to teach. According to Cohen, in the 1980s students were asked to do work of a more analytic nature than had previously been the case (Cohen, 2005). As a result, greater demands were placed on teachers to ensure that students were able to meet the higher standards. Certification examinations for teachers were becoming the norm. Greater demands were being placed upon teachers while many people still viewed teachers more as technicians than professionals. Shulman sought to alter that view (Shulman, 1986). He argued that teaching has a long and distinguished history as being a vehicle for those with the greatest capacity to pass along their knowledge and skill to others. This tradition, he says, can be seen in the traditions of philosophers and in the academic field where titles of accomplishment, like Masters, are directly related to the ability to share knowledge. He then went on to redefine the conversation about capacity to center around types of content knowledge necessary to be proficient (Shulman, 1986). In his argument to reestablish the importance of quality teaching, he stressed that effective teachers need to have knowledge other than technical knowledge of classroom management procedures and content knowledge similar to that of a skilled student of a particular content. He highlighted the other significant forms of knowledge necessary to be effective such as,

> curriculum knowledge, with particular grasp of the materials and programs that serve as "tools of the trade" for teachers; pedagogical content knowledge, that special amalgam of content and pedagogy that is uniquely the province of teachers, their own special form of professional understanding; knowledge of learners and their characteristics; knowledge of educational contexts, ranging from the workings of the group or classroom, the governance and financing of school districts, to the character of communities and cultures; and knowledge of educational ends, purposes, and values, and their philosophical and historical grounds (Shulman, 1987, p. 8).

In particular, he is interested in the significance of pedagogical content knowledge, the knowledge of content and pedagogy that would allow a teacher to teach that specific content most effectively. Brophy and Porter support this position by stating that

> Teacher knowledge is represented as encompassing (1) knowledge about the content to be taught, (2) knowledge about pedagogical strategies for teaching the content, and (3) knowledge about the students (in particular about student background knowledge that can be capitalized upon and about student misconceptions that will need to be confronted during teaching". Good teaching requires possession and use of all three of these categories of teacher knowledge, not just knowledge of the subject matter (Brophy & Porter, 1988, pp. 75-76).

In her dissertation, Ball also discusses the importance of pedagogical content knowledge (Ball, 1988). She emphasizes the importance of teachers having strong content knowledge. She also believes that it needs to be demonstrated other than through completing coursework in a given content area. She advocates for the kind of content knowledge

specifically important for teaching. She believes that in order to effectively transmit knowledge about the subject, in this case mathematics, that teachers need to have a thorough knowledge of mathematics such that they can explain why certain strategies work. Teachers need to be able to recognize the effectiveness of a student's approach if it varies from standard procedures. Teachers need to be able to guide students to think mathematically, not simply reproduce procedures without understanding. Fennema and Franke support this position in the *Handbook of Research on Mathematics Teaching and Learning* (Fennema & Franke, 1992). They state, "expert teachers appeared to know not only the procedural rules … but understood the interrelationships of the procedures" (Fennema & Franke, 1992, p. 153). They also show a model of teacher knowledge that includes knowledge of mathematics, content specific knowledge, pedagogical knowledge and knowledge of learners' cognitions in mathematics (Fennema & Franke, 1992, p. 162). Lampert supports this position and advocates encouraging students to think like mathematicians (Lampert, 1992). She advocates teaching using the following characteristics of mathematical practice:

> (1) The questions that are understood as meaningful and legitimate; (2) the methods of reasoning that are accepted as supporting conclusions; (3) the goals and structures of mathematical knowledge; (4) the language that is meaningful to practitioners (5) statements of findings and conclusions that are accepted and established (Lampert, 1992, p. 300).

Ball continues to advocate for this position in later work. In "Bridging practices: intertwining content and pedagogy in teaching and learning to teach", she advocates the intimate and intricate weaving of content with pedagogy (Ball D. L., 2000).

Results from the study by Ma (1999) contrasting elementary teachers from China and the United States illustrate that these beliefs are not merely conjecture. In her study she demonstrates the way that knowledge of mathematics in a thorough and "profound" manner leads to dramatically different levels of knowledge of mathematics in elementary teachers from the United States and China. Her work includes interviews with teachers from both countries. The teachers from the United States are considered strong in mathematics content and yet their knowledge is often incomplete and, at times, completely inaccurate. What is even more significant is that the teachers from China have an understanding of mathematics that allows them to systematically consider a mathematical question that they might not have an immediate knowledge of. They are able to investigate the situation and determine what is correct, mathematically. In other words, they know how to approach mathematics as a mathematician would. They understand the structure and principles of the subject. Her work makes real the notion proposed by Bruner that understanding the structure of subject matter can lead to a person developing the ability to learn to be a learner (1977). He proposed that by understanding the foundations and structure of a subject, that students would not simply learn procedures but would in fact learn to think about the subject independent of specific skills. His proposals are verified by the knowledge possessed by the teachers in Ma's study.

Instilling a deeper and more fundamental understanding of mathematics in pre-student teachers has become a goal of those who prepare elementary educators. The task is not a straightforward one. As Hiebert, Morris and Spitzer demonstrated in a study of pre-student teachers, even those with high levels of mathematics content knowledge do not have an automatic understanding of pedagogical content knowledge (Hiebert et al., 2009). What they understand about mathematics themselves as students of mathematics does not

automatically translate into an ability to understand the fundamental concepts that need to be conveyed to effectively teach (Hiebert et al., 2009).

The level of mathematics knowledge that elementary teachers have is a source of concern. There is evidence to demonstrate that their mathematics knowledge is insufficient. Even when teachers pass tests of basic skills it would seem that they are entering the profession with less than adequate understanding of the subject. A large scale study of elementary teachers conducted by Hill sought to learn more about the levels of knowledge present. She found that level of knowledge did not vary according to topic. In other words, if a person lacked knowledge in rational number concepts they had a similar lack of knowledge about whole number concepts. Further, problems that required a greater conceptual knowledge posed greater difficulties for those studied (Hill, 2010). She drew several other conclusions from the data obtained from the study. First, there was a positive correlation between level of content knowledge and elementary grade level taught. Those in upper grade levels had a higher level of knowledge. This relationship was fairly linear. There was a very weak positive correlation between years of experience and levels of content knowledge. However, there was no relationship between levels of content knowledge related to differing certification programs. Nor was there a correlation between levels of content knowledge and amount of mathematics professional development engaged in. This could indicate a problem with the perceived relevance of coursework and professional development experiences from the prospective of the pre-student or inservice teacher. Finally, there is a correlation between self-perceived mathematics competence and actual levels of content knowledge.

The need for solid competence and fundamental understanding of mathematics remains a vital concern. "The Common Core State Mathematics Standards (CCSMS), which were released in June of 2010, have been adopted by almost all states and will be phased in across the nation in 2014" (Wu, 2011, p. 3). The CCSMS "are mathematically very sound overall" (Wu, 2011, p. 3). According to Wu, the new standards rely much more heavily on an intuitive understanding of mathematics, rather than the traditional process-laden standards of the past and current day. The new standards focus more on instruction that would necessitate the precise use of mathematical language to define concepts and structures of the subject. Additionally, it relies on logical reasoning to support the development and sequence of topics. This type of instruction will require that elementary teachers have a solid grasp of the structure and fundamental concepts of mathematics. According to Wu, effective implementation of the new standards will require that teacher education programs require higher levels of fundamental understanding of mathematics and it will also necessitate a great deal of professional development of inservice teachers. He emphasizes that currently teachers of mathematics do not have sufficient knowledge relevant to K-12. He acknowledges that part of the problem is the societal belief that elementary mathematics is simple and therefore not worthy of rigorous study. In his analysis, it would not suffice to simply demand that pre-student teachers take more and higher levels of mathematics courses. Nor, does he believe, it would improve the situation to introduce more pedagogy-based courses into the teacher education mathematics curriculum. Rather, he is advocating vigorous efforts to increase the level of understanding mathematics that is

> relevant to teaching- i.e. does not stray far from the material they teach [and also] is consistent with the following five fundamentals of mathematics: precise definitions

> are the basis for logical deductions; precise statements clarify what is known and what is not known; every assertion can be backed by logical reasoning; all the concepts and skills are woven together like a tapestry; and each concept and skill has a purpose (Wu, 2011, p. 11).

His beliefs are closely aligned with the kind of mathematical knowledge, PUFM, advocated by Ma (1999). The direction they suggest for knowledge development is a sound one. It is important for pre-student teachers to have exposure to a reasonable level of mathematics coursework to permit them to be competent mathematics practitioners. And it is also important for pre-student teachers to learn about ways of instruction that are suited for development of mathematical understanding, rather than just methods of teaching procedures. However, it is also important that pre-student teachers learn the structure of mathematics that will allow for the PUFM. However, due to the long-term status of the curriculum and its instruction, changes may not be able to fully overcome deficiencies in knowledge over the course of the pre-student teacher training cycle. It is for this reason that capacity needs to be combined with engagement, to provide a reason to improve and continuity, to provide an avenue to begin the development of capacity as an educator becomes aware of his or her need for it.

Continuity

The literature gives a picture of the role of continuity and the literature illustrates the current state of continuity. It also suggests a vision of what continuity could be and the kind of support it could provide for the profession of teaching.

Campbell, Jolly, and Perlman (2004) describe continuity as "a pathway or system that offers resources necessary for advancement. Ideally it is a fully articulated system where the skills, knowledge and information students need to move to advanced levels are known and provided at each earlier, less advanced level" (Campbell et al., p. 7). In the case of the profession of education, this would mean that teachers have a clear pathway for continually improving their knowledge and skills as they begin to move forward in their careers. Currently it seems uncertain, even doubtful, if learning experiences that occur after certification are truly having an impact on the capacity of teachers. Wu (2011) points out the current state of professional development for inservice teachers.

> For in-service teachers, professional development is hardly synonymous with learning content knowledge. Far too often, 'professional development' is filled with games, fun new manipulatives, the latest pedagogical strategies, and classroom projects that supposedly make mathematics easy. The more serious kind of professional development, which some small percentage of teachers are lucky enough to participate in, addresses topics such as children's mathematical thinking, appropriate use of technology, teacher-student communication, and refined teaching practices. While these are important issues for teaching, they are not sufficient (Wu, 2011, p. 7).

Wu's depiction of professional development describes the sort that occurs within schools and districts. But there is another sort. In order to maintain certification, teachers must continue to develop their knowledge and must demonstrate their efforts through taking a certain number of credit hours of development. Educators have a choice about the sort of development to pursue. This development can be the school or district sort. It can include college credits earned in the pursuit of a higher degree in education. However, it is logical

that if teachers are pursuing a degree that they would decide to work on an area that they perceive as a strength. If they must pay for, and pass, a college course, why would they choose to take a class in a topic that they struggled in? It is certainly doubtful that they would pursue an entire higher degree in a subject that they lacked confidence in. This limits the potential of continuing education to have an impact on strengthening capacity and leaves much of the burden for this task on the school or district-level professional development.

The view of the current state of continuity opportunities is not especially promising. Hill's 2010 large-scale study of inservice elementary teachers would seem to support the sense that professional development efforts are less than highly effective at impacting capacity development in elementary teachers. Her research showed no relationship between participation in professional development activities designed to improve mathematical knowledge and an increase in mathematics capacity. Other research would indicate that engagement in professional development could have positive impact on student learning. In research on the influence of teacher professional development on the achievement of middle school students, Cobb, Sample, McMeeking, and Orsi (2012) found that, in comparison to students in a control group, students who had teachers who received professional development intended to improve mathematics capacity had a greater chance of improving their standardized test scores to proficient level when previously they had not been proficient. This would indicate that the potential for positive impact as a result of continuity activities is there, but perhaps is not being fully utilized by all teachers who engage in it. Literature would suggest some avenues for further consideration.

In "The Quiet Revolution- Rethinking Teacher Development" (Darling-Hammond, 1996), the professional development practices of teachers in other parts of the world is

contrasted with those here in the United States. In European and Asian countries, inservice teachers, particularly those in the early years of teaching, receive far greater continued development. "In Luxembourg, a seven-year process, extends beyond the baccalaureate degree to professional training that blends pedagogical learning with extensive supervised practice teaching" (Darling-Hammond, 1996, p. 8). In Asian countries beginning teachers receive additional inservice training, have lowered class loads so that they may observe experienced teachers and work under the supervision of master teachers. In European countries, inservice teachers spend far greater time preparing and collaborating with fellow teachers, as part of their professional day (Darling-Hammond, 1996). These activities do not take place during non-work hours where teachers are expected to collaborate without getting paid for their efforts. Rather, they are part of the expectations of teachers as part of their professional practice. These kinds of conditions are foreign to the structure of schools in the United States. It is impractical to imagine that pre-student, or inservice teachers, in the United States can implement radical changes in the structure of the regular teaching workday. However, much can be gleaned about the kinds of activities that are being pursued in an effort to improve teacher practice. Inservice teachers are continuing their educations, a practice that happens in the United States through pursuing higher degrees in teaching beyond certification. What is most promising is the role that experienced teachers can play in the development of novice teachers.

In Ma's work (1999), she describes the practice of mentoring that takes place in China between expert and novice teachers. Novice teachers are not only encouraged to seek out advice and guidance from expert teachers, they are expected to. It is understood that novice teachers do not have a totality of expertise on content knowledge or content

knowledge for teaching at the conclusion of their teacher preparation. Rather, their knowledge and expertise are seen as being in continuous development. She cites numerous examples of the Chinese teachers expressing the benefits of the mentoring relationships. In addition, she describes the structure of the schools that allows such relationships to develop.

> Chinese teachers are organized in *jiaoyanzo* or "teaching research groups". These groups, usually meeting once a week for about one hour, get together formally to share their ideas and reflections on teaching. During this period of time, a main activity is to study teaching materials. In addition, because Chinese teachers do not have their own desks in classrooms, they share an office with their colleagues, usually with other members of their teaching research groups. Teachers read and correct students' work, prepare their lessons, have individual talks with students, and spend their nonteaching time at their offices. Therefore, they have significant informal interactions with officemates outside of the formal meetings of their teaching research groups (Ma, 1999, p. 136).

This image provides a contrast to that of most elementary teachers in the United States, who work alone in their own classroom with little, to no, professional interaction with colleagues during any given workday. Again, it is impractical to imagine that pre-student or inservice teachers will change the organization of a building such that all teacher desks are housed in offices. However, it is not inconceivable that pre-student teachers could see the value of professional collegial activity and feel encouraged to seek out mentoring relationships. One hour a week of dedicated meeting time is not out of the question for most elementary teachers, nor is taking advantage of informal time with colleagues during work hours. It is

likely that few teachers consider that such minimal time investment could yield significant results, and yet Ma's work suggests that it can and does.

Ma also describes development activities undertaken by the Chinese teachers that occur on a more individual level. Chinese teachers engage in mathematics activities on their own for the interest of becoming better mathematicians. This work is not for classes, nor is it about preparing to instruct. It is in the interest of developing individual abilities as mathematicians. The Chinese teachers view themselves as mathematicians because they engage in mathematics activities (Ma L., 1999, pp. 140-141). Despite the fact that all elementary teachers in the United States are expected to teach mathematics, it would be rare to find an elementary teacher here who considers herself or himself to be a mathematician.

Given evidence that personal actions and attitudes toward the process of continuity can have a profound impact on the development of capacity, how can teacher educators cultivate it? Pre-student and novice elementary teachers who have negative attitudes toward mathematics are even less likely to believe that their efforts will result in increased capacity. They are likely to see their efforts as a waste of valuable time and not see the merit in such a process. This exemplifies the importance of combining engagement and motivation in order to inspire a desire to persevere at development activities.

Taylor notes the significance of mindset and teachers' sense of teaching identity (Taylor, 2002). He says that the way teachers envision good practice, the traits and characteristics that they mentally assign to good teaching, will be emulated in their own classrooms. This finding was supported by work done by Campbell, Horn, Nolen and Ward (Campbell, Horn, Nolen & Ward, 2008). In their work they determined that aspects of

teaching that pre-student teachers valued have a strong impact on how they engaged in learning experiences. For example, Campbell and her colleagues shared the experiences of a pre-student teacher who was not comfortable with the assessments class (Campbell, Horn, Nolen & Ward, 2008, p. 65). She did not feel that her normal approach to life and teaching coincided with the structure of assessment objectives. She thought of herself as a big picture person and not a facts and figures kind of person. However, she knew that effective teachers know how to accurately assess their students' learning. Her view of teaching included the importance of assessments. Therefore, she found motivation to exert extra effort in order to master the material. This type of identity-motivated action was not exclusive to one pre-student teacher, either. Campbell and others consistently found that identities had an impact on the learning experience for pre-student teachers. This finding is backed up by research about how mathematics identities impact students in the mathematics classroom (Cobb, Gresalfi, & Hodge, 2009; Bishop, 2012). In both studies the researchers found that identity and classroom experiences were closely linked. Of particular interest was Bishop's study that illustrated how personal identities about efficacy can impact not only how the individual views himself or herself as a learner, but also how other classmates view the learner. This research provides even more evidence for the importance of an approach that combines engagement, capacity with continuity.

In summary, the literature supports the inclusion of all three aspects of the triad of engagement, capacity and continuity in the development of effective educators. For pre-student teachers, being involved in a program that features all aspects of the triad could not only provide motivation to glean as much as possible from their pre-student teaching

experiences, it could also set them on a course of professional development that would lead to mastery teaching.

Chapter 3

Participants

Participants for the study were pre-student teachers currently placed in their pre-student teaching internship. It is important to understand their thinking when it comes to their transition from learner to teacher. The purpose of this research was to examine the development of teaching skills within pre-student teachers using the framework of engagement, capacity and continuity. Previous research has focused on teacher capacity related to content expertise or delivery skills. This research attended to those aspects but also ways that pre-student teachers became engaged in this process and their views concerning continuing professional development. Participation was voluntary for all participants. The Institutional Review Board approved all protocols prior to the onset of this research. Pseudonyms have been used in all records in order to protect the identities of the participants. Aspects of this study that were not part of the routine pre-student teaching experience were interview sessions for five participants. All other aspects of this study occurred in the context of experiences, which are part of the course requirements for pre-student teaching. Each participant interviewed participated in two interview sessions lasting roughly 35 minutes each, one at the beginning of the term, and one at the end of the term.

Participants in a traditional pre-student teaching placement. Three of the participants were from traditional pre-student teaching placements in a traditional K-12 classroom with a cooperating teacher supervisor and a university supervisor. In order to ensure that an accurate representation of the experiences of the pre-student teachers in the traditional placement was feasible, the director of the traditional pre-student placement discussed significant features and details of the traditional placement with this researcher.

The process for placing pre-student teachers, as well as the traditional setting, single pre-student teacher in a classroom, along with standard requirements were all explained to this researcher. In addition, a survey of the syllabi of different sections of the traditional pre-student teaching placement was conducted in order to discern routine activities and requirements for perspective teachers in the traditional placement. Participation was solicited during a general informational meeting at the beginning of the semester. They were informed about the nature of the study during a brief presentation during the meeting and interested participants provided contact information to the primary investigator. Of the pre-student teachers who provided contact information, three were randomly selected to participate. Deb is seeking certification in secondary mathematics teaching. Deb is a non-traditional student in the sense that she has a previous degree from another school. Claire is seeking certification in elementary education majoring in mathematics. Claire is a traditional undergraduate student pursuing her first degree. Barb is seeking certification in elementary education not majoring or minoring in mathematics. Barb is also a traditional student pursuing her first degree. All three participants selected demonstrated their agreement to participate by signing a consent agreement. Consent occurred at the first interview session, prior to the onset of the interview. Participants in the traditional pre-student teaching placement participated in two interview sessions with the principle investigator.

Participants in an alternative pre-student teaching placement. The remaining four participants served as pre-student teachers in an alternative placement. Pre-student teachers in the alternative placement were solicited to participate on the first day of their placement-related professional development. University supervisors excused themselves, and the pre-student teachers were informed of the nature of the study. Those willing to

participate provided their consent at that time. University supervisors were not aware of which pre-student teachers agreed to participate. The participants in the alternative pre-student teaching placement were observed during their pre-student teaching experiences. They also shared written work created as a part of their pre-student teaching experiences. Four pre-student teachers from the GO-GIRL program agreed to participate in this study. Gail is seeking certification in teaching English as a second language. Gail is a non-traditional student and has had a career prior to returning to school to pursue her degree in education. Fiona is pursuing certification in secondary science education. Fiona is a traditional undergraduate student. Allie is also pursuing certification in secondary science education. Allie is a traditional undergraduate student. Elise is pursuing certification in elementary education with a major in science. Elise will be attaining her first degree when she completes her degree in education. However, Elise previously sought a degree in science from another school and then took a hiatus and returned to seek her degree in education. Allie and Elise agreed to participate in interviews with the principal investigator. The group of participants in the alternative program did not include pre-student teachers majoring in elementary or secondary mathematics. Allie was selected as an interview candidate because science includes the use of mathematics regularly. This choice was deemed the most appropriate substitute given the lack of a secondary mathematics candidate. The selection of Allie and Elise provided a pair of perspectives from the differing elementary and secondary arenas.

Placements

Traditional pre-student teaching placement. Requirements for attaining certification vary from state to state. In the state in which this study was conducted, state

requirements include field experience. According to state documents, accredited education programs must

> provide candidates with opportunities to relate principles and theories from the conceptual framework(s) to actual practice in classrooms and schools; create meaningful learning experiences for all students; and study and practice in a variety of communities with students of different ages and with culturally diverse and exceptional populations. Field experiences encourage reflection by candidates and include feedback from higher education faculty, school faculty and peers. Student teaching and internship experiences are sufficiently extensive and intensive for candidates to demonstrate competence in the professional roles for which they are preparing. (A minimum of 10 weeks of full-time student teaching, or its equivalent, is expected.) (Michigan Department of Education, 2003).

At the university where this study was conducted, field experiences include a pre-student teaching experience. Prior to a full-time student teaching experience, education students are placed in a school in the community. They are placed in schools according to their expected certification. Pre-student teachers seeking elementary certification are placed in elementary schools, or middle schools in a classroom teaching the subject of their major or minor. Pre-student teachers seeking secondary certification are placed in high schools or middle schools in a subject-specific classroom. For example, if a pre-student teacher is seeking secondary certification in mathematics, they will be placed in a high school mathematics classroom. Pre-student teachers are individually assigned a cooperating teacher from the school. Pre-student teachers must spend time in the classroom either four half days a week or two full days a week for ten weeks during a university semester.

Pre-student teachers must also simultaneously engage in a theory course. Theory course sections are separated according to certification. Secondary certification pre-student teachers are in sections with other secondary certification pre-student teachers, for example. Additionally, in most cases, pre-student teachers within a section are doing their fieldwork in the same school, but not in the same classroom.

All pre-student teachers in the traditional program are responsible for completing a set of tasks in order to successfully complete their placement experience. While in the field, pre-student teachers must carry out tasks and duties assigned to them by their cooperating teacher. Those tasks will vary in nature but could include assisting in small-group activities, examining student work, creating displays for the classroom or co-teaching a lesson. All pre-student teachers are responsible for teaching two lessons that they have created. As part of the theory course, all pre-student teachers must complete certain tasks as well. Pre-student teachers are expected to contribute to classroom discussions on topics related to teacher practice, such as classroom management. Pre-student teachers are assigned readings designed to support assignments and experiences. Pre-student teachers must complete a variety of written assignments that are included in their teaching portfolio. These assignments include conducting a curriculum analysis, writing reflective journal entries about their field experiences, and creating lesson plans, which include the two lessons that the pre-student teachers are responsible for teaching in the field. The combination of fieldwork and in-class assignments exists to provide pre-student teachers with a comprehensive range of experiences to assist in their development as teachers. All pre-student teachers from the traditional program who participated in this study met all of the above requirements during their semester-long pre-student teaching experience.

GO-GIRL. Gaining Options: Girls Investigate Real Life™ (GO-GIRL) provides an alternative field experience for pre-student teachers offered in an out of school learning setting. The objective of the GO-GIRL program is "to increase the competence and confidence of middle school girls in the areas of mathematics, technology, scientific thinking, and communication by engaging them in experiences that promote interest in and awareness of STEM (Science, Technology, Engineering and Mathematics) related careers" (Roberts, 2012). Simultaneously, the goal of GO-GIRL is to provide pre-student teachers with an authentic teaching experience, with an emphasis on the instruction of mathematics and science as part of their pre-student teaching internship. Programs of this sort have been shown to encourage professional growth in educators (Rosaen, & Schram, 1997). Faculty from the University of Michigan Institute for Research on Women and Gender along with faculty from the Wayne State University College of Education collaboratively developed the program in response to the decline in mathematics interest and achievement among girls and minority youth during middle school. During the program, pre-student teachers from the College of Education guide teams of girls during the course of the 10-week program. During each session the teams agree on a social science research topic of mutual interest. Pre-student teacher pairs guide the girls in developing survey questions related to the selected topic. The survey is posted online. The teams use computer applications designed to conduct a statistical analysis aimed at interpreting the data. At the end of the program teams make public presentations of their findings.

The program follows the same 10-week structure as the traditional program. But fieldwork takes place only one day per week. GO-GIRL pre-student teachers do not have a cooperating teacher because they are teaching lessons themselves. They do have university

supervisors present at all times during their field experiences. GO-GIRL pre-student teachers also participate in a theory course together. Pre-student teacher candidates who participate in the GO-GIRL placement elect to do so as an alternative to the traditional program.

The duties and responsibilities for a GO-GIRL pre-student teacher are much the same as those of the pre-student teacher in the traditional placement. While in the field, they too must carry out tasks and duties assigned to them. The biggest difference is that their responsibilities include being the teacher for their group of seventh grade girls for each field experience. Rather than teach two lessons, they teach each week, mostly from pre-existing lesson plans. As part of the theory course, GO-GIRL pre-student teachers are responsible for many of the same tasks as pre-student teachers in the traditional program. They must contribute to classroom discussions, and complete reading and writing assignments. The biggest difference is that the theory course occasionally includes time to discuss within the group, lessons during the following field experience day. The combination of fieldwork and in-class assignments in the GO-GIRL placement also exists to provide pre-student teachers with a comprehensive range of experiences to assist in their development as teachers. The GO-GIRL pre-student teaching placement offers these experiences through a unique perspective. All participants from the GO-GIRL pre-student teaching placement met all of the above requirements during their semester-long pre-student teaching experience.

Engagement

Engagement has been shown to be an effective component to success in the process of developing new skills. For pre-student teachers to be engaged in the process of evolving from learner to teacher would mean that they are actively examining their experiences and endeavoring to develop greater teaching skills based upon what they learn as a product of

that active engagement. Focus on the student experience and mentoring and collegial relationships have been shown to be effective means of activating engagement in pre-student teachers. Therefore, it is important to consider how those factors are featured in the pre-student teaching experience.

Engagement in a traditional pre-student teacher placement. In the traditional pre-student teacher program, individuals participate in experiences that could activate their engagement in their development process. The very nature of the field experience means that pre-student teachers are working with K-12 students. For many pre-student teachers, this experience provides them with their first opportunity to be in a classroom as a teacher, not a student. For many, being engaged in the classroom environment as a teacher is a revelation. In the traditional pre-student teacher program, pre-student teachers spend some of their fieldwork time observing the cooperating teacher as the cooperating teacher teaches lessons and leads their students through daily routines. The pre-student teacher in the traditional placement also participates in many classroom functions while in the field. The pre-student teacher in the traditional placement may work with small groups of students to support lessons. They may co-teach lessons with their cooperating teacher. Also, part of the requirements for successful completion of the pre-student teaching experience in the traditional program includes teaching two lessons that the pre-student teacher designs himself or herself. In this manner, pre-student teachers are exposed to the student experience, as well as professionals active in the field, which could activate their level of engagement in the experience.

Another important feature of the pre-student teaching experience is the accompanying theory course. During these sessions, pre-student teachers have opportunities to share their

observations during their days spent in their cooperating teacher's classrooms and receive feedback on their observations from their university supervisor. Another important function of the theory course is to prepare pre-student teachers for teaching their own lessons. Pre-student teachers design lessons and unit plans as part of the expectations for this course. With their university supervisor, they are given opportunities to discuss considerations that will impact their development of lesson plans. They are given opportunities to discuss considerations that will impact how they carry out their teaching. They are also given opportunities to reflect on considerations that impact their post-teaching reflections and how those reflections will influence their future teaching. Cooperating teachers and university supervisors observe the lessons taught by the pre-student teachers. They provide their feedback to the pre-student teachers. These experiences present opportunities for pre-student teachers to engage in their development by interacting with experienced professionals.

In addition to lesson plans, pre-student teachers create several other important documents that will become part of a portfolio. Several of these could activate engagement in the process of developing as a teacher through considerations of student thinking. All pre-student teachers must write six reflective journal entries during their ten-week field experience. These entries pertain to their experiences in the classroom. University supervisors have an opportunity to give feedback on these journal entries. In addition, pre-student teachers must create a classroom organization and management plan. In this document pre-student teachers consider their teaching philosophy and create a plan reflecting that philosophy. This assignment includes a large number of significant features of running a classroom, such as how desks and materials will be organized, what sorts of daily routines will be established, and what kinds of rules and consequences the pre-student teachers

anticipate they will enact in their future classrooms. These written pieces present an opportunity to activate pre-student teachers' engagement in their development by considering the significance of the student experience.

Engagement in the GO-GIRL pre-student teacher placement. The pre-student teacher in the GO-GIRL program experiences many of the same opportunities to engage in their development. Many GO-GIRL pre-student teachers are also having their first experiences as a teacher in a classroom. As with their cohorts in the traditional pre-student teaching placement, GO-GIRL pre-student teachers participate in many different activities in the classroom, including co-teaching lessons and independently teaching lessons. There are some differences between the two experiences though. The GO-GIRL pre-student teaching placement requires that pre-student teachers teach lessons during each field experience. That responsibility is shared with a teaching partner through many of the lessons. However, all GO-GIRL pre-student teachers take the lead role in teaching a lesson during most field experience days. And on most field experience days, GO-GIRL pre-student teachers also have an opportunity to observe others teaching. They observe their teaching partners, who are also pre-service teachers. Another key difference between the two placements is the curriculum. GO-GIRL pre-student teachers teach more frequently, but the lessons they teach are primarily not of their own making. On most field experience days, GO-GIRL pre-student teachers teach lessons that are part of the GO-GIRL curriculum. For one of their teaching experience days, GO-GIRL pre-student teachers use a lesson of their own design. These lessons are in line with the GO-GIRL curriculum, but like their counterparts in the traditional program, the GO-GIRL prestudent teachers design the lessons with advice and guidance from the university supervisors. After teaching the lesson, they must evaluate their choice in

terms of their own perception of the success they had when teaching it. These activities offer opportunities for GO-GIRL pre-student teachers to become engaged in their development by considering the student experience.

The theory course also plays a role in offering opportunities for GO-GIRL pre-student teachers to engage in their development by considering student thinking. Like their cohorts in the traditional pre-student teaching placement, GO-GIRL pre-student teachers have opportunities to share their observations during their days spent in their classrooms and receive feedback on their observations from their university supervisor, as well as prepare for teaching lessons. The primary difference between the different placements is that due to the nature of the program, more time is spent in the GO-GIRL pre-student teaching theory course discussing lesson preparation, delivery and reflections. This is because GO-GIRL pre-student teachers teach lessons during each field experience. Therefore, during the theory course necessary discussions about the lessons take place with the university supervisor and among the pre-student teachers. These activities provide opportunities for pre-student teachers to engage in their development by considering the student experience. The other difference is that the nature of the program means that every pre-student teacher in the theory course is instructing the same material. Therefore, the experiences have a certain commonality that can impact how the pre-student teachers are able to discuss their experiences together.

Like their pre-student teaching cohorts in the traditional program, GO-GIRL pre-student teachers create several other important documents that will become part of a portfolio. GO-GIRL pre-student teachers must write six reflective journal entries during their ten-week field experience. They also must create a classroom organization and management plan and

they must develop their own lesson plans. The only significant difference between the two programs is that the university supervisors reading and responding to these written assignments are present during all of the GO-GIRL pre-student teaching field experiences. This is in contrast to the traditional placement, which only requires the university supervisor to be present for three experiences during the ten-week placement. This difference may result in a different sort of feedback on written assignments from the university supervisor. Each of these written pieces presents an opportunity to activate pre-student teachers' engagement in their development by considering the significance of the student experience for the GO-GIRL pre-student teachers, as they do for those in the traditional program.

What does engagement look like?

This study investigated the previously described teacher education practices in the differing placements that could lead to more engagement in the transition from learner to teacher on the part of the pre-student teachers. The evidence of this engagement best illustrated itself through themes relating to the student experience as well as the role of mentors and peers on the pre-student teaching experience. The study examined what kind of teacher education practices during lesson planning led to observable considerations of the student experience. The study has examined what kind of teacher education practices led to modifications of lessons during teaching due to an awareness of the student experience. In addition, the study has examined what kind of teacher education practices led pre-student teachers to reflect back on their teaching and modify, or develop intentions to modify, future teaching experiences due to considerations of the student experience. In addition, written documents have been examined along with experiences in the theory course to determine their impact on pre-student teacher engagement in their development. In addition, the study

has examined the role that other professionals that the pre-student teachers interacted with had on the cycle of lesson planning, instruction and post-instruction reflections.

Engagement data collection.

Interviews. In order to gather data about these experiences, five pre-student teachers participated in semi-structured interview sessions. As described earlier, three pre-student teachers were solicited from traditional placement and two GO-GIRL pre-student teachers were solicited to participate in the interview sessions. Interviews took place two times during the course of the semester. Initial interviews took place prior to the beginning of the pre-student teaching experiences. Claire had visited the school where she was placed just prior to our initial interview, but she had not had an official field experience day in the classroom yet. Final interviews took place as near to the conclusion of the term as was reasonable given demands on the pre-student teachers to prepare for final evaluations in their various courses. Interviews followed the format described by Patton (2002, p. 347) as a combined approach utilizing features of both a flexible conversational interview as well as those of a standardized interview format. Interviews began and ended with a conversational discussion about overall expectations for and impressions of the pre-student teaching experience. A series of standardized interview questions came in the middle of the interview. Interviews featured several simulation questions during the initial interview in order to optimize the collection of data relevant to this study. Patton suggests these types of questions as a way to "provide context for what would otherwise be quite difficult questions" (Patton, 2002, p. 386). Since the pre-student teaching experience hadn't yet occurred and there was no way of knowing of the pre-student teachers' prior teaching experiences, these sorts of questions allowed access to the ideas and expectations that pre-student teachers had about the

teaching experience. During the interview, follow-up and clarification questions were asked when a response to a structured question warranted further elucidation. Questions asked during the final interviews followed a similar structure to those asked during the initial interview, but were based upon the actual experiences pre-student teachers had, rather than asking pre-student teachers to anticipate future experiences. All interviews took place in a public setting on campus. All interviews were audio recorded, with the permission of interview subjects. All interviews were transcribed as soon as possible after the interviews took place. All copies of tape-recorded sessions and transcriptions were protected according to guidelines for safeguarding participants. Transcriptions use pseudonyms in order to maintain anonymity of interview subjects. A list of initial interview questions can be found in Appendix A. And a list of final interview questions can be found in Appendix B. Interview questions included several questions which were intended to gather information about activities that lead to greater engagement in three areas: the processes of lesson development; the act of modification of a lesson during teaching sessions; and post-teaching reflections that indicate plans to adjust future teaching activities based upon feedback or events during teaching experiences. In addition, during the interviews evidence was collected that pertained to the role of professionals and peers during pre-student teaching as it relates to engagement.

Artifacts. **"**Documents prove valuable not only because of what can be learned directly from them but also as stimulus for paths of inquiry that can be pursued only through direct observation and interviewing" (Patton, 2002, p. 294). There were several types of artifacts collected during this study. All artifacts originated from the GO-GIRL pre-student teachers. Artifacts were not collected from pre-student teachers in a traditional placement.

All pieces of collected work were part of the regular coursework assignments for pre-student teachers. The first artifact type consisted of reflective journals. The second type of artifact consisted of papers written for their portfolio. Of particular interest were three pieces of writing: the first is a district curriculum analysis, the classroom organization and management plan, and the pre-student teacher designed lesson plans.

All pre-student teachers in the GO-GIRL program participated in an online discussion board. The topics are timely in that they reflect elements of the pre-student teaching experience that are often most relevant at any given time during the program. Pre-student teachers were expected to post a response to the given topic and also post a reply to at least one other pre-student teacher's response. Discussion board topics that pertain to this study were included in the collected data. Pre-student teacher responses were read and coded, as they became available. A list of the included discussion board topic can be found in Appendix E.

As part of the pre-student teaching experience, GO-GIRL pre-student teachers created a variety of instructional materials. These included lesson plans, supplemental worksheets meant to scaffold instructional materials, communication with families of students and puzzles that were used as part of a learn-the-campus scavenger hunt. The array of artifacts: reflective journals, written assignment pieces, discussion board responses, and materials created for instruction together assisted in creating a more complete picture of the pre-student teaching experience.

As part of the regular GO-GIRL pre-student teaching experience, pre-student teachers write reflective journal entries as well as assigned papers for their theory course, some of

which ask them to envision their future practice as a fully certified teacher. GO-GIRL mentors participate in a discussion board as part of the routine mentoring experience. In addition they routinely create instructional documents and artifacts as part of their experience of learning to become a teacher. Therefore, the collection of these materials did not constitute a significant change from the usual experience of pre-student teachers in the GO-GIRL pre-student teaching placement.

Observations. Another form of data collection was through observations. GO-GIRL pre-student teacher mentors were the focus of these observations. Pre-student teachers in a traditional placement were not observed as part of this study. It is also important to note that no K-12 students were the focus of observations. Observations of GO-GIRL pre-student teachers took place in two settings. The first setting was the theory course that took place one weekday evening per week, for each week of the semester, on campus. The second setting was during the Saturday sessions of the GO-GIRL program where pre-student teachers taught small groups of twelve-year old female students. "The question of how the observer affects what is observed has natural as well as social science dimensions" (Patton, 2002, p. 326). In order to minimize the intrusion of the observations on the overall experience for middle school students and pre-student teachers, observation were of a passive participatory nature. As Patton points out "The challenge is to combine participation and observation so as to become capable of understanding the setting as an insider while describing it to and for outsiders" (Patton, 2002, p. 268). The researcher chatted with and interacted with the university supervisors and pre-student teachers in a casual, non-official way during down times, for example during lunches. But during times when field notes were being taken, the researcher participated as passively as possible. In this way, a rapport was

established with the participants so that everyone was comfortable. But the activities and experiences were not influenced by the research, in as much as was possible. Patton suggests, “each unit of activity is observed and treated as a self-contained event for the purposes of managing field notes” (Patton, 2002, p. 285). This was done during the course of this research. The researcher took field notes during each observation session. Observations were not video or audio recorded so as to protect the twelve-year old students involved in the GO-GIRL program. The researcher's background with the GO-GIRL program includes having been an instructor of the pre-student-teachers for two years prior to this study. In addition, the researcher is a certified teacher and has gone through the certification process, including participating in pre-student teaching experiences. This history provided the researcher with knowledge and insight into the scenes that were observed. Patton (2002) refers to this sort of knowledge as sensitizing concepts (p. 268). This knowledge was beneficial in that the language and interactions were familiar. However, caution was taken in this situation. In *Participant Observation*, (1980), Spradley warns that over-familiarization could potentially lead to ignoring significant interactions or events. Observations were conducted with this warning in mind. Following the guidelines laid out by Spradley, observations began with the intention of gathering "wide-angle lens" information. Interactions and behaviors were observed and recorded in field notes at the time of observations. Field notes were typed up during observation episodes, unless the environment did not allow for that. During field trips, notes were taken in a more condensed form and then elaborated upon as soon after the field trips as possible. At regular intervals throughout the semester, field notes were analyzed. Data were categorized into big picture themes that pertained to engagement, capacity and continuity was done. Through the

semester, as patterns of behavior and development emerged, observation took on a more focused nature. Activities and interactions that were more relevant became the focus of subsequent observations. The pre-student teachers who are the focus of the interviews were mentor partner pairs, which meant that observations, along with interviews and artifacts, allowed a more complete image of their experience and development. During Saturday sessions, GO-GIRL pre-student teachers teach in three separate locations, two mentor teams, or four pre-student teachers, per room. This meant that sometimes up to three participants in this study were being observed at a time, but sometimes only one. Rarely were all four observed in the same experience at the same time.

As part of the GO-GIRL pre-student teaching experience, university instructors consistently observe pre-student teachers. The presence of an additional, unobtrusive observer did not alter the nature of the teaching experience days for the pre-student teachers or their middle school students.

Engagement data analysis. The different elements of the study necessitate different types of analysis. One common theme is that all elements were evaluated as soon as possible after the various forms of data were collected. This allowed for appropriate adjustments of observations and later analysis of ongoing data collection. The analysis of all artifacts, interviews and observations was informed by procedures established in Spradley's *Participant Observation* (1980), as well as those articulated by Patton's *Qualitative Research & Evaluation Methods* (2002). "Developing some manageable classification or coding scheme is the first stop of analysis" (Patton, 2002, p. 436). Because this study was structured around the concepts of engagement, capacity and continuity, categories were initially established that related to those concepts. "Begin by looking for recurring regularities in the

data. These regularities reveal patterns that can be sorted into categories" (Patton, 2002, p. 465). For example, "student thinking" was a category relating to the engagement concept, while" subject matter issues" was a category relating to capacity. Axial coding (Patton, 2002, p. 490), was used as data were processed. Data were examined and placed into appropriate categories. "Inductive analysis involves discovering patterns, themes and categories in one's data. Findings emerge out of the data through the analyst's interactions with the data" (Patton, 2002, p. 453). As further analysis was conducted themes and sub-themes were identified and refined as the analysis progressed. Analysis occurred in regular intervals during the progress of the study. But caution was exercised to not draw conclusions early based on initial data analysis. "Rushing to premature conclusions should be avoided. But repressing analytical insights may mean losing them forever, for there's no guarantee they'll return" (Patton, 2002, p. 436).

In order to ensure trustworthiness of the study, results that were included in the findings appeared in numerous instances in the data. Because data collection methods varied between the two programs, data found in interviews was given more weight. This was done in an effort to keep the representations balanced. Triangulation was achieved by utilizing information that was referred to numerous times in interviews. And within the alternative program, instances discussed that occurred in more than one type of data were utilized to achieve triangulation. In addition, conclusions and implications were based upon themes and patterns evidenced by multiple individuals and sources. The organization of the data can be seen in the figures included in Appendices C and D.

Artifacts were read and coded shortly after the data had been collected. When analyzing data on engagement, attention was paid to writing that indicates that considerations

of the student experience occurred or that mentors and peers played a role in actions or experiences.

After each interviews, audio recordings were transcribed as soon as possible. Transcriptions were read and coded shortly after the interviews took place. Interview questions were created prior to the beginning of this study. Interview responses were scrutinized for evidence of features that would indicate engagement in the process of development through pre-student teaching. Responses were evaluated to determine if the student experience or the role of peers and mentors influenced decisions and actions regarding lesson development, teaching and change in teacher practice.

Field notes were taken during observations. The field notes were read and coded at regular intervals throughout the semester. Field notes were evaluated for evidence to illustrate examples of practices that activate engagement. In particular, observation notes were scrutinized to look for examples of conversations or actions that would indicate that lesson plan development, and enactment were influenced by considering the student experience or the influence of peers or mentors. Additionally, observation notes were scrutinized to determine if reflections led to a change in practice.

Capacity

Subject matter capacity has been shown to be an effective component to success in the process of developing new skills. For pre-student teachers to demonstrate capacity in the process of evolving from learner to teacher would mean that they show observable behaviors that indicate that they are considering their subject matter before teaching and effectively making instructional choices in order to successfully teach their students stated learning

objectives. It is possible that some pre-student teachers will not have sufficient capacity for teaching subject matter at the beginning of their pre-student teaching internship. Pre-student teaching is the often the first experience where pre-student teachers actually teach. During these experiences, they may discover their own insufficient capacity. While pre-student teaching, pre-student teachers will participate in activities and experiences that could lead to feelings of greater capacity.

Capacity in a traditional pre-student teacher placement. When pre-student teachers begin their pre-student teaching experience, they have usually already successfully completed the coursework in teaching specific subject matter, or sometimes they are finishing up coursework while involved in the pre-student teaching experience. The intent of these courses is to allow pre-student teachers to have the knowledge necessary when they are faced with teaching experiences. However, research has shown that this intent is not always achieved. While in pre-student student teaching, pre-student teachers participate in activities that may alter this situation. Pre-student teachers are engaged in teaching activities during the field experiences. These activities require preparation. Pre-student teachers may create activities to assist in teaching lessons in their cooperating teacher's classroom. They may be asked to co-teach a lesson with their cooperating teacher and they are required to teach lessons of their own design. During the process of preparation to teach, pre-student teachers have opportunities to discuss subject matter with cooperating teachers and university supervisors. They also can gather support materials from their own sources, such as textbooks from coursework taken earlier, teacher guides and information found online. During this process, it is possible that pre-student teachers could have experiences that could

lead to a self-perception of greater capacity. Their sense of what they needed to know could alter leading to a sense of deeper understanding of subject matter.

Capacity in the GO-GIRL pre-student teacher placement. Just as their counterparts in the more traditional pre-student teacher placements, GO-GIRL pre-student teachers are given feedback from university staff. Prior to teaching these lessons, the pre-student teachers are given the opportunity to discuss the important objectives of the lessons. They are given an opportunity to discuss the significance of the concepts being taught. As with their counterparts in the traditional pre-student teaching placement, GO-GIRL pre-student teachers are encouraged to create materials to support lessons that were designed for the program. The biggest difference between the two programs is that GO-GIRL pre-student teachers must prepare to teach throughout each day of their field experience. The pre-student teaching pairs are responsible for the learning of their own team of girls each week. This presents more opportunities for experiencing a situation that could lead to a self-perception of increased capacity in a given subject. The drawback of the GO-GIRL program is that the curriculum has a central focus and does not include subject matter on all core subjects. If it is true that the role of subject matter itself can influence a sense of increased capacity, this could limit the opportunities for certain pre-student teachers to have this experience. However, in this study, there was more focus on the sense of capacity to teach mathematics and that subject will be a feature of the experience for all participants in this study in both placements.

What does capacity look like? This study has examined the teacher education practices experienced during the two differing placements that led to greater self-perception relating to capacity for instruction of subject matter. The study examined what kind of

teacher education practices during lesson planning demonstrated an awareness of the need for capacity or a self-perception of increased capacity on the part of the pre-student teachers.

Capacity data collection. Data was collected seeking evidence relating to the development of capacity in pre-student teachers during interviews. It was also collected in written artifacts and during observation. Again, pre-student teachers in a traditional placement only took part in the interview portion of data collection. When conducting interviews, questions were asked that sought to determine whether pre-student teachers achieved stated learning goals. They were asked to justify how they are certain that they did or did not achieve their learning goals. They were asked to describe practices or experiences that allowed them to make instructional choices in designing and enacting their lessons and how those choices allowed them to reach their teaching goals. Finally, they were asked to describe if and how their experiences in pre-student teaching allowed them to adjust their teaching practice in order to improve their capacity for teaching subject matter. In written data and data obtained through observations, evidence was examined to determine if pre-student teachers demonstrated an awareness of or felt an increase in understanding of fundamental principles essential to effective instruction of subject matter.

Capacity data analysis. Transcripts from interviews, field notes from observations and all written artifacts were analyzed with respect to capacity. As with elements analyzed for engagement, the analysis of all artifacts, interviews and observations was informed by procedures established in Spradley's *Participant Observation* (1980). Artifacts were read and coded, as they become available. When analyzing data on capacity, attention was paid to language or writing that indicates that pre-student teachers were utilizing or developing subject matter capacity during their pre-student teaching experiences. Data was scrutinized

to determine whether pre-student teachers consider best instructional strategies for attaining successful student learning while preparing lessons. Attention was paid to activities and experiences that led to these considerations. Data were analyzed to determine if pre-student teachers are aware of whether or not they were successful in achieving student learning of objectives, and if pre-student teachers felt unsuccessful, could they determine how to alter their approach using fundamental knowledge of subject matter to succeed in the next teaching experience.

Continuity

Continuity has been shown to be an effective component to success in the process of developing new skills. For pre-student teachers to demonstrate continuity in the process of evolving from learner to teacher would mean that they show observable behaviors that indicate that they are considering their future as teaching professionals. Continuity in pre-student teachers would indicate that they are aware of areas that still need development. But awareness is not sufficient. Continuity in pre-student teachers would indicate that they have clearly defined ideas about how to continue to develop themselves as teaching professionals.

Continuity in a traditional pre-student teacher placement. Feedback is a crucial element to the pre-student teaching experience in the traditional placement. Feedback allows cooperating teachers and university supervisors to let pre-student teachers know things that are going successfully and to encourage them in those activities. Feedback also allows cooperating teachers and university supervisors to let pre-student teachers know what is not going so successfully and to offer advice on how to strengthen weaker areas. During the pre-student teacher experience, feedback can come through several avenues.

The cooperating teacher is present during all fieldwork experiences. In addition, the cooperating teacher will observe pre-student teachers teaching lessons independently. The cooperating teacher engages in conversations with the pre-student teacher about observations he or she has made of the activities of the pre-student teacher. Some of these conversations may be casual feedback during the course of activities in the classroom. Or at times it may be more appropriate to have a more formal conversation. An additional source of feedback is the university supervisor.

The university supervisor observes the pre-student teacher in the field on three occasions. During at least two of those visits, the pre-student teacher is teaching his or her lesson. This allows the university supervisor to provide feedback on those teaching experiences. Often this feedback includes a formal conversation about the lesson as well as some written feedback concerning observations made. In addition, the university supervisor is responsible for reading all written assignments and evaluating them according to a standard rubric and providing constructive feedback. There are numerous assignments, already mentioned, where this feedback can pertain to experiences where the pre-student teacher may have encountered a difficulty and where the university supervisor can offer advice on how to develop in light of those difficulties. Some examples include the six reflective journal entries, the lesson plans, the classroom organization and management plan and the district curriculum analysis. In addition to written feedback from the university supervisor, oral feedback can be provided. One instance already cited was to review teaching experiences. But others occur during the meetings of the theory class. Pre-student teachers have an opportunity to discuss events from their field experiences. At this time, they can receive feedback from their supervisor and peers on experiences that they choose to share

with the class. The addition of the perspective of the fellow pre-student teachers can provide an opportunity for multiple perspectives on the same experience.

A final source of feedback can come from the pre-student teacher's own reflections. As pre-student teachers have field experience and complete assignments in connection with their methods courses, they may discover areas of needed growth on their own. Any number of experiences during pre-student teaching could lead to such a realization. A motivated pre-student teacher could take this realization and use it as an impetus to seek out a source of development to continue with their professional growth. All of these experiences offer occasions when pre-student teachers may receive feedback that could lead them to consider areas that need more development. In addition, all of these experiences offer opportunities to learn about resources they may use in the future to strengthen weaker areas.

Continuity in the GO-GIRL pre-student teacher placement. Feedback is equally crucial in the GO-GIRL pre-student teaching experience. The GO-GIRL pre-student teachers experience many of the same opportunities to receive feedback, as do their counterparts in the traditional pre-student teaching placement. GO-GIRL pre-student teachers receive feedback on their teaching and other activities performed during their field experience. GO-GIRL pre-student teachers also receive feedback on their written assignments. They also engage in personal reflection as a result of their field experiences and theory course assignments. There are several differences in the GO-GIRL experience in comparison to the traditional pre-student teacher placement. The first difference is how the university supervisors oversee the field experience and classroom theory course and how that could impact the type of feedback provided. Since the GO-GIRL pre-student teachers are responsible for all of the teaching during their field experience, they do not have a traditional

cooperating teacher. They are supervised by the university faculty person responsible for overseeing their field experience, the director of the program and the university faculty person responsible for heading their theory course. One or all of those supervisors are present during each field experience, though each does not see every moment for each pre-service teacher as the groups meet in different rooms during the course of the day. This sort of supervision allows for a perspective on the writing assignments turned in to the university supervisor that can include observations of teaching and activities during the field experience. This setup could prove a weakness for this placement in that GO-GIRL pre-student teachers are not provided with an opportunity to see an experienced professional teacher teach to the classroom as part of this experience. However, during professional development days, university supervisors do model several days of lessons for the GO-GIRL pre-student teachers.

Another difference surrounds the discussions within the theory course. As with the traditional pre-service teacher theory course, GO-GIRL pre-student teachers might occasionally discuss experiences from their fieldwork. What makes the GO-GIRL pre-student teaching placement different in this context is that the university supervisor was present during the experience under discussion, as were several of the pre-student-teacher peers involved in the conversation. This is in contrast to the traditional pre-student teaching theory course where the supervisor is only required to be present for three field experiences. Also, in the traditional pre-student teaching program, each pre-student teacher has his or her field experience alone. Therefore, none of their pre-student teaching peers in their theory class would have been present for a field experience that the pre-student teacher might wish

to discuss. This difference may create a different sort of feedback in each of the differing placements.

A final feature of the GO-GIRL pre-student teaching experience that is unique in comparison to the traditional is the online discussion board. This is not to say that an instructor of a pre-student teaching theory class in the traditional placement would never employ such an assignment. But it is not a core requirement of the theory course, and at the time of this research, an examination of syllabi indicated that the online discussion board was not being used in the traditional pre-student teacher placement theory courses. The online discussion board provides an additional opportunity for pre-student teachers to receive feedback from their peers and supervisors on aspects of their experience that might lead to an awareness of an area that needs improvement. Further, the nature of the discussion board, like an in-class discussion, means that feedback is coming from university supervisors and peers. Again, the presence of multiple voices during the feedback process can offer a variety of ideas that may suggest an avenue to pursue to strengthen weaknesses.

It is important to note that each pre-service teaching theory course in the traditional program offers unique different assignments in addition to the core requirements. For example, some theory courses have examinations or require attendance at a particular professional development seminar. These assignments each provide additional avenues for feedback from the university supervisor. These assignments are not a part of the GO-GIRL pre-student teaching placement.

Continuity data collection. Data collection of evidence relating to the development of continuity in pre-student teachers was done by conducting interviews, collecting written

artifacts and through observation. Again, pre-student teachers in a traditional placement only took part in the interview portion of data collection. When conducting interviews, questions were asked that sought to determine whether or not pre-student teachers considered development beyond the pre-student teaching experience. If they have considered development, they were asked what that development would be. And finally, pre-student teachers were asked what experiences in pre-student teaching led to such considerations.

Continuity data analysis. Transcripts from interviews, field notes from observations and all written artifacts were analyzed with respect to continuity. As with elements analyzed for engagement, and capacity the analysis of all artifacts, interviews and observations were informed by procedures established in Spradley's *Participant Observation* (1980). Artifacts were read and coded, as they became available. When analyzing data on continuity, attention was paid to language or writing that indicated whether pre-student teachers consider how they will continue to develop. Further, data were scrutinized in order to determine if pre-student teachers are able to clearly articulate a plan for continuity for themselves. In particular, it has been significant to see if their plan is reflective of actual needs for development. In other words, does their plan for development include attending to areas that they, or others in their program, noted as areas of weakness? This kind of awareness can be considered a contrast to a general awareness that teachers simply need to continue to take classes in order to maintain certification.

In summary, the pre-student teaching experience, both traditional and GO-GIRL, presents a unique opportunity to examine the evolution of pre-student teachers from learners to teachers. This examination was conducted through the lenses of engagement, continuity and capacity. Participants from the GO-GIRL pre-student teaching placement were observed

during their pre-student teaching experiences, their written artifacts were collected and examined and they participated in interviews in order to get a complete picture of their experience. In addition, pre-service teachers from the traditional pre-student teacher placement were included, though in a more limited capacity, in order to provide an opportunity to determine if the experiences yield differing results. The unique nature GO-GIRL program warrants it being the focus of this study.

Chapter 4

The purpose of this study was to examine the experiences that occur as part of the transition from learner to teacher while prospective teachers are in their pre-student teaching. These experiences were examined using a conceptual framework that highlights the importance of the triad of engagement, capacity and continuity during learning experiences. The findings will be organized according to the main three research questions. Within each section, significant themes and the experiences that demonstrate their significance to the pre-student teachers will be presented. The final research question comparing the experiences of two different groups of pre-student teachers will be discussed in each of the sections dedicated to the other research questions. I followed Patton's advice to, "Do your very best with your full intellect to fairly represent the data and communicate what the data reveal given the purpose of the study" (Patton, 2002, p. 433). It should also be clarified that several relevant terms are used in this section in quotes by pre-student teachers in ways not used in other portions of this document. An effort was made in the rest of this work to use the word engagement only when referring to pre-student teachers and their involvement in their own transition from learner to teacher. However, the word engagement has significance for teachers of K-12 students. When pre-student teachers use the word engagement in their words or texts that are quoted for this work, they are referring to getting their own K-12 students actively involved in the learning process. In addition, while all participants are pre-student teachers, within the GO-GIRL program, the term mentor is used to describe the position pre-student teachers hold in the program. This term is used to describe pre-student teachers because they are teaching their seventh-grade students, but they are not fully certified teachers. It is meant to define the role of pre-student teachers for the seventh grade students their families as well as others outside the program. Because of this, the GO-GIRL

pre-student teachers refer to themselves and their peers as mentors in several instances when their dialog or written pieces are quoted. In this chapter, the word mentors is equivalent to the term pre-student teachers when used in quotations.

Results of Research Question One

What kind of teacher education practices experienced during pre-student teaching lead to more engagement in the process of transitioning from learner to teacher? During this study, it became clear that the two biggest sources of pre-student teacher engagement were considerations of the K- 12 student experience and the professional culture, specifically, interactions with seasoned professionals and peer pre-student teachers.

Consideration of the student experience. During the course of this study, one source of pre-student teacher engagement in their process of development as a teacher was their considerations of the K-12 student experience. This was evident during interviews, in written artifacts as well as during observations. These considerations took on a variety of forms. The main themes to arise during this study were consideration of the K- 12 student experience as it relates to student activation or involvement in the lesson, the relationship formed with students, student enjoyment of the learning experience, and student learning styles or needs. Pre-student teachers often had in mind that they wanted to consider these elements even before beginning their experiences. Their involvement with students led them to take actions and reflect upon their experiences with these themes in mind.

Student activation. Prior to beginning their experiences with students, during the initial interviews, pre-student teachers from both the traditional program and the GO-GIRL program stated that they intended to ensure that their students were actively participating

during lesson time. Prior to their experiences, pre-student teachers felt that student involvement indicated that a lesson was going well. Allie, a pre-student teacher in the GO-GIRL program, iterated this idea several times in response to being asked how she could tell if a lesson was going well. "Whether or not people are daydreaming and looking off or whether they are engaged in the lesson" (Allie, initial interview, 1/18). She explained that she likes to use inquiry-based lessons because she believes that students being active as part of the lesson demonstrates that it is going effectively. "Being able to see if people are engaged and answer their questions and follow along with them works well" (Allie, initial interview, 1/18). Claire, a pre-student teacher in the traditional program also speaks to this idea as she describes intentions she has to create effective lesson plans. "So, I would like to have lessons where they can move around or show it in small groups of like maybe four and can physically see what they're doing for adding and subtracting" (Claire, initial interview, 1/16). She also feels that student participation is an effective tool to determine if a lesson is going well. "If they're talking about other things or playing with other toys that they don't need to be playing with. And I know it's going to be hard at first because you have to get the students engaged first. To get them excited to do the lesson… Definitely kid watching and observing to make sure that they are all on task." (Claire, initial interview, 1/16). She also referred to this awareness of student participation when asked how she would use a lesson already taught to prepare for an upcoming lesson. "But also if I can see that they're not paying attention or if they have too much free time or too little or too much time sitting down just writing or just work out if we go outside and they just start running around or whatever then I would change it to a different area or in the courtyard where they can't run around". Elise, another GO-GIRL pre-student teacher, also commented on the importance of student

involvement when asked how she can tell if objectives were met during instruction. "I pay attention to their participation more than anything" (Elise, initial interview, 1/16). This element of it being important that students are actively involved in their own learning was something pre-student teachers brought to their experience of pre-student teaching.

During the pre-student teaching experience, the pre-student teachers in the GO-GIRL program continued to demonstrate, through their writing and their actions, that they paid attention and were concerned about student involvement during lessons. As early as the first theory class after the first day of instruction with the students, Allie shares that she felt it was harder to get the girls to participate than she expected. Fiona, another GO-GIRL mentor, commented that she found the team name creation activity challenging for the same reason. Even though, in both cases, the pre-student teachers had been successful in accomplishing the lesson objective, creating a team name, the lack of active student participation influenced how they felt the lesson had gone. Other actions taken by the pre-student teachers focused on giving the students something to do. Fiona divided her students into smaller groups and different girls were assigned different tasks to keep them all involved (Fiona, field notes, February 9). On several occasions, ensuring participation meant having resources distributed in a way that encouraged most, or all, students to actively participate. "Elise begins the next phase. She has students signify that they have all necessary materials by giving thumbs up. 'Thumbs up if you have a pen. Thumbs up if you have a TV survey sheet'" (Elise, field notes, March 9). During many of the lessons, laptops were necessary to complete the objectives. On numerous occasions, there was an overall group task, for example, survey questions needed to be entered into a survey-creation program on the laptops. Only one survey needed to be created, but the entire group was responsible for this task being

completed. In these instances, pre-student teachers made the decision not to control the laptop themselves. They left the work on the computers in the hands of their students. In these instances, most, or all, of the students had laptops in front of them in order to participate in the lesson (Fiona, field notes, March 23; Fiona, field notes, April 13; Gail, field notes, April 13; Gail, field notes, April 13; and Gail & Elise, field notes, April 13). Other actions that focused on student activation were related to student participation in a discussion. In these instances, pre-student teachers actively sought to include every member of their group in the pertinent discussion, both in the classroom and on field trips. "Elise guides them through the answers. She makes sure to include all the students so that some are not withdrawing from the activity" (Elise, field notes, March 9). Allie, Fiona and Elise, working together, have the students move to the front rows of the classroom so that they can all participate in the discussion (Allie, Fiona & Elise, field notes, February 9). During a field trip, Elise and Fiona were observed taking actions to ensure that all their students were interacting with the exhibits or learning activities. Fiona routinely asked questions of her various students about what the different displays were describing. Elise ensured that her students took turns experimenting with the exhibits and even guided one of her students through the activity with a large lever used to lift an extremely heavy weight. Not all attempts to garner student participation were successful. Pre-student teachers experienced episodes where their efforts did not achieve the goal of participation. "Allie is having the students give examples to match her definitions and examples. The students seem a bit low energy. Allie's facial expressions and words of urging indicate that she recognizes this. But other than her words of urging she does nothing to modify her approach" (Allie, Field notes, March 2). "Elise draws the girls attention to the purpose of the survey. She asks them

questions to get them thinking about which questions they should choose… Elise seems to have certain ideas in mind… The students seem to be growing bored. They are not involved in doing anything except answering Elise's questions to draw them out… It's interesting to see how the different groups are handling this activity and how different levels of student participation seem to impact the number of questions created" (Elise, Field notes, March 9). "Elise is having some trouble keeping the girls on task. She is having them share a single computer rather than using one for each" (Elise, Field notes, April 13). Despite the level of success, or lack thereof, these various actions demonstrated that the pre-student teachers were not just aware that student participation was important, but that they were taking actions toward the goal of achieving student involvement in the learning process.

Written artifacts also demonstrate that pre-student teachers were considering student participation while engaged in the experience of their internship. These comments occurred in documents relating to the Classroom Organization and Management Plan as well as those that reflected upon what had happened during teaching experiences. In documents relating to classroom management, the theme evolved that keeping students attentive and involved ensured good classroom control. "To ensure that students do not become bored, confused, uninterested, and disruptive, teachers need to implement numerous strategies that take into consideration the multitude of learning styles represented" (Elise, Classroom Organization and Management Plan, 3/19). "To get students started at the beginning of each day there will be bell work, a question that covers the prior day's topic or unit" (Allie, Classroom Organization and Management Plan, 3/19). "It is imperative class time is not wasted and transitions from activities are made smoothly" (Gail, Classroom Organization and Management Plan, 3/19). In the reflections on events that had taken place during

instructional episodes, the comments were connected to a variety of activities. "One group mentioned using an attention grabber to get students back on track. This is a great idea!" (Fiona, Discussion board post 1, 2/5). "As I walked around to the groups, I noticed that the girls were often off task or even bored. The other mentors, volunteers, and myself attempted to negate this by asking questions and facilitating" (Elise, Reflective journal 3, 2/21).

> My turn to instruct was first and I prepared in a couple of ways. To begin, I had two topics already on the board that were going to be discussed when the girls came in: a) What do ethics mean to you? b.) What do ethics mean in research? I thought this would give the girls a tip right when they sat down as to where we were going for the day and maybe get them thinking a little while we were getting settled (Gail, Reflective journal 3, 2/21).

"I attempted to facilitate this experience for our students while we were working on entering our survey. As one student at a time worked with Allie to enter a question, the rest of the girls and I were responsible for generating a few more questions" (Elise, Reflective journal 4, 3/26). These different experiences, in different contexts reflect a level of engagement in the experiences had by the pre-student teachers. Their comments demonstrate that they are actively considering their students as they go about learning their craft.

At the conclusion of the pre-student teaching experience, when participants from both groups were interviewed again, the theme of student participation arose on a number of occasions. All of the pre-student teachers mentioned student participation at some point. And for all of them, it was tied to a sense of good teaching. Student participation was a way that they measured their own success. Student participation was part of what made a

particular lesson Allie's favorite. "That one was probably more interactive. It allowed me to just watch them do it too. Just watch them explore… It allowed me time to observe them and watch them as they explored the website" (Allie, final interview, 4/16). Another pre-student teacher from the traditional program, Barb, commented on student participation. For Barb, student participation was part of her favorite teaching experiences. "Oh boy. Well, we do these things called super science where they learn the basic science things… They had fun with that, we had fun with that. They were so interested and so engaged it was really fun… Yeah, and I mean I've never seen kids so excited about science in my whole life" (Barb, final interview, 4/8). Claire, in particular, seemed to note the level of student participation in her reflections of her teaching. She discussed this as she shared what she did to prepare to teach. "Definitely with this group of kids. Um a lot of them don't like to be on the carpet. Or are bored right when they get there, or moving around. So, I thought, so I was very concerned about how I was going to teach it. If I stumbled over something if they would get distracted or bored with me I guess" (Claire, final interview, 4/10). Then she commented on this theme again when discussing how she knew if her lesson was going well. "It was going well at first when everyone was quiet and listening to the story and that. And once I started writing them on the board if I like turned my head I know someone was getting up. So I had to always be eyes in the back of my head" (Claire, final interview, 4/10). "They all listened and they responded and it felt good to see that they were listening to me… They responded, which is really good too. So I think that was probably one of my favorite moments in the classroom" (Claire, final interview, 4/10). And finally she commented on how she would have used this experience to inform a follow-up lesson "Maybe start writing a letter as I'm talking about it. So um, so that they can stay focused on me" (Claire, final interview, 4/10). And her belief

that student participation is an issue with students was reflected when she shared what occurred in the classroom when the students had their follow up lesson with their regular classroom teacher and sat around the carpet once again. "The second thing that they did was have them all come to the carpet and read to them and have them go through the letter again. And they were distracted again" (Claire, final interview, 4/10). Deb, the final traditional pre-student teacher, also commented on the significance to her that student participation had. It impacted her sense that the lesson went well. Deb used a series of guided notes to allow her students to be more involved in her lesson. She is sharing her experience where two students who traditionally performed poorly in class had been successful in the section that she was partially responsible for teaching.

> But there were a couple of kids that decided that they were going to learn that section… I would like to believe that I presented it in a way and with the notes. Kids don't like to do what they don't like. And like I said, in my own world, I like to think that these kids saw that they could do this and they applied themselves (Deb, final interview, 4/3).

And finally, Elise also commented on the importance of participation in her teaching.

> I've noticed that our girls they have really strong points that some of them have and some of the others really struggle with the same points. And by giving them something like this to work with, the ones who are better with technology will really hone in on it and kind of facilitate that part of it. The ones who are really vibrant and outspoken about things will present it. And just being able to give each of them some piece of it so that they will have that ownership (Elise, final interview, 4/6).

Through their responses to the interview questions, pre-student teachers were able to relate a common experience. Pre-student teachers in both programs felt that student participation was important. And during their experiences they were able to engage in activities where they worked to attain that participation. They then used that criterion as one means of judging their own success in their experience.

The relationship with students. Throughout the course of this study, pre-student teachers have shown that they value the relationships that they form with their students. Pre-student teachers from both programs anticipated that these relationships would be an important part of their developing role as teacher. During the initial interviews, Barb mentioned this theme. "I think you should be able to have that open, honest relationship with your students where you know, they can tell you, 'No. I didn't really get it'… Ask them things about what they like, about what they don't like and how they think they're doing" (Barb, initial interview, 1/16). In the Classroom Management and Organization Plan, Elise and Gail mention the importance of developing relationships with students as a way to create good rapport, which they believe will aid in classroom management. "Once the teacher has created an open line of communication, he or she can begin to invite the students to participate in the development of classroom rules and policies" (Elise, Classroom Management and Organization Plan, 3/19). "Extra community builders would be implemented for the first month, such as the chain of personality, the travel box of 1000 questions, or other pressure-free activities to allow me to engage with the students" (Gail, Classroom Management and Organization Plan, 3/19).

Nearly every participant from both programs reflected back upon experiences during their pre-student teaching that they felt was significant and that related to their relationship

with their students. These reflections occurred during observation time in the GO-GIRL theory class, during wrap up times at the end of the GO-GIRL instructional day, in written reflective pieces and during interviews conducted at the conclusion of the semester. When discussing her favorite lesson, Claire commented on the times when she was called upon to read to her students. "When one-on-one or in a small group, they are so excited that I'm there and then that they want me to read to them all the time. I love it because they are so excited that I'm there or that I am doing it for them. That's good" (Claire, final interview, 4/10). During the first weeknight of theory class after the GO-GIRL pre-student teachers had their first week of teaching their students, "Elise and Fiona both discuss how much they enjoy interacting with the students and the way they were bonding. Gail shares that one of her girls asked, 'why is this only one day a week'" (Elise, Fiona and Gail, Field notes, 2/5). In the final interview, both Deb and Elise reflected on the importance of the student relationships with the teacher. Deb reflected on how she believes that the behavior of her students is linked directly to the relationship they have with the classroom teacher. "They really weren't misbehaving. That's one thing I've found with these kids. They're good kids. And I don't know if it's because of this teacher. I think it might be. Because he is all about the relationships" (Deb, final interview, 4/3). And Elise reflected on how the development of the relationship with her students impacted how she felt about her teaching. When asked about her favorite teaching experience she spoke about this theme. "I would say the latter experiences where I'm more comfortable with the girls… I will say that that cats database that we did in the beginning was a little rough. I had no experience with InspireData or the girls" (Elise, final interview, 4/6). Deb also reflected on how part of her preparation to teach included developing a relationship with her students. "In fact, I even went through the class

and I spoke to each one of them, you know? Some of them you have to write their name down phonetically you know make sure you pronounce it correctly. So, and so that was kind of a get to know them a little bit" (Deb, final interview, 4/3). She took this getting to know her students step prior to her first experience being observed teaching a lesson in front of a full classroom of students. During the end of the day wrap up conversation with the entire group of pre-student teachers and university supervisors, Elise shares an experience of feeling successful as a teacher. In her experiences, she relates an episode where her effort to create a relationship with her student has led to positive results. "Elise shares that she suspected the girl had a lot of insightful things to bring to the conversation. But the girl was hesitant to participate. Elise shares that she was always encouraging the girl, urging her to participate, talking with her. But that up until this day, she hadn't shared much. However, now that she has, Elise feels good that she stuck to it because the girl is really bringing some good elements to the conversation" (Elise, Field notes, 3/2). The episodes of relationship building were not always the culmination of days of effort on the part of a pre-student teacher. In one instance on the first day of instruction, the lesson called for the students to review ideas discussed through a PowerPoint version of the game Jeopardy. During this review, Allie "is having fun with the presentation…She is adding drama to the reveals of the correct answer. And while this adds to the girls' amusement, it isn't clear that it's adding to their learning… But since it's the first day, it is helping the girls feel bonded with their instructor" (Allie, Field notes, 2/2).

Student enjoyment of the learning experience. The final episode with Allie illustrates another recurring theme that occurred during the course of this study. As part of Allie's efforts to instruct effectively and create a relationship with her students, Allie used

humor and banter to achieve her goals. Part of what appeared to encourage Allie's efforts was the amusement of the girls. Their enjoyment was significant to her in that episode. Allie was not alone in valuing her student's enjoyment during their learning. The other pre-student teachers from both programs also valued their students' enjoyment of the learning experience. When discussing things to consider during lesson planning, Claire says, "I'd like to also keep in mind the students' interests. Like maybe find that out before just to maybe incorporate that a little bit" (Claire, final interview, 1/16).

> Gail again mentioned to the group the conversation she had with one of the girls at the end of week 2 or 3. Gail shares that the girl asked her if they were ever going to get to any math and Gail shares with her that they've been doing math and science all along but the girls just didn't realize it. She seems very pleased with this. So do the others. They all seem to agree that it's great to kind of sneak math in so that people don't get worried about it (Gail, field notes, March 3).

These episodes from each of the programs illustrate a belief in the pre-student teachers that their students should be enjoying their experience. In many instances, pre-student teachers link student enjoyment to student participation or involvement in the lesson. "In the weeks to come, it will be my intention to provide an environment in which these two girls feel comfortable enough to interact" (Elise, Reflective Journal entry 1, 2/1). "The students were engaged during the entire lesson and really liked the Venn diagram comparing and contrasting Harry Potter and Twilight fans" (Fiona, Reflective Journal entry 2, 2/8). When talking about why she wants to utilize hands-on learning, "Because when we do, do it, it's engaging and they love it and they want to do it more" (Claire, final interview, 4/10). When Barb was talking about what made a lesson called super science her favorite teaching

experience, she said, “They had fun with that, we had fun with that. They were so interested” (Barb, final interview, 4/8). This theme is explicitly included in Gail’s lesson plans in two areas. “This activity I designed to remind students of the statistical terms needed for the lesson in a fun and engaging way” (Gail, Lesson Plan on mean, median, mode and percent count, 3/26). “Were the girls engaged in the activity? Did they seem to be interested and focused on the task (Gail, Lesson Plan on mean, median, mode and percent count, 3/26)? The connection that pre-student teachers make between the enjoyment of their students during the learning experience and the participation and involvement levels their students have during the learning experience helps to explain why it is important to the pre-student teachers, and why they consider it when engaging in their pre-student teaching experience. If pre-student teachers use levels of student involvement in the lesson as a gauge of their success at teaching a lesson, then it makes sense that they would take into account aspects of the classroom environment that they feel might lead to greater student involvement in the lessons. Based on the data collected during this study, these pre-student teachers believe that student enjoyment during learning is one aspect that they value as a means of achieving student participation leading to successful instruction.

Student learning style. A final theme that relates to considerations of the student experience pertains to pre-student teacher awareness of different learning styles of their students. Pre-student teachers from both programs showed that they were interested in making their classrooms, their lessons accessible to all of their students. This interest demonstrates that they are not merely considering their work in terms of completing assignments or tasks in order to pass an education course, but rather that they are taking their students’ learning needs in mind. In the GO-GIRL program, evidence that this was an

important theme appeared mostly in documents created for the theory course. For several of the GO-GIRL pre-student teachers, considerations of learning styles were part of their Classroom Management and Organizational Plan papers. "Teachers need to implement numerous strategies that take into consideration the multitude of learning styles represented" (Elise, Classroom Management and Organizational Plan, 3/19).

> In order to accommodate diverse learners while each assignment will be the same, there will be several options for the manner in which they can submit their work. They can write their assignment, act it out, make a video or create a visual…Materials will be taught in different modes to accommodate various learning styles. This includes assignments that incorporate written, verbal, artistic, musical, kinesthetic and other elements (Gail, Classroom Management and Organizational Plan, 3/19).

This theme also appeared in the district curriculum analysis. The curriculum for the GO-GIRL program, like the curriculum in most school districts, is established before the onset of the pre-student teaching experience. While the pre-student teachers do not get to make decisions on how individual lessons will be tailored to differing students with different learning styles, it is evident that they consider this a significant feature of the curriculum. "The curriculum can be easily adopted to accommodate diverse learners as the student to teacher ratio is 2:1 making individual attention an option when and if necessary" (Gail, District Curriculum Analysis, 2/19). It should be noted that the student to teacher ratio is actually not 2:1. It is more often approximately 6:1. I was unable to clarify with Gail what she meant when she used this ratio.

> The curriculum accommodates diverse learners in various ways. First, it accommodates multiple intelligences by having different types of activities that all target one objective. For example, in teaching Venn diagrams, we had students talk about it, draw it, and get up and show where they stood. These activities reached out to a diverse group of learners (Fiona, District Curriculum Analysis, 2/19).
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> Looking at the major reasons for the creation of the program, it is clear that the accommodation of diverse learners has played a crucial role in the development of the curriculum. Because the program serves female students from many backgrounds, it is inherent that the learning materials, objectives, and activities take into account the myriad ways in which the students differ (Elise, District Curriculum Analysis, 2/19).

The consideration of the differing ways students learn did not appear solely in documents created for the theory course. This theme also appeared in lesson planning considerations. "If girls are struggling with the concept, they could physically create a box-plot as a whole group, which may be helpful to kinesthetic and visual learners" (Gail, Lesson Plan on mean, median, mode and percent count, 3/26). Deb, a pre-student teacher in the traditional program, was particularly interested in this theme of student learning styles even prior to beginning her pre-student teaching. She quotes a professor as she talks about things to keep in mind when lesson planning, "One of my professors said, 'It's not how smart you are, or how smart are they, it's how are you smart?' and I really believe that" (Deb, initial interview, 1/16). Her own experiences learning mathematics influenced her beliefs on this topic. Deb is getting her secondary certification in mathematics. However, her path with mathematics has not always been smooth. She considers this when she approaches her teaching. "I don't know what's going to affect the kids. I don't know. It's kind of scary. But I know that there's a

way cause I know it happened for me" (Deb, initial interview, 1/16). This consideration of differing ways that students learn is evident as she anticipates lesson planning before she begins her pre-student teaching experience and after as she reflects on what she did to prepare her lesson plan. "You know, there's different ways to present things and I believe going into this, that kids learn in different ways and you really have to accommodate those different ways" (Deb, initial interview, 1/16). During her pre-student teaching, Deb spent a great deal of time researching different methods of teaching the lesson that she taught on triangles. When talking about that she said,

> Just to get different viewpoints. You know what I mean, different ways to present it. Because you know, that is what I feel is my biggest hindrance, is my ability to do it in so many ways. Which I think the only way to solve that is through teaching. (And when asked why she wanted so many different ways to present) Oh because there's so many different ways that a kid learns (Deb, final interview, 4/3).

For Deb, considerations of different ways of student thinking are central to her idea of what it means to be an effective teacher. This theme resonated with her most powerfully, but also played a role in the experience of nearly every pre-student teacher in this study. Paying attention to different learning styles is another way of ensuring as many students as possible are involved in the lesson. It provided motivation for the pre-student teachers to fully engage in the process of considering aspects of the profession, like classroom management and curriculum design. It also provided motivation for several of the pre-student teachers, Deb in particular, to take particular care when planning lessons.

Summary of themes related to student experience. All of the themes discussed in this section, student activation, relationship with the student, student enjoyment of the learning experience, and learning styles have a commonality. They are all different types of considerations of the student experience that the pre-student teachers utilized during their experiences. These considerations provided motivation for the pre-student teachers to actively engage in their pre-student teaching experience. In some instances, they gave the participants reasons to interact in certain ways with their students. But in most instances, these considerations provided motivation for the pre-student teachers to engage fully in teacher actions, like lesson planning, learning about the scope and sequence of curriculum, organizing a classroom and conducting a lesson. All of these elements are important parts of the transition from learner to teacher.

The professional culture. As pre-student teachers transition from learner to teacher, it is not merely the students around them that motivate them to engage in the process. It is also the professional educators, by way of their university supervisors and cooperating teachers, as well as their peers, their fellow pre-student teachers, who have a role in bringing about engagement in the pre-student teachers. These other educational peers and role models had an influence on lesson planning and teaching experiences of pre-student teachers throughout the course of this study. Each group represents a theme illustrating how the educational culture, which included experienced professionals and developing peer pre-student teachers, played a part in engaging pre-student teachers in their transition from learner to teacher.

The cooperating teacher/university supervisor. The presence of trained professionals during the pre-student teachers' experiences had an impact on their engagement in both of

the programs. Nearly every participant in this study reflected, in some way, on the influence of the professional role models that they worked with. In the traditional program, the influence came from the cooperating teacher. While in the GO-GIRL program, the influence came from the combination of supervisors. A distinction was not made, probably because of the different nature of the program. For Claire, the support and influence came when she was preparing to teach her own lesson. "Because I knew what elements needed to be in the lesson for the students to learn. So, I had the 'Click, Clack, Moo' book at my house that I knew. I've known some children's books that I knew to build from. So I brought that up to the teachers and they said that it was a good idea because it has letters in it and everything" (Claire, final interview, 4/10). For Barb, the influence was also present during her lesson planning. However, for her it wasn't entirely positive. When asked what influenced her lesson planning she talked about some difficulties she had. "I think I overestimated how well they knew rhyming words. Because the teacher that I work with, she said that they had gone over rhyming words before. But when I asked them about their previous knowledge, it was cat, hat, bat, like all a-t" (Barb, final interview, 4/8). This particular interaction seemed to have strongly impacted this teaching experience for Barb. She brought it up several other times during the interview. When she was asked how things were going she shared that she needed to modify her lesson while teaching. "I uh, I wanted to get more examples from them. Like off the top of their heads, rhyming words. And all they kept giving me was cat, hat, bat nothing more than that. So I just said, 'let's move on and I'll give you more'" (Barb, final interview, 4/8). And finally when asked how she would use the experience to plan for a follow up lesson, she said, "Well next time I need to figure out where their level is. Not based on what someone says, but based on what I can find out" (Barb, final interview, 4/8).

This is a significant lesson to learn in teaching. For Barb, she learned it through facing a challenging situation. For Deb, she felt that the atmosphere of being around professionals was beneficial to her in a more general way. "I'm learning a lot from observing… he also put me in a lot of other classrooms to observe lots of other teachers. Plus, he's also a good teacher" (Deb, final interview, 4/3). For Allie, there were several ways that she reflected on the influence of the university supervisors during her pre-student teaching experience. "I've been pushed to be a lot more organized than what I usually am, so. Um, continuing to do better at that and just being in the classroom has been really, really fun" (Allie, final interview, 4/16). She mentioned that influence of the university supervisors when asked to share her initial impressions of how the pre-student teaching experience went. And she brought up that influence again when asked to share some final thoughts. "Being able to, in certain situations, having teachers presence or like when the university supervisor would check our lesson plans and then give us feedback" (Allie, final interview, 4/16). For Gail, the presence of the educational professionals represents a support system as well as a reliable source of knowledge during the experience. When discussing the GO-GIRL curriculum, she says, "The teachers also have a highly qualified support system to utilize should extra instruction become necessary and weekly brainstorm forums are held to answer any questions mentors may have" (Gail, District Curriculum Analysis, 2/19). She goes on to add "The GO-GIRL program requires me to be an active participant, planner, classroom manager, guide and inspiration while offering full support and guidance to me, the teacher" (Gail, District Curriculum Analysis, 2/19). For Elise, the influence was more of general support. Elise reflects on this several times. When asked how pre-student teaching is going, Elise says, "I'm feeling good about it… I feel a little safer because this was completely

supportive…We've been supported. And just you know, really a teamwork atmosphere" (Elise, final interview, 4/6). And in her final reflective journal entry, Elise echoes this sentiment.

> It was hard at the beginning of the semester to listen to other mentors and our professors as they told us not to worry or that the information would be coming. In hindsight, they were so right! There was never a point where I felt a lack of support and even though I am a constant planner, the levels of stress relating to teacher were quite reduced throughout the semester… It has given me newfound confidence to work with students, something that I always struggle with… I am thankful for my brief participation in GO-GIRL for giving me the opportunity to learn this about myself and for allowing me to 'come into my own' under the support and guidance of some very special women (Elise, Reflective Journal entry 5, 4/12).

For Elise, the support she received from the supervisors of the GO-GIRL program influenced not only the actions she took day in and day out, but also her overall view of herself as a developing teacher. Her reflections seem to indicate most strongly the influence that these relationships can have on the developing teacher. However, the evidence gathered in this study indicates that this relationship plays a significant role in the experiences of the pre-student teachers. This relationship leads to a level of engagement in their process of development as teachers.

Fellow pre-student teachers. The influence of peers during the pre-student teaching experience is different for the participants from the different programs examined during this study. At the university where this study was conducted, the traditional pre-student teaching

experience means that a pre-student teacher will be in a cooperating teachers classroom solo. Traditionally, there is not another pre-student teacher in the same classroom. This was true for the three participants from the traditional program included in this study. The GO-GIRL program is different from the traditional program in this aspect. The GO-GIRL pre-student teachers have a pre-student teacher who is their teaching partner. And during the course of the semester, they work with most, or all, of the other pre-student teaching pairs. This was true for the GO-GIRL pre-student teachers included in this study. Therefore, it is not surprising that the influence of fellow pre-student teachers on the engagement levels of the novice teachers was evidenced in the data from the GO-GIRL pre-student teachers, while it was absent in the reflections of those from the traditional program.

In most instances, when the GO-GIRL pre-student teachers comment on the role their fellow pre-student teachers play in their learning experiences, they state it as a positive influence. They feel supported, or assisted by their partners and fellow pre-student teachers. For Gail, she simply relates the positive aspects in a general way as she reflects on the teaching experiences.

> I am so pleased with how well they get along with each other and the group dynamic. As always, I thoroughly enjoy working with … and it was really great to witness Fiona's silent communication activity. I will definitely use that one in the future (Gail, Reflective Journal 3, 2/21).

Fiona reflects in a similar fashion about the role of her peers during her teaching experiences.

> My teammates stepped in to give tape to the girls that had post-it that weren't sticky. The mentors also made comments or asked questions that enhanced discussions. It

> was those little things that made transitions between activities seamless and kept us focused during activities (Fiona, Reflective Journal entry 1, 2/1).

During this study, two of the participants wound up being teaching partners, Elise and Allie. Both of them reflected several times on the ways that having fellow peers and each other benefitted them during this learning experience. Elise, "We've been so supported. And just you know, really a teamwork atmosphere. So I'm like, 'thank God for GO-GIRL'" (Elise, final interview, 4/6). Allie also reflects back positively on the situation. "It's also sort of different working with someone… That's been new. I haven't always liked working with a partner. But Elise has been great" (Allie, final interview, 4/16). Each of them has specific episodes that they recall where their fellow pre-student teachers influenced specific teaching experiences. For Elise, the episode was one where she was able to quickly collaborate with her fellow pre-student teachers to ensure things went smoothly.

> In lesson planning, the other group was under the impression that they were only going to teach their own girls while my partner and I thought the session was going to involve the whole class. I just happened to notice the other group gathering a limited amount of materials and I questioned her. Because my partner and I had not prepared anything for their portion of the unit, we were not ready to deliver their lesson. In hindsight, this could have been a major disaster. However, after a brief discussion of remedies, it was decided that they would just facilitate the lesson to the whole class...crisis averted (Elise, Reflective Journal entry 3, 2/21).

Allie reflects positively on how having teammates enhanced her experiences. "And in that instance it was wonderful having other people in the room and having Elise and F and S to

help me and as they were going around answering questions too" (Allie, final interview, 4/16). And in another instance, "The day seemed to have run so much smoother because we really took time to talk to each other about all the parts we'd be doing, the things we'd be adding and because we all knew what was going on it just seemed to work seamlessly" (Allie, Reflective Journal entry 3, 2/21).

However, not all instances of working with peers, who are also novices, result in positive development experiences. Two episodes illustrate how the influence of other developing teachers can result in difficulties. On the first teaching day, Allie and Elise were partnered with another pair of pre-student teachers who were leading the lesson. During observations it became clear that things were not going smoothly. Allie and Elise both looked confused and concerned. This episode wound up in an end of the day discussion, brought up by Elise, as well as in the reflective journal of Elise and both discussed the episode during their interviews. Allie describes the incident here.

> It wasn't a situation where I was teaching, but I was sort of co-teaching. And I was in the room. It was when we did our, in the very beginning, when we did our Venn diagrams. And um, I can't remember if it was S or N who was teaching the lesson, but they sent us their lesson plan and I had previously looked over it myself from the GO-GIRL curriculum and not just their lesson plan on what they had planned to execute but when we actually got into the classroom and it, it was just sort of all over the place and no one knew what was right. Because you looked at their point of view and you thought… it could be right, but I was thinking of it from another point of view, but I'm not the one teaching the lessons. So does my point of view really matter? (Allie, final interview, 4/16).

Allie talks about how this incident impacted their future actions. "After that, we definitely had more communication with other mentors, especially when they were teaching lesson plans" (Allie, final interview, 4/16). In a separate incident, Gail is teaching and her fellow pre-student teachers appear to inadvertently hinder her efforts. "Gail appears comfortable while she's leading this lesson. It's interesting that while she's teaching the other mentors hand out cocoa and granola bars, walking through students and the classroom to do so. This takes some attention away from what Gail is saying. But she doesn't slow down or wait for the food to be distributed. She continues on with her lesson" (Gail, Field Notes, 2/16,).

The evidence gathered during this study demonstrates that the role of fellow pre-student teachers can be significant in the experiences of the developing teacher. Sometimes peers act in ways that promote feelings of camaraderie and success, which contributes to engagement in the process. Another way that peers can contribute to engagement is through creating situations that cause pre-student teachers to pause and consider their practice. If they experience something that is confusing or not as successful due to the combined lack of experience, it can also lead to reflections on what occurred that can lead pre-student teachers to want to improve the next time. In either case, in a program like the GO-GIRL pre-student teaching one, pre-student teachers influence each other's engagement in developing as teachers.

How the two programs compare in relation to engagement. The evidence has demonstrated that the pre-student teachers in both programs have experiences that lead to engagement in their process of development. The evidence also shows that pre-student teachers have experience in both main areas discussed, considerations of the student experience and considerations of the professional culture. Looking at how certain aspects of

the experiences may have impacted the pre-student teachers will be used to compare the two programs. Three dynamics will be discussed, the placement dynamic, the cooperating teacher dynamic, and the community of developing professionals dynamic.

Placement dynamic. The pre-student teaching setting influences the individual pre-student teacher's experience. Allie and Barb speak about this in their final interviews when they discuss how the specific atmosphere they were in has influenced their experiences. Allie speaks about the unique atmosphere of the GO-GIRL program in a way that makes it clear that she is aware that her placement has impacted what she has done and what she still needs to do. "That's one thing that I feel like we haven't had a lot of experience with, even though now, even in GO-GIRL, being in charge of your own classroom, in a sense, um, you still don't get the entire gambit because GO-GIRL is such a different program where you really don't have problem students, where you have people who actually want to be there" (Allie, final interview, 4/16). Barb also talks about the impact her specific placement has had on her experiences in pre-student teaching. When asked how the semester was going in general, she replied,

> Good. I mean, um, unexpected, but good. I uh, I was placed in a kindergarten class. It's been fun, but it's been very challenging. Because I'm not an early childhood major, so I haven't really had the skills you know necessary to teach them and handle that, their behavior and stuff… This grade is really hard for me because they're all over you. I've been sick since Christmas. I've just been sick nonstop. It was totally unexpected to be put into a kindergarten (Barb, final interview, 4/8).

Given the evidence showing that the interactions in the classroom with students have an effect on the engagement of the pre-student teachers, these comments are significant. They point out some key differences between the two programs that should be kept in mind when considering engagement during pre-student teaching. The GO-GIRL program is one that pre-student teachers opt to participate in. When they begin they understand that they will be working with groups of 12-year old female students. But the fact that the students they work with participate voluntarily does make the teaching environment different from that of the typical classroom. This is important to keep in mind when thinking about the interactions between the pre-student teachers and their students. In contrast, Barb's comments point out the fact that in the traditional program, pre-student teachers do not usually have knowledge beforehand about the classroom that they will be working in. This was true of all three of the participants from the traditional program. During the study, the placement was an issue of any concern only for Barb in the traditional program. But it is a feature to keep in mind when considering the way pre-student teacher and student interactions in the classroom impact pre-student teacher engagement in their development.

The cooperating teacher dynamic. Who the pre-student teacher experience takes place with is significant. This study has yielded evidence to show that the interactions pre-student teachers have with the educational professionals in their placement impact their engagement. Therefore it is important to examine how these influences compare in the two programs. During this study, pre-student teachers from both programs discussed ways that these role models influenced them. However, it was only the pre-student teachers from the traditional program that mentioned issues pertaining to the relationships with these role models. For Deb, the relationship meant that she did mostly observations during her pre-

student teaching while others in her theory class taught much more. Her cooperating teacher had her teach only when she was observed and chose to enhance her time with him through having her observe throughout the school. Deb did not see this as a problem. "And you know, I think it was good that I got to go into different classrooms too. And I think that everybody should have to" (Deb, final interview, 4/6). For Claire, she was placed in a classroom that had shared teaching between two teachers. One of the teachers wound up being a long-term substitute. This created a dynamic that resulted in Claire perceiving herself differently than she had prior to this experience.

> Over the course of the semester in this first grade classroom, I have become more of a leader in the classroom. And um, cause the long-term sub had just graduated and from here so I knew her from one of my classes. But um, I even saw myself today taking control… But when she was reading one of the stories, I had to stop the class. Because they were being so disruptive and everywhere. And I felt myself actually becoming a teacher. So I thought that was very neat (Claire, final interview, 4/10).

For Barb, the cooperating teacher relationship presented a challenge.

> I think the most challenging thing is that the teacher that I work with has seventeen years experience. And our age difference… we get along, we get along great. But we don't really mix and make connections… You know, it's been hard to relate to her.. The way that she comes off, like when she does share things with me. Well like maybe she'll say 'be sure you know this. This is something important you should know.' She knows it. But she kind of expects me to know it, but I don't (Barb, final interview, 4/8).

The differences between the two programs can probably account for why the relationship with the cooperating teacher was more of a theme for the pre-student teachers from the traditional program. This relationship is the main professional interaction that the pre-student teachers in the traditional program have. The cooperating teacher and university supervisor co-teach the pre-student teachers in the GO-GIRL program. Both have a relationship with the pre-student teachers. In addition, the experiences of the GO-GIRL pre-student teachers are more uniform because they are teaching the same curriculum.

Peer pre-student teacher dynamic. During this study, it was only the pre-student teachers from the GO-GIRL program that discussed engagement in their experiences in connection to experiences with their peers. The differences between the two programs can probably account for why the relationship with peers was more of a theme for the pre-student teachers from the GO-GIRL program. The pre-student teachers in the GO-GIRL program co-teach with a peer and go through the same teaching experiences each week with all the peers in the program. While in the traditional program, pre-student teachers most often do not have another pre-student teacher with them in the classroom. That was the case with the three participants in this study from the traditional program.

Results of Research Question Two

What kind of teacher education practices experienced during pre-student teaching lead to changes in pre-student teacher's self-perceptions about their capacity to teach subject matter? The results of this study show that it is the experiences pre-student teachers have developing and enacting lessons as well as developing and enacting assessments that lead to the pre-student teachers considering their subject matter capacity. During these experiences, pre-student teachers must rely upon their own personal knowledge of subject matter, as well

as knowledge of how to convey that knowledge in order to create effective lessons. The pre-student teachers in this study were able to utilize their subject matter knowledge in a variety of situations to create lessons and assess their students' learning. The results of this study also show that they were able to utilize a variety of resources and methods to achieve those ends. This study revealed that pre-student teachers have a variety of teaching experiences where they are able to utilize their subject matter knowledge and expertise. However, their self-perceptions about being prepared and proficient, in relation to subject matter, is not necessarily impacted by these experiences.

Reasons to activate subject matter knowledge. The development of capacity is an important part of transitioning from learner to teacher. As pre-student teachers begin the pre-student teaching process, they are still in the process of developing capacity when it comes to subject matter. At the onset of this study, mathematics was the subject matter of interest. However, through the course of the study, it became apparent that themes that pertained to the development of mathematics teaching capacity pertained to all subject matter that the pre-student teachers discussed. There were two themes that arose when pre-student teachers discussed their anticipation to teach particular subject matter in interviews prior to the pre-student teaching experience. When pre-student teachers anticipated teaching particular subject matter, they did so because they personally enjoyed the subject, or because they wanted to provide the students with a positive experience with that particular subject matter. These themes ran through the interviews of the participants from both programs.

Personal connection to subject matter. For pre-student teachers who were part of this study, a big reason they looked forward to teaching was because they were looking forward

to teaching something that they enjoyed, personally, as learners. For Deb, this linked back to her own experiences with learning mathematics.

> I don't think I would have gotten A's in that if it wasn't for the way it was taught and so I saw the difference and that wow, things can be taught in a different way. A derivative was not just x to the n minus one, a derivative was the slope of a line. I was shown the difference of the different ways. And not being very left-brained you know with the Hermann-Briggs and all that, I'm more right-brained, but I learned that darn math. And it was neat! And I thought wow, there's a different way to do it…I don't know what's going to affect kids. I don't know. It's kind of scary. But I know that there's a way cause I know it happened for me (Deb, initial interview, 1/16).

For the other interviewed participants, it was a more straightforward fondness for the particular subject matter they spoke of. "I'm excited to teach chemistry actually. I've always loved chemistry" (Allie, initial interview, 1/18). "I like teaching language arts because it's my major and because I'm good at it" (Barb, initial interview, 1/16). "I'm particularly excited to teach, or learn how to teach my math because that is my major and I'm in a few math course now and before and methods. But I like, I know, I always loved math growing up" (Claire, initial interview, 1/16). "I am excited to teach about matter of molecules for elementary kids… Ever since I was a kid I've loved it (science)" (Elise, initial interview, 1/16). This love of a topic is significant to each pre-student teacher as they thought about reasons to look forward to teaching.

Desire to make a difference for students. A second interesting theme that arose in the initial interviews was a motivation for teaching particular subject matter that related to how

the pre-student teachers thought about their students' future experiences. Each of the pre-student teachers looked forward to making a difference in the experiences of their students. Those who were excited to teach math or science felt that it was likely that their students would not like the subject. Each of them wanted to provide an experience that would allow their students to have a better experience and feel more positive about the subject.

> I always loved math growing up but I know a lot of kids don't. Like I think that nowadays students just don't like math. They ignore it, just put that homework aside. But if you can get them engaged or inspired to do it or to enjoy it even a little bit with interesting ways to do it then I think that would obviously help (Claire, initial interview, 1/16).

> People number one think it's really hard, when it's when it really can be really simple. And just relaying that and being able to do chemistry experiments and showing them how chemistry is related to every day life… I really do hope to show people that it's really not that hard (Allie, initial interview, 1/18).

"And I would like to, especially when it comes to math, math gets a bad rap and I would like the kids to feel empowered. I'd like them to embrace math, rather than feel the shame and the um frustration and you know?" (Deb, initial interview, 1/16).

> Being able to take something so boring and have it spark in either little kid or adult and everything in between, that's what I like… Just the fact that people don't think about molecules and atoms and things like that. It's really helping to open their eyes. And you know, it's everything. It's everything. So, it's very exciting (Elise, initial interview, 1/16).

This notion that students dislike mathematics and science appeared in the comments and reflections by Gail in several instances. She was observed sharing these comments with the GO-GIRL group after one day of teaching and then she wrote about it in her reflections. "At lunch the girls asked when they were going to start doing math and science. Unbeknownst to them, they had been doing math and science all morning and didn't even know it! That's when we knew we did something right" (Gail, Reflective Journal entry 2, 2/8). Gail thinks it is a good thing that the students do not know that they are doing these subjects. She thinks that if they were aware that they would not be as enthusiastic about doing the work as they have been. For Barb, she does not believe that her students will dislike language arts, but she still brings a similar sense of wanting to make a difference when she talks about how she is looking forward to teaching.

> I'm good at writing stories and spelling and sentence structure and helping students with that. I have experience in the classroom with students that struggle with reading and spelling. So that's what I'm most interested in. I think books are really important too. Always, no matter what lesson or what subject, I always try to include some kind of book in my lessons. I feel that's really important. Because if you can't read how are you going to do a math problem or do a science problem? Reading is like the basis for everything (Barb, initial interview, 1/16).

This desire to provide their students with a different, more positive experience than what they perceive to be the norm is an interesting theme. It connects strongly to the considerations of the student experience as a reason to engage in an experience. As pre-student teachers anticipate bringing their own experience and knowledge about subject matter to their

teaching, they continue to be engaged by considering their students and what their students need.

Ways that subject matter knowledge was utilized. During the course of the pre-student teaching experience, pre-student teachers taught lessons to their students. Each of the pre-student teachers from both programs taught multiple lessons during the experience. All of the pre-student teachers needed to prepare lessons on their own. As part of teaching, pre-student teachers accessed knowledge they had of subject matter in several ways. In order to create and instruct effective lessons, pre-student teachers utilized their subject knowledge to create and instruct lesson plans. Pre-student teachers also needed to create and utilize assessments to determine if they had been successful. In order to create and utilize assessments effectively, they utilized knowledge about subject matter. Pre-student teachers from both programs had experiences in each of these areas.

Subject matter knowledge to create and instruct lesson plans. Creating lesson plans is a crucial piece of the pre-student teaching experience. Commonly, pre-student teachers have created lesson plans in prior courses. However, it is not always the case that they have had to teach their lessons to a classroom of students. Each of the participants in this study was required to go through the process of creating lesson plans and teaching lessons. In order to be effective, they utilized their knowledge. For Claire, as she began to prepare her lesson on parts of a letter, she utilized knowledge that she had about teaching language arts to start the process. She shares that she knew the elements of the letter that needed to be in the lesson and she knew that using a children's book that contained letters would be a good way to begin and that she could build on the example from the children's book to guide her students (Claire, final interview, 4/10). For Deb, the process was more involved. But she

shared that she utilized a number of resources to assist her. She researched the textbook examples and online resources like the Kahn academy as well as watching what her cooperating teacher was presenting to ensure that she was aware of all necessary connections that needed to be made. She then went on to create her lesson plan by synthesizing all of the information that she researched (Deb, final interview, 4/3). Fiona and Elise created a lesson plan collaboratively. Their lesson plans utilize subject matter knowledge to create some of their teaching objectives.

> Bar graphs procedures/methods- Be sure students understand that bar graphs are used to compare or show data between other data. Know that bar graphs contain 2 axes; an x and a y. Note that this graph, like a pie chart, is a good way to find the largest value quickly… Pie Charts procedures/methods- Guide students to the idea that pie charts (or circle graphs) are used to represent data as portions (or segments) of a whole… Each portion represents a percentage of the pie; all portions add up to 100% (Elise and Fiona, lesson plan on using types of graphs to represent data, 3/26).

The subject matter knowledge they are utilizing not only describes important features of the different graphs, but also points out ways that the two are different. This is significant because Fiona's and Elise's students needed to use graphs to represent data that they had collected during the course of the program. This theme of using the knowledge to create lesson plans that are useful for students continues in Gail's lesson plans on mean, median and percent count. The purpose for this lesson, much like Elise and Fiona's lesson, is to allow students to learn how they can use mean, median and percent count to analyze and represent the data that they collected during the course. In order to guide students to understand which types of data are appropriate for calculating mean, median and percent count, Gail had her

student participate in two activities. The students used a software program to look at a set of already established numerical data. They learned how to calculate mean and median and percent count using this software. Following that activity, they participated in a categorization activity and then entered the categorized data into the same software program they had used before. Gail explains the intent of the two activities.

> Students will be exposed to a discrepant event when they try to calculate mean and median… for their plot and they do not get any number; the fact that students are puzzled with this unusual result would facilitate the teacher's task to lead them to identify the differences between numerical data and categorical data (Gail, Lesson Plan on mean, median and percent count, 3/26).

In each of these instances, pre-student teachers were able to use subject matter knowledge to create lesson plans that were appropriate for achieving their teaching objectives.

It is not enough to create a well-designed lesson plan. Lesson plans can be found in textbooks and using online resources that have fully formed lesson plans. The next significant phase is enacting the lesson effectively. During teaching, it is important to be able to evaluate whether you are utilizing appropriate terminology and activities to achieve your goals. During their experiences, pre-student teachers had experiences where they were able to use their subject knowledge to enact their lessons in ways that they perceived to be effective. Allie has a background in science. For her, this meant that she could assist her students understand what a prediction about their survey could look like. She shares with her fellow pre-student teachers that what her group did was look through their survey questions and think about what people will say and then rephrasing that as a statement (Allie, Field

notes, 3/2). Her knowledge of the scientific process was beneficial in giving helpful guidance to her students. For Claire, it meant using some strategies she'd learned in the past to assist her students in learning addition facts. "Definitely I've been trying to use some of my strategies that I learned… like the three, counting the three points. Like 7+ 3, you go 7, 8, 9, 10 (she made a triangle in the air with her fingertip as she said the 8, 9, and 10)" (Claire, final interview, 4/10). For Barb, it was a matter of utilizing techniques she knew could be helpful while teaching a lesson on rhyming. Her students were only familiar with a small set of rhyming words when the lesson began. Barb was able to use her knowledge of language arts instruction to know that she should slow the new words down, stretch them out and encourage her students to listen to the sounds carefully to help them learn new rhyming patterns (Barb, final interview, 4/8). During a lesson on different graph types, Fiona is able to use her knowledge of mathematics during teaching to ensure her students understand key concepts of the lesson. She asks questions like, "What kinds of conclusions can you make based on your diagram? How can we manipulate the Venn diagram to answer a different question?" (Fiona, Field notes, 4/13). Elise uses her knowledge of the scientific process to help her students overcome a difficulty during the creation of a survey that is part of the GO-GIRL project. Her students struggled with the process. They had decided on a topic, but when they went to create questions, Elise reflects that they kept creating questions around a related, but different topic. During her final interview, she shared how she was able to assist her students through their difficulties by connecting things back to science.

> We sat down with the girls and we just had a very earnest talk about it and said this is something you keep coming back to. Because it's OK to switch your topic. Sometimes in science that happens. And you realize you're not interested in the

> research you're doing. And that's OK. Sometimes that happens and you just move on. You climb up the hill again. Every question they were coming up with, they were twisting it to try to fit. And in science, you don't twist things to fit (Elise, final interview, 4/6).

In each of these instances, pre-student teachers were able to enhance their teaching by using their subject matter knowledge.

Subject matter knowledge to assess student learning. Pre-student teachers value the experience their students have. They evaluate their own teaching success using a variety of cues. One important cue is student learning. It is important to be able to discern if pre-student teachers have been able to assist their students in building their own knowledge successfully. Therefore, they need to create and utilize assessments during the course of their instructional experiences during pre-student teaching. All of the pre-student teachers in this study were required to create an assessment piece as part of the lesson plan that they created. In Gail's lesson, her assessment had students applying the information they had learned about mean, median and percent count to their own student-created work.

> Mentors will conclude the lesson by the following words 'mean, median and mode are not just numbers, their significance is so important to ANALYZE our data sets. As we mentioned before, it is not only important to collect data and let people take our survey, but more interestingly we need to analyze their answers in order to go back and answer our original big question'… Mentors will ask students to pull up their team survey and identify one question that can be analyzed using mean, median

> and mode (numerical) as well as one question that cannot be analyzed in this way (categorical) (Gail, Lesson plan on mean, median and percent count, 3/26).

Fiona and Elise's lesson plan, they required students to demonstrate their understanding of the material taught in two ways.

> Once mini lesson is completed, each group is the expert for their type of graph. In a short presentation (no more than 5 minutes), they share what they have learned and key points using Inspire Data on the projector… Think Pair Share Activity: Reinforcing Types of Graphs- Have students look at the two sets of data below (pg. 7) and answer the two questions for each graph in a 'Think, Pair, Share' format… Question 1: What graph should be used to organize the data? Question 2: Why would other types of graphs not work for the data? (Elise and Fiona, Lesson Plan on types of graphs, 3/26).

During the April 13th session of the GO-GIRL program, Fiona and Gail worked in the same room with students on this lesson. Fiona led her students through an examination of Venn diagrams while Gail led her students through a lesson on pie charts. At the conclusion of the lesson, both Fiona and Gail were observed supporting their students through both culminating activities mentioned and Elise was observed supporting her students through a modified version of the first culminating activity (Primary investigator observations of Fiona and Elise, Field Notes, April 13).

Most of the other pre-student teachers reported conducting an assessment as part of their teaching. For Allie, she utilized her knowledge about what made a survey biased or unbiased to determine if her students understood the requirements of making a survey

unbiased. "I'd give them a scenario. And they'd have to explain whether that scenario explained the bias and how they could make it unbiased, how they could make the question or scenario unbiased. So, being able to check their understanding in that respect" (Allie, final interview, 4/16). Claire conducted a similar sort of assessment at the conclusion of her lesson on parts of a letter. "When I did ask them to repeat it, like so-in-so, give me the first part, the second part, the third part, they were, they knew it. So it showed me that they were listening to me… so I knew that overall most of them were listening" (Claire, final interview, 4/10). Deb utilized a written assessment at the conclusion of her lesson.

> With the fourth hour, they had an exit ticket… that was my feedback to know how the lesson went… I felt that was important (when asked why) For feedback and so I could know if what I did was effective (when asked if she felt it was) Yeah, it really, uh, it really was. It was a 3-2-1. Name 3 things you learned, 2 things you found interesting and 1 thing you still have questions about… And you know, they were good about filling them out… And you know, that one question that I have left, you know, I could address that the next day (Deb, final interview, 4/3).

Barb utilized her knowledge to assess in a slightly different way. Barb's students struggled with the rhyming lesson a bit. As reported earlier, Barb believed they had more previous knowledge than they did. She quickly realized this when she began her lesson. Barb utilized her knowledge to assess that things were not going as planned and she adapted her teaching. Instead of relying on students to give other examples, she supplied some for her class. And she was also able to modify the degree of difficulty of the lesson in order to adapt to her student's capabilities. This formative assessment was important for her in order to enact her lesson with some degree of success (Barb, final interview, 4/8).

During the course of this study, each pre-student teacher had opportunities to utilize their content knowledge in order to assess if their students were learning. The collected evidence shows that the pre-student teachers were able to utilize a variety of different techniques in a variety of subjects in order to carry out their task of assessment. The pre-student teaching experience is valuable for the learning teacher in that it provides these opportunities to access their knowledge and use it not to just show what they themselves know, as they need to do as learners. The pre-student teaching experience has provided the pre-student teachers in this study an opportunity to demonstrate that they can utilize their subject matter knowledge to determine if they have successfully transferred their knowledge on to their students.

How the pre-student teachers' perceptions of their capacity were impacted. The pre-student teachers in this study began their experiences anticipating teaching subject matter to their students. They had motivation relating to their own experiences and their future students' experiences for wanting to teach. During the course of the study, all participants experienced events that allowed them to transfer their knowledge and expertise along to their students. They also experienced events that allowed them to evaluate how successful they were in these efforts. But what impact did this have on the pre-student teachers' perceptions of their capacity to teach subject matter? For the participants in this study, these experiences, while significant and positive, did not seem to have much impact upon their own perceptions of capacity as it relates to subject matter. For most of the pre-student teachers, when they commented on their growth, they thought most about how they developed capacity in other areas. For Claire, her experiences dealing with management and developing her leadership skills, her more assertive persona was most significant to her (Claire, final interview, 4/10).

When Deb reflected upon her subject matter growth, she connected it most to a course she was taking simultaneously during the pre-student teaching experience (Deb, final interview, 4/3). Allie felt that significant growth for her came in ways that she has learned to be more organized, more careful about her lesson planning, and a better time manager (Allie, final interview, 4/16). Elise was very passionate when speaking of her growth during her pre-student teaching experience.

> My personal growth as a prospective teacher has been immense. It was hard in the beginning of the semester to listen to others as they told us not to worry or that they information would be coming. In hindsight, they were all so right! There was never a point where I felt a lack of support and even though I'm a constant planner, the levels of stress related to teaching were quite reduced throughout the semester. Participation in GO-GIRL has taught me to relax and to trust that I either have or will get the needed materials and information. It has also given me a newfound confidence to work with students, something that I always struggle with… I am not sure if this has anything to do with the mutual respect that our group exhibits, but I have to believe that there is something to be said for being yourself with your students. I have learned to have grater trust in my teaching abilities and to stop comparing my style to that of others (Elise, Reflective Journal entry 5, 4/12).

Despite her thorough and enthusiastic reflection on her growth, she never mentions her growth as it relates to subject matter capacity. Barb is the only pre-student teacher who specifically discusses how the pre-student teaching experience has impacted how she feels about her subject matter capacity. Prior to the pre-student teaching experience, Barb did not feel that she was very prepared to teach mathematics. She felt it was her weakest area (Barb,

initial interview, 1/16). Her pre-student teaching experience took place in a kindergarten classroom. That seems to have had a factor on how prepared she feels to teach the subject.

> The math wasn't so hard. The math was the numbers and teaching them how to write it the right way because some of them write them backwards still. And they're learning about adding and subtracting… But, um, math was kind of easy because it was like counting and estimation and you know, nonstandard units. I mean, it was kindergarten, how hard can it be to do math in kindergarten (Barb, final interview, 4/8).

This experience gave Barb some confidence to teach mathematics that she did not have before. In fact, the experience left her feeling like she might want to pursue certification in mathematics in the future (Barb, final interview, 4/8).

The motivation to examine and develop capacity is present in pre-student teachers at the time they begin their pre-student teaching experience. The opportunities for pre-student teachers to exercise their abilities to teach subject matter and evaluate their own abilities to do so successfully are also present during the pre-student teaching experience. The fact that subject matter capacity is not a focus of the participants in this study is an interesting one. It is something to be mindful of as efforts are made to optimize the transition from learner to teacher in the prospective educator.

How the two programs compare in relation to capacity. The two programs are quite similar in regards to how the pre-student teachers experienced capacity. The two programs even share a similar concern related to placement. While many of the pre-student teachers in the GO-GIRL program have a major that is in some way related to the curricular

goals of the program, it is not a requirement in order to be a GO-GIRL pre-student teacher. Gail was one such student that did not have a major that was related. Gail is working toward certification in secondary English as a second language. None of her students in the program spoke English as a second language. As a result, she worked on improving her teaching skills utilizing subject matter that was not related to her major. This was a similar issue for Claire. Claire is seeking a certification in elementary education with a major in mathematics. During our initial interview she voiced her desire to have an opportunity to teach mathematics, since it was her major and her favorite topic. However, the daily routine of the classroom she was in made that nearly impossible during her tenure there. She was not in the classroom during the times in the week when the classroom had their mathematics lessons. So she was only able to work with students on practicing addition facts, not teach a full mathematics lesson (Claire, final interview, 4/10). Neither pre-student teacher felt that this situation resulted in an experience that was lacking. But it is an important feature to keep in mind when considering how the experiences during pre-student teaching can impact development of subject matter capacity.

There were two differences between the programs in relation to development of capacity. One involves the role of the role model professionals in the pre-student teaching experience while the other involves the role of peers in the pre-student teaching experience. For Deb, her pre-student teaching experience was in an environment that was entirely related to her subject matter. Deb is seeking a secondary mathematics certification and she did her pre-student teaching in a high school mathematics classroom. In addition, Deb was encouraged to observe in other classrooms throughout the building where her placement took

place. And it is during these observations that Deb encountered teaching that was not in sync with her beliefs about what good mathematics teaching should include.

> I'm in these classrooms and I'm like really? This is what you guys are doing? You know? It's like here's a ditto. And I'm like really? Take the next 45 minutes and work on your ditto. Really? And what you don't finish you take home for homework (Deb, final interview, 4/3).

For Deb, who believes so strongly in striving to teach a concept in multiple ways so that she can reach as many students, who learn differently, as she can, the use of dittos simply did not make sense.

For Elise, mathematics was not a subject that she eagerly anticipated teaching. During the initial interview, she shared that she felt mathematics was not her strong suit and that she was not fully prepared to teach it. During her tenure with the GO-GIRL program, Elise wrote a lesson plan on utilizing different graph types to represent data. Her lesson was rather sophisticated and sought to focus on requiring students to understand how the different graphs might best be used to represent certain types of data, rather than the mechanics of creating the different sorts of graphs. During the creation and instruction of the lesson, Elise received support from several peer sources in her program. During the writing of the lesson, Elise worked with Fiona and several of her other pre-student teaching peers. During the instruction of the lesson, Elise was unable to work with Allie, her usual teaching partner due to an outside conflict that Allie had to attend to. Elise was aware of this conflict and ensured that she would have the support she needed on her teaching day. There are education student volunteers that assist during each GO-GIRL teaching day. These are education students that

have not reached the level of pre-student teacher yet. They typically observe and help out in managerial ways throughout the day. On the teaching day in question, Elise solicited the assistance of one of the volunteers. She selected the particular volunteer because the volunteer is pursuing a certification in mathematics education. This expertise gave Elise confidence that this particular volunteer would be able to successfully help her in enacting her lesson (Elise, Field notes, 3/23).

Results of Research Question Three

What kind of teacher education practices experienced during pre-student teaching lead to more consideration from pre-student teachers about their needs for ongoing professional development? The profession of education requires a long-term commitment to development. Those who choose to be educators must continue to meet learning requirements in order to remain certified. This study reveals that pre-student teachers have experiences where they are able to learn about development options. In this study, the pre-student teachers experienced reasons to consider their ongoing development as they taught lessons and discovered, or confirmed strengths and weaknesses that they had as teachers. In addition, pre-student teachers had interactions with the experienced professionals and peers that exposed them to ideas and information about ongoing development opportunities available to them as members of the professional educational community. This study also reveals that the pre-student teaching experiences influence their perceptions about their own development needs.

Perceived purposes for continued development. During the course of this study, pre-student teachers engaged in a variety of experiences that exposed them to the realities of being a teaching professional. They observed experienced professionals and took part in

duties and responsibilities required of teachers. In addition, they all participated in a theory class. During these theory courses, pre-student teachers were exposed to topics relevant to future development. As the experiences unfolded, three key themes emerged around the purposes that pre-student teachers envision for their future development. They see the need to build on strengths, strengthen weaknesses, and grow as professionals. For several of the pre-student teachers, their experiences resulted in a shift of focus on what they felt was most important to develop in the future, but this was not universally true.

Build on strengths. As they began their pre-student teaching experience, nearly every interviewed participant expressed the desire to build on their perceived strengths. As they considered their long-term professional career, they considered ways that they could pursue educational and career goals. For Allie, this meant thinking about becoming an administrator one day. "I do know that I want to continue at least with the, I can't even remember the program, um, educational leadership, that's it… Yeah, I want to continue with getting my ed leadership degree. But in addition to that, just continuing to take classes" (Allie, initial interview, 1/18). In addition, Allie is interested in keeping her knowledge about scientific events current and relevant. "Constantly staying abreast of all the latest developments, at least for me, the science, like the new discoveries for science… it's always interesting to keep up with things like that and integrate it into your classroom" (Allie, initial interview, 1/18). For Barb, Claire, and Elise the specifics of the future degree are less defined, but they have plans to continue on with formal education coursework. "I'd like to take more psychology courses too. I already took my child psychology course here… And it was really interesting and I really liked it" (Claire, initial interview, 1/16).

> I'm going to get my certification in elementary and language arts. I want to think about maybe getting a social studies certification. And then maybe a few years down the road, I want to get a master's. But I'm not sure exactly what I want it in yet. I think maybe I want to move up to the administration level. Or maybe make some curriculum decisions, but I'm not sure about that yet. I want to get in a school and teach first and see what I like to do (Barb, initial interview, 1/16).

"I will probably apply some of those toward going for my masters first… I'm a professional student. That's what everyone in my family always says about me" (Elise, initial interview, 1/19). Elise does not specify what she would like to get her master's degree in. But she does also mention that she plans to continue to enhance her knowledge about science and that she has plans of how to continue to do that. "And of course anything science related. Yeah, I have a really good resource for that. One of my professors, she sends me stuff on that all the time" (Elise, initial interview, 1/19).

At the conclusion of the pre-student teaching experience, Allie does not discuss her plans to go into administration at all, nor does she discuss enhancing her science knowledge. Barb's plans to build on her strengths remain relatively the same. "Maybe getting a minor in another subject, something like that… And I eventually want to get my masters. I just have no idea what I want to get it in" (Barb, initial interview, 1/16). Claire has some more clearly defined ideas about how she would like to continue to develop. Her major is in mathematics, and she focuses in on that.

> Yeah, I definitely want to get a masters. I might like to move up. (When asked if she meant move up to teach a higher-grade level or move up to administration) Both.

> Like I was thinking about middle school, which I know I can teach for math. I have K-8. But I don't know. I'm indecisive too. So I like, I see myself as a high school teacher sometimes. But I also do like maybe want to be a principal one day. I think maybe that would be fun"(Claire, final interview, 4/10).

For Elise, her plans for future coursework are also more clearly defined at the conclusion of the semester.

> One thing I'm kind of interested in is that early childhood aspect… It's just a very neat age that you can kind of help mold. And they want to know things. And I think my thinking is on that level. I want to know things too. So, it's an interesting age to me. There is a part of me that is also interested in research and testing and things like that. So there's that aspect so that if I ever want to stay in school for the rest of my life, that's probably the area that I would look into (Elise, final interview, 4/6).

The desire to take coursework to develop strengths remained relatively consistent in the participants of the program. The biggest evolution was that for several of the participants, their ideas about what that could look like became slightly more defined.

Strengthen weaknesses. At the onset of the semester, as pre-student teachers considered their future development, not all were able to verbalize an area that they felt needed to be strengthened. But several were very clear about areas that they wanted to strengthen. At the beginning of the term, neither Allie, nor Barb mentioned pursuing future development to work on an area of concern. Claire, however, was very clear that she wanted to develop her classroom management skills and that she wanted to do so because she felt it was a weak area of hers along with time management and being organized (Claire, initial

interview, 1/16). For Deb, strengthening a weakness was her biggest focus when she considered her future development prior to her pre-student teaching experience. For Deb, strengthening her abilities to use technology was her one intention. Deb was interested in strengthening her ability to use technology to teach and just in general to help her run a more efficient classroom (Deb, initial interview, 1/16). Elise also shares this intent. "I would like to stay up on the technology, for example those mac computers. I know that everybody loves them" (Elise, initial interview, 1/19). At the conclusion of the semester, all of the participants who were interviewed expressed intentions to develop an area that they saw, or had previously seen, as a weakness. For Allie, she shared that she needed to continue to improve her organizational skills. And in addition, she spoke about wanting to develop her classroom management skills.

> For development, I would probably have to say, um, even though it's fairly hard to teach someone this, is classroom management. Um, and it's something that you, that I know is dynamic and it's never a static thing where one thing fits all. But it definitely fits your environment and who you're with in the exact moment. That's one thing I feel we haven't had a lot of experience with (Allie, final interview, 4/16).

Barb was also interested in taking classroom management courses. In addition Barb became interested in potentially pursuing a certification in mathematics. When she spoke of adding an additional certification area, she had begun to consider mathematics. This was a huge shift for Barb. During the initial interview, she shared that mathematics was her weak area and that she did not feel prepared to instruct the topic. However, as a result of some positive experiences during her pre-student teaching, combined with a high score on the certification exam in mathematics, Barb felt like she could consider further training in the subject. "Now

that I think about it, math might not be so bad" (Barb, final interview, 4/8). Claire maintained her desire to strengthen her classroom management skills.

> I feel like even my own personality, I guess I'm a very passive person. And a teacher can't be passive. Cause they have twenty-some kids, you know, taking control. So I need to be in better control. And, but still make it like not strict, but in the middle. Assertive, I guess. So, I definitely need to work on that. Probably I know like my first few years of teaching is going to be my scariest ones. So, I'll probably be buying all the books on how to do your first year of teaching (Claire, final interview, 4/10).

Deb maintained her desire to strengthen her skills with technology.

> Technology because I think it's something you have to be up with and as a way to connect with your kids. Because they're all about it. So you'd better be up on it. And I think it's a helpful learning tool for visualization and things like that. So, technology, I want to know how to use GSP (Geometer's Sketchpad) and the new calculators (Deb, final interview, 4/3).

For Elise, she discussed wanting to strengthen her mathematics instruction in her own method. Elise very much identifies herself as a scientist. And for her, developing her skills in mathematics instruction will not entail taking additional coursework, but will mean that she will apply herself to researching the problem and through reading and trying things out for herself, she will strengthen her abilities to teach this subject (Elise, final interview, 4/6).

It can be argued that truly the most significant purpose of further development as a teacher is to strengthen areas of weakness. Therefore, it is important to see how the pre-

student teaching experience allows pre-student teachers to view their teaching. How does it enable pre-student teachers to develop plans and intentions to improve their abilities and their craft?

Growth as a professional. There is a final area that pre-student teachers identified as an area that they intended to pursue development in as they continued on in their careers. This area pertains to training that pre-student teachers believe would make them better professionals. For Allie and Elise, this sort of development is something that they considered prior to beginning their pre-student teaching.

> Just taking some of the little niche classes that can continue to help you… But um, even when just continuing to develop myself by going to some of the conferences at school districts, professional development days. As well as the college of education here is always having some sort of event or lecture for teachers to continue to go to continue to building on their education, things about diversity and the different teaching methods (Allie, initial interview, 1/18).

Elise discusses similar sorts of development before beginning her pre-student teaching experience.

> Stuff related to our … ISD (intermediate school district), they do a lot of boosting the teacher up things. You know helping you come out of your comfort zone and confidence wise and public speaking wise… Yeah, for a new teaching, in today's world, I think things like that are important (Elise, initial interview, 1/19).

At the conclusion of the semester, nearly every pre-student teacher interviewed spoke of wanting to take advantage of training and development relating to being an educational

professional. Allie talks about having greater knowledge about how to carry out a set curriculum (Allie, final interview, 4/16). Barb is interested in that as well. She is interested in finding ways of making herself more marketable. In addition, she mentions wanting to attend conferences and be part of professional organizations.

> "I learned about conferences, like Harry Wong and all those… I've been looking into becoming a member of the MEA (Michigan Educational Association) or the SMEA (Student Michigan Educational Association)… But I'm sure there's going to be programs through that for education resources, conferences, stuff like that. And I know, hopefully, the school I go to will be informative for workshops or conferences and stuff like that" (Barb, final interview, 4/8).

For Deb, she knows that there are things about the culture of a high school that she will want to become more knowledgeable about in the future. "I'd like to kind of hit areas that affect these kids' lives, like bullying, things of that nature. Because I don't live in a high school. I guess I would know that the issues of that culture when I'm in there. But you know, I'd like to learn about that" (Deb, final interview, 4/3). And for Elise, it is through a community of professionals that she'd like to continue to develop professionally as she becomes a member of a teaching staff. During a mock interview on the final evening of her theory course, Elise is asked if she is hired, if there is any way she would like to receive the school's support. She "mentions wanting to have an opportunity to continue her development as a professional through learning opportunities with groups in the school. She says that would be a way that an administrator could support her as a new teacher" (Elise, Field notes, April 16).

Being a teacher requires knowledge in many areas. Being aware of the available organizations and resources that can allow a developing teacher to continue to grow as a professional educator is important. During this experience, the pre-student teachers from both programs had these sorts of experiences.

Influences on vision for future development. As the pre-student teachers spoke of their intentions for continuing to develop, there were several themes to what motivated their choices. Particularly in the final interviews, pre-student teachers' choices pointed to several key factors. The main themes were the influence of interacting with students, the influence of experienced professionals and the influence of peers.

Influence of student interaction. The influence of students on choices about professional development was a theme in each of the interviewed participants choices. For Allie, it was a combination of working with the GO-GIRL program and participating in another service learning experience that influenced her belief that she would like more development about classroom management. When asked if her pre-student teaching experience influenced her choice, she replied,

> Yeah, I think that from being in the contrast of being in such a starkly different areas like I said. GO-GIRL where you don't have all the different problems and attitudes and when I was working at the community center where I literally the first day I thought what am I doing here? (Allie, final interview, 4/16).

For Barb, it was her experiences of teaching mathematics to her kindergarten students that influenced her thought that she might try to work on being certified in mathematics (Barb, final interview, 4/8). For Claire, her experiences solidified her desire to continue to gain

training and assistance developing her management skills. She spoke repeatedly during our interview about management issues during her tenure in the school. And at the conclusion of the semester she felt that she was able to demonstrate some sense of leadership. However, she still felt that her classroom management needed some more work (Claire, final interview, 4/10). For Deb, a primary motivation for her to improve her technology skills is for her students. "Technology because I think it's something you have to be up with and as a way to connect with your kids" (Deb, final interview, 4/3). Deb was able to use calculators during her time pre-student teaching and she found that she wasn't able to have as much success as she would have liked.

> I go to use that stupid darn calculators that are in the classroom and I have no idea… They're so frustrating… I try to do it and every time I go to use it the darn thing won't, the guided lesson was to show this, uh, dilation of this triangle and the ratios changing but the angles stay the same. And it wouldn't work (Deb, final interview, 4/3).

Deb's work with her students utilizing technology illustrated for her that she needed some additional training in order to feel confident using the tools she needed to teach effectively. Elise had a similar experience as Allie. During the time that she was participating in her pre-student teaching, Elise was also employed in a children's hands-on science museum. Elise has shared that in the past she has not felt confident in her interactions with students. She had a narrower view of who and what she wanted to teach. However, through her interactions with students, she gained a confidence that allows her to consider pursuing an additional certification that would open up an additional group of students for her to teach.

Interactions with role models and peers. During the process of becoming an educator, prospective teachers will develop relationships with experienced educators as well as fellow developing teachers as a matter of being involved in educational coursework and activities. These relationships can have an influential role in the development of the prospective teachers. During the initial interview, both Elise and Allie spoke of the influence of experienced professionals in helping them stay abreast of developments in their field (Elise, initial interview, 1/19 & Allie, initial interview, 1/18). In the final interview, Deb spoke passionately about the influence of a mathematics methods teacher she was taking a class from during the same semester as her pre-student teaching experience.

> Hers was the only class that prepared me for the realities… Because she's in there. She's in there. She knows what it's about, you know? She's been doing it for years. And she's so helpful and inspirational and all of it. Everything she tells you… There's just some things she's taught me that I'm so glad because I, I never would have thought of that. I never would have thought of formative assessments, exit tickets right away so I know what I'm doing. You know? Oh yeah, so many things I never would have thought of (Deb, final interview, 4/3).

During the pre-student teaching experience, pre-student teachers continue to work with a combination of experienced professionals, their cooperating teachers and university supervisors, and peers, their fellow pre-student teachers. As a result, pre-student teachers are exposed to facets of their future profession that pertain to ongoing development. Most of these experiences occur during the theory course portion of the experience. During the semester under observation, the GO-GIRL pre-student teachers were exposed to information on a variety of development-relevant topics. Topics include: teacher evaluation models

(Primary investigator, Field notes, 1/29), classroom management (Primary investigator, Field notes, 2/5), inclusion and IEP (individualize education plan) paperwork (Primary investigator, Field notes, 2/19), understanding formative and summative assessments (Primary investigator, Field notes, 3/5), utilizing technology and using technology standards (Primary investigator, Field notes, 3/19), and professional organizations (Primary investigator, Field notes, 3/26). Pre-student teachers in the traditional program discuss similar relevant topics during their theory course as well. During this semester, the college of education held a conference on educating in an urban environment and pre-student teachers were encouraged, or required, to attend. As part of enhancing the conversations during the theory course, the GO-GIRL pre-student teachers had a guest speaker on several occasions. This speaker works for an ISD, intermediate school district, in the area and regularly delivers professional development sessions to groups of professional educators. On one occasion, the speaker delivered an abbreviated version of a professional development presentation on universal design as a means of appropriately including students with special needs in the classroom. During her presentation, students were shown online resources that they could use at any time in the future (Primary investigator, Field notes, 2/19). Relevant articles and online resources were a regular part of information provided to pre-student teachers as they learned about these topics. Pre-student teachers were given information about professional organizations such as MEA (Michigan Education Association), DACTM (Detroit Area Council for Teachers of Mathematics) and NSTA (National Science Teachers Association) and information on fees and how to join. As a final culminating experience during the theory course, the pre-student teachers were invited to participate in a mock interview. The guest speaker from the ISD conducted interviews with several willing pre-student teachers, Elise

being one of the volunteers. Through this process, pre-student teachers were exposed to the sorts of relevant topics and knowledge that they would be expected to have knowledge of when they sought a permanent teaching job in the future. During this time, pre-student teachers asked questions or shared information relevant to the conversation. For example, when discussing professional organizations and ongoing development, "Elise also points out that there are certifications that you can get in all kinds of areas, like technology" (Elise, Field Notes, 3/26).

The prospective teacher encounters people involved in the field of education throughout their teacher education process. This process continues as they experience pre-student teaching. One major focus of the relationships that occur during this time is exposure to topics relevant to ongoing development. This exposure provides pre-student teachers with an opportunity to consider ways that they can continue to develop and grow now and as they continue with their careers.

How the two programs compare in relation to continuity. In many ways, the two programs are very similar in relation to how pre-student teachers have experiences relating to continuity. For both groups, involvement with students has an impact on how they view their professional needs. As they work with students, they recognize areas that either need improvement to better meet the needs of their students, or they become aware of areas of interest that were previously unrecognized. Sometimes this exposure results in a change in what the pre-student teachers focused on as a future need, while in other cases, their experiences solidified their previously held ideas. In either case, the influence of student interaction was present. The placement of individuals in the different programs did not make any discernable difference in this area.

In addition, for both groups, the influence of role models was not discernably different for the participants of this study. Pre-student teachers in both programs were exposed to information and events that provided them with a context in which to consider their future development needs.

The area of biggest difference for these two programs relates to the peer influence. The nature of the differing programs is the reason for this difference. In the traditional program, pre-student teachers have their experience alone and when they complete their experience they move on to the next phase, usually student teaching and do not necessarily maintain contact with their university supervisor, cooperating teacher or the other pre-student teachers in the program. There is a difference in the GO-GIRL program. Pre-student teachers in the GO-GIRL program are encouraged to make connections right from the beginning. On the first day of observations, pre-student teachers were observed using social media to make connections to both the program and to the other participants. There are opportunities for GO-GIRL pre-student teachers to participate in other teaching venues that are part of the larger GO-GIRL program. It is also customary for previous pre-student teachers to return periodically to participate in the events during the pre-student teaching program. During this term, several previous pre-student teachers came to the initial instructional day prior to the arrival of students. The previous pre-student teachers shared some of their experiences as well as talked about what they are doing with their careers now. They provided encouragement and advice to the pre-student teachers about to begin their teaching (Primary investigator, Field notes, 1/26). In addition, on the final day of the theory course, a previous pre-student teacher with the program came in and spoke with the current pre-student teachers again. At this time the pre-student teachers are told about preparing for

the capstone portfolio. It is an assessment that prospective teachers must create as a culminating piece to their student teaching. This conversation gives the current pre-student teachers an opportunity to consider events from the semester they have just had that could be relevant to this culminating piece. They are able to consider documents, pictures, and reflections that they might be able to use in the future.

The GO-GIRL program encourages its pre-student teachers to contact one another from year to year, to form a community amongst themselves, and to stay in contact with the program as they continue along their career path. Both Allie and Fiona will continue to participate in aspects of the GO-GIRL program in the future. And Elise speaks both in her final reflective journal and during her final interview of the influence working with the team had on her as well as her desire to continue with the program.

> I would really love to see something like this for student teaching. But what's really neat for me is to be able to talk about GO-GIRL… Just having been part of it, I'm wishing for something else I can do, like a student teaching and then a post student teaching. But then the reality of it is that you have to move forward (Elise, final interview, 4/6).

> I am thankful for my brief participation in GO GIRL for giving me the opportunity to learn this about myself and for allowing me to "come into my own" under the support and guidance of some very special women. As I said before, I feel a sadness that our program is coming to a close, but I intend to continue my relationship with GO GIRL in some capacity (Elise, Reflective Journal entry 5, 4/12).

It is a program that is different from the traditional placement in this way. This community allows for pre-student teachers to have other opportunities to develop in the future. In addition, it provides a community of peers and experts that the developing teacher can turn to for guidance and support as they further their career. And while it is not an impossibility to have such an environment in the traditional program, it is not the standard and it was not part of the experiences of the participants of this study.

Summary

The data gathered from this study demonstrate that the pre-student teaching semester includes experiences related to the triad of engagement, capacity and continuity. The data showed that each of the pre-student teachers in this study experienced episodes that activated their engagement. In addition, they each had opportunities that required them to utilize their subject matter knowledge to effectively prepare and carry out their teaching experiences, thus building their capacity. The data also shows that the experiences of pre-student teaching exposed pre-student teachers to significant concepts related to their continued professional development. The data also showed that the expectations pre-student teachers had about their continued development underwent an evolution during the course of their pre-student teaching experiences. In this way, continuity was activated. Finally, the data shows that pre-student teachers from both programs had experiences relating to the triad of engagement, capacity and continuity. In many instances the experiences were similar across the two programs. However, there were differences between the two programs, likely attributable to the differences in the structure of the programs.

Chapter 5

This chapter contains a summary of this study, including a summary of the purpose of the research, the research questions, and a summary review of the methodology. In this chapter I will also summarize the findings, including conclusions based upon gathered data and implications of the findings. Finally, I will conclude with a discussion of the limitations of this study as well as suggestions for further research based upon the findings.

Purpose of the Study

The purpose of the study was to examine the experiences of pre-student teachers during their pre-student teaching experience. The conceptual framework utilized for this examination meant that the experiences of the pre-student teachers were studied to determine how their experiences impacted their engagement in the process, their perceived capacity and their thoughts on their needs for continued development in their profession. Pre-student teachers from two programs, a traditional pre-student teaching program as well as an alternative program, were included to compare the different experiences.

Research questions

The following questions guided the implementation of the research as well as the analysis of the collected data.

- What kind of teacher education practices experienced during pre-student teaching lead to more engagement, in the process of transitioning from learner to teacher?
- What kind of teacher education practices experienced during pre-student teaching lead to changes in their self-perceptions about their capacity to teach subject matter?

- What kind of teacher education practices experienced during pre-student teaching lead to more consideration from pre-student teachers about their needs for ongoing professional development?

- What aspects of involvement in an alternative pre-student teaching placement lead to a different evolution of the practice of pre-student teachers from the evolution of practice of pre-student teachers in a traditional pre-student teaching program?

Methodology

This was a qualitative study gathering data about the participation of pre-student teachers in their pre-student teaching experience using a variety of methods including interviews, observations, and written artifacts. Pre-student teachers from two programs were included in the study. Those from the traditional program were interviewed only, while those in the alternative program were included in all aspects of this study. Axial coding was used as data was processed. Data was examined and placed into appropriate categories. As further analysis was conducted themes and sub-themes were identified and refined as the analysis progressed. As the themes and sub-themes were solidified, the results were examined to identify overall patterns to each theme.

Major Findings

The findings of the study will be presented in four sections, each representing one of the research questions that guided this study. The first section will address the conclusions and implications for data collected regarding the pre-student teachers' engagement in their transition from learner to teacher. The second section will address the conclusions and implications for data collected regarding pre-student teachers' perceptions about their capacity to teach subject matter. The third section will address the conclusions and

implications for data collected about the way pre-student teachers consider their own needs for ongoing development and how their pre-student teaching experience influenced their considerations. And finally, the last section will be dedicated to examining how the two programs compare to one another.

Research Question One

What kind of teacher education practices experienced during pre-student teaching lead to more engagement in the process of transitioning from learner to teacher?

Research Question One Conclusions. This study produced a great deal of evidence to demonstrate that the pre-student teaching internship provides many experiences that engage pre-student teachers in the process of their transition from learner to teacher. There were two main categories, each with several sub-themes.

The first main category is the way pre-student teacher engagement was influenced by experiences with their students. The evidence demonstrated that pre-student teachers consider the experiences of their students in a number of significant ways. These sub-themes were student participation, the relationship with students, student enjoyment of the learning experience and student learning styles. Each of these contributes to the way pre-student teachers engage in their experience.

There was much evidence demonstrating that pre-student teachers were interested in the level of participation of their students. This concern led to pre-student teachers engaging in the process of creation and enactment of lessons. Creation of lessons and teaching episodes are a requirement of the pre-student teaching experience. But lesson plans follow a set format dictated by the College of Education. The pre-student teachers in this study

demonstrated that they were interested in creating lessons that not merely met the requirements but that encouraged their students to participate and be involved. Their reflections illustrated that they considered student participation prior to teaching and that they endeavored to modify their presentation style during teaching in order to increase participation. They used these experiences to consider how they would approach other interactions with students in order to ensure that all students were involved in the learning experiences. The data indicates that pre-student teachers appeared to use this level of participation as a measuring stick to evaluate their own effectiveness as instructors. They consistently linked higher levels of student participation with a good or favorite lesson.

The other themes, in many ways, linked back to the important theme of student participation. Each of the remaining themes seemed to involve methods that pre-student teachers used to garner that all-important student participation. In their reflections, pre-student teachers talked about ways that they considered developing a good rapport with their students. They thought about this as they developed their lessons and during their teaching. The data shows that the pre-student teachers engaged in their activities in this way because they felt that it was important for their students to be successful. Their reflections indicate that pre-student teachers believe that when their students are comfortable in their environment, including how they feel about their instructor, the students will be more inclined to be actively involved in their learning. Pre-student teachers worked to establish relationships and promote a sense of comfort in their students with the goal of getting their students to contribute to conversations, listen actively, and be more successful in learning the teaching objectives.

This was also true when pre-student teachers considered their students' level of enjoyment of the learning experience. The data illustrates that pre-student teachers created a variety of activities, or included materials in their lessons specifically with the intent of ensuring that their students enjoyed themselves. Examples to illustrate learning objectives were selected with this goal in mind. Entire lessons were created to ensure that students had fun with the experience. The rationale for pre-student teachers to engage in their lesson planning and enactment in this way, with these goals in mind, ties back to participation. For the pre-student teachers, students who were enjoying their learning were more likely to be involved. And again, the pre-student teachers felt that this resulted in successful or favorite teaching experiences.

Finally, most of the pre-student teachers in this study shared a concern that their lessons were accessible for students who learn in a variety of ways. For one pre-student teacher in particular, this was vitally important. The evidence illustrates that this concern led to preparing for lessons in a way that would allow all students to be able to access the information and therefore have a successful learning experience. For this theme, the engagement occurred primarily during the planning stages of the teaching cycle. It provided motivation to develop, and at times research and then develop, materials and activities that would get all students involved and allow all to learn the teaching objectives effectively.

The conclusion that students provide motivation for pre-student teachers to engage in the activities and experiences that occur during pre-student teaching and that contribute to their transition from learner to teacher is supported by the literature. The findings of this study coincide with the findings of many previous studies about the benefits of pre-student teacher interactions with students as a method of learning the necessary aspects to be an

effective teacher (Ambrose, 2004; Ambrose et al., 2007; Clark, Clark, & McDonough, 2002; Compos & D'Ambrosio, 1992; Hollebrands, Stohl Lee & Wilson, 2011; Levin & Rock, 2002; Levin & Rock, 2003; Rock, 1999; and Sherin & van Es, 2002;).

A second major category of influences on pre-student teacher engagement in their transition from learner to teacher was the role of the experienced professionals and peer pre-student teachers during the pre-student teaching semester. Pre-student teachers interacted with these different groups of people while having their various experiences. In both cases, these interactions fostered the motivation in them to engage in their transition.

All pre-student teachers interacted with seasoned professionals during their experiences. These experiences resulted in a variety of reasons for pre-student teachers to engage in their requirements and activities. At times, these interactions motivated pre-student teachers to raise their own level of preparation, encouraging higher levels of engagement. Sometimes these interactions provided a means of support, which, in turn, engendered a sense of confidence leading to greater engagement in the activities that took place during the semester. The more experienced professionals also leant their knowledge and expertise to the pre-student teachers who sought it out. This engagement led pre-student teachers to feel more confident about the lessons they were preparing. And in one instance, this engagement with a cooperating teacher led a pre-student teacher to reflect upon the importance of being fully prepared to teach rather than preparing by only relying on the information provided by others. In nearly every instance, these interactions provided a means for pre-student teachers to interact in ways that helped them feel more successful. And even in the instance where the experience was not entirely positive, the pre-student

teacher was able to reflect on it and use the knowledge gained to learn about the realities of teaching.

Due to the different structures of the programs studied, the role of peer pre-student teachers was primarily evident in the experiences of the GO-GIRL mentors. However, evidence illustrates that in the GO-GIRL program, the role of peers provided many of the same opportunities for engagement, as did the role of experienced professionals. The evidence demonstrates that peer pre-student teachers provided experiences of support, which encouraged pre-student teachers to engage in their activities with confidence. In addition, pre-student teachers engaged in preparation prior to teaching with their peers in order to feel fully prepared so that they might teach effectively. As with the interactions with the seasoned professionals, experiences with peers at times led to an awareness that entirely relying on someone else to prepare a lesson that you are responsible for does not always result in a successful lesson. However, as in the other instance, these experiences led the pre-student teachers to engage in different sorts of practices. In this case, pre-student teachers engaged in greater collaboration efforts with their peers in subsequent weeks so that later lessons would be more successful.

The evidence in this study supports the findings of previous research. In earlier studies, the roles of mentors and peers has been shown to be an effective means of engaging educators in processes that encourage their increased effectiveness as teachers (Darling-Hammond, 1996; Franzak, 2002; Ma, 1999; Scherff & Singer, 2008 and Singer & Zeni, 2004). Pre-student teachers undergo the same sorts of processes. The data collected in this study also support previous research that shows that sometimes these interactions can be

unpredictable, but influential on the experiences of the pre-student teacher (Ambrose et al., 2007; Beswick & Muir, 2006).

Research Question One Implications. The implications of the findings of this study are that programs of the nature studied are effective at engendering engagement in pre-student teachers as they transition from learners to teachers. Pre-student teachers themselves value these sorts of experiences, as they reported, as being important in helping them understand the realities of their chosen profession. In addition, the data shows that they utilize these experiences to enhance their actions and thinking during their pre-student teaching experiences.

In particular, consideration of student thinking proves to be a powerful motivator on the intentions and actions of the prospective teacher. Including interactions with students in every stage of the learning process in teacher education is impractical. However, invoking the student experience for the prospective teacher could prove an effective means of bringing about a more meaningful level of involvement in the learning process in a variety of situations, not just those that include an internship. The literature mentions several methods for focusing on student thinking, directed research, use of videos, use of student work, etc. The research in this study would support those types of approaches with an added emphasis on meaningfulness. Pre-student teachers engagement is highly activated by their concerns for students. Continued efforts should be made that seek to combine instruction of relevant subject matter information with features that will engage them in the task of learning the material in a profound way. K-12 students and their needs and thinking should be part of those features to heighten engagement.

The results of this study are not surprising. I believe that most people who enter the field of education do care about the welfare of their future students. I believe that they also share a desire to impart knowledge. The subjects of this study fit that pattern. They all demonstrated an enthusiasm to be a beneficial part of their students' lives. When faced with students that they could call their own, I believe the pre-student teachers felt motivated to make a difference. I believe they wanted to not only make their students like them, but to help them learn and grow. I believe this desire to develop their students motivated them to engage in their experiences as a teacher would. They employed a variety of strategies and considered their students needs in a variety of ways in order to be effective. And they did this for the welfare of their students.

The influence of experienced professionals and peer prospective teachers also has proven to impact the actions and experiences of the pre-student teachers in this study. The significance of the role of peer pre-student teachers for the GO-GIRL pre-student teachers could influence other programs. GO-GIRL pre-student teachers found their peers to be a positive source of support and assistance. At this time, the traditional program does not have a structured format for creating peer support structures during pre-student teaching. But the pre-student teachers in the traditional program participate in theory courses as a group and an alteration to encourage peer support mechanisms might provide an enhancement to the current structure of the traditional program. The results were a little less consistent when it came to the interactions with the non-students during the internship experiences. It is important to keep this in mind as pre-student teachers begin their experiences. The investment of tuition money and time makes it impractical for most pre-student teachers to redo a pre-student teaching experience that does not go smoothly. Pre-student teachers

should be encouraged to discuss concerns they have about difficulties with interactions with the educational professionals or peers with whom they must interact. With the pre-student teachers involved in this study, even negative experiences were utilized to learn something significant about the profession of teaching. With appropriate support from the teacher education community, this could be the case more often than not. Pre-student teachers should be given every opportunity to discuss the relationship they form with their cooperating teachers and peers. Given the importance of these relationships, colleges of education should encourage university supervisors to provide a safe environment where pre-student teachers may discuss these relationships. If there are difficulties, pre-student teachers should feel supported and given opportunities to learn from the challenges, as Barb was able to do, rather than feel defeated. The results of this study certainly support the continued use of internship-type experiences to enhance the development of the prospective teacher.

I believe that the cooperating teacher and peers are so significant during this time because of the novelty of the experiences. The responsibility of having to transfer knowledge to students is very different from possessing that knowledge for oneself. Even for prospective teachers who are very knowledgeable about a subject, figuring out how to aid someone else in learning about it is a very different experience than demonstrating that you know it yourself. I believe that the awareness of how challenging that task is often comes when in the midst of initial efforts at trying to teach. Constructivism would suggest that it is through these times of facing what we don't know that we begin to build new knowledge. I think that as pre-student teachers are building this new knowledge, it is natural that they would look to those around them for information and support. I believe this is why the cooperating teacher relationship, as well as the relationships with peer pre-student teachers,

were so important to the pre-student teachers. During the pre-student teaching semester, the pre-student teachers needed to face their shortcomings and rapidly adapt in order to effectively teach in subsequent days and weeks of their semester. The support structure around them becomes vital. Therefore I believe it is not surprising that the pre-student teachers in this study became more engaged in the process of transformation because of the interactions with seasoned professionals and peers.

Research Question Two

What kind of teacher education practices experienced during pre-student teaching lead to changes in pre-student teachers self-perceptions about their capacity to teach subject matter?

Research Question Two Conclusions. The evidence in this study demonstrates that when pre-student teachers begin their internship, they do so with perceptions about subject matter. The pre-student teachers in this study were motivated to be effective at teaching subject matter. Their motivation came from two sources, a personal love of the subject and a desire to ensure that their students felt successful in the topic. There was a general belief among the pre-student teachers in this study that students have a pre-existing dislike for certain subjects. This engendered a desire in the pre-student teachers to overcome this dislike through their teaching.

Throughout the semester, the pre-student teachers participated in a variety of experiences that required them to utilize their subject matter knowledge. Through interviews, observations, and artifacts, the study yielded data to illustrate that the pre-student teaching experience requires pre-student teachers to access this knowledge in order to create

appropriate lesson plans, to teach them effectively as well as to assess their students to determine if their teaching has been effective. All pre-student teachers in this study had similar sorts of experiences of this nature.

Despite these experiences, at the conclusion of this study, only one of the pre-student teachers underwent a significant change in their perceptions of her capacity to teach subject matter. Barb began the study feeling that mathematics was her weakest area. She did not feel prepared to teach the subject. During her experiences, she was able to teach mathematics to her kindergarten students successfully. In addition, she received word that she had passed a certification exam and that her highest marks were in mathematics. This combination of experiences meant that she began to consider pursuing certification in mathematics in the future. She was not certain and when asked specifically about her capacity to teach the subject, she still felt that she was underprepared. However, her successes gave her enough confidence to consider the subject in a new way.

There are several probable explanations for why pre-student teachers do not focus on their subject matter growth during their pre-student teaching experience. Pre-student teachers reported that they felt their greatest growth was in areas more related to classroom management, abilities to manage time or student behavior, or confidence in front of the classroom for example. Pre-student teachers are focusing on the experiences that are more novel to them, like being responsible for keeping students on task and completing a lesson, as planned. Based on the evidence, it appears that pre-student teachers believe that their subject matter capacity has been developed while taking classes at the university. In addition, the interactions pre-student teachers have with university supervisors and cooperating teachers are not usually focused on subject matter and developing greater capacity to teach subject

matter effectively. Assignments and theory course discussions focus more on effective classroom management, like inclusion and ways to develop an effective classroom management plan. The lesson plans created during the internship and their teaching experiences that accompanied those lesson plans are the place where subject matter capacity comes most into prominence. However, the evidence gathered from this study demonstrates that pre-student teachers interactions with their university supervisors and cooperating teachers around these experiences do not center on subject matter expertise. At least, pre-student teachers do not perceive that this subject matter expertise is the most significant part of their dialog with their supervisors. As a result, pre-student teachers do not report that they feel a significant change in their capacity to teach particular subject matter.

These findings have some support from the research. There is previous evidence that suggests that subject matter capacity becomes somewhat fixed at the conclusion of their teacher education, which in this case could translate into at the conclusion of taking their subject matter coursework (Hill, 2010). In addition, research that has shown that even when prospective teachers have experiences instructing students that they report were very positive, those experiences did not result in an increase in scores on subject matter tests (Ambrose, 2007). The literature does not attend to the issue that prospective teachers focus on their classroom management skills over considerations of subject matter capacity during internship experiences.

Research Question Two Implications. The implications from this study are that the pre-student teacher internship experience is one that currently focuses mostly on teaching capacity as it relates to delivery and management concerns, and not as much about subject

matter. This is despite significant experiences where pre-student teachers are required to utilize their subject matter knowledge and expertise.

The issue, in this case, seems to be that student teachers are not attending to the issue of their subject matter knowledge at the time of their internships. Pre-student teachers are having experiences of utilizing their subject matter knowledge in genuine teaching experiences where they are expected to guide their students to attaining new knowledge. However, there are several realities of either pre-student teaching program that could be contributing to this lack of attention. The first is that there is quite a bit of required material and experiences that university supervisors and cooperating teachers must guide their pre-student teacher through already. In addition, pre-student teachers are not necessarily paired with a university supervisor who is an expert in the subject matter of interest to a particular pre-student teacher. These realities may contribute to the difficulties in promoting an awareness of subject matter capacity and how the pre-student teaching experiences impact it. It could also be that despite efforts to make it so, the interview was not a sensitive enough instrument to generate substantive dialog from the pre-student teachers on this topic. It is possible that when asked about their self-perceptions on their capacity to instruct that they think about their own personal subject matter knowledge and not their knowledge for teaching.

I think that the study yielded these results because of the significance of being responsible for students for the pre-student teachers. I believe that pre-student teachers become focused on the immediate concerns during the semester. They need to create lesson plans. They need to get to know their students. They need to learn how to maintain control of their students. They need to learn how to manage teaching materials and budget their

teaching time. For most pre-student teachers, and for all included in this study, these were relatively new responsibilities. Whereas subject matter knowledge has been a part of pre-student teachers' backgrounds when they were taking coursework prior to this experience. I also believe that there is no specific structure in place where pre-student teachers are asked to consider how their subject matter knowledge was a factor in their teaching experiences. Pre-student teachers are asked to reflect on their teaching. But left to their own devices, they reflect on topics such as the ones I mentioned above. I believe that without directed reflection, pre-student teachers will naturally concentrate on what is new to them. Therefore, I think it is not entirely surprising that even though the pre-student teachers had many experiences utilizing their subject matter knowledge that they didn't reflect much on how that may have impacted their own capacity.

Research Question Three

What kind of teacher education practices experienced during pre-student teaching lead to more consideration from pre-student teachers about their needs for ongoing professional development?

Research Question Three Conclusions The evidence from this study indicate that when pre-service teachers enter their internship semester, that they have certain ideas in place about their future development as professionals. Nearly every interviewed candidate spoke about a desire to pursue a future degree based upon a perceived strength or area that they had personal enjoyment of. A few spoke of the desire to strengthen weaknesses. And a few spoke about the desire to enhance themselves as professional educators.

During the course of this study, evidence gathered, primarily through observations and interviews in this case, illustrated that pre-student teachers have experiences that expose them to a variety of professional development possibilities. They discuss topics in the theory course and are provided with information about how to join professional organizations as well as how to access information on professional development opportunities and resources via the Internet. Even though the pre-student teachers in the traditional program were not observed during their theory course, several reported learning about this sort of information in their classes and there was a conference held on campus that all pre-student teachers were encouraged, often required, to attend.

In addition, the experiences of teaching appear to have influenced the pre-student teachers in this area as well. Significant experiences include being responsible for managing a class, utilizing technology, teaching particular subject matter for the first time and even simply having success in teaching students. These teaching experiences, combined with the theory class experiences seem to have had an influence on the ways the pre-student teachers considered their future development.

At the conclusion of this study, the evidence suggests that pre-student teachers were slightly more likely to be concerned with pursuing development that would help them strengthen an area that they felt was a weakness. In addition, they were able to articulate their plans in more detail. Also, nearly every interviewed participant discussed an awareness of the kinds of development available through professional organizations and local support systems, like the Intermediate School District, where there was not as much awareness at the beginning of the semester.

At the conclusion of the study, the interviewed candidates indicated that their pre-student teaching experience did have an influence on their thoughts about future development. They shared that their experiences either confirmed what they felt they would need to develop in the future, or exposed to them strengths or weaknesses that they had not considered before. For all of the interviewed participants, a main influence was their students. The pre-student teachers desired to continue to develop and improve so that they could best meet the needs of their students and be as effective as possible teaching their future classes.

These findings that suggest that the pre-student teaching experience relates to and influences how prospective teachers feels about themselves and their relative strengths and weaknesses are supported by the literature (Taylor, 2002 and Campbell, Horn, Nolen & Ward, 2008). This research also aligns with previous studies that demonstrate the significance of the experienced professional on pre-student teachers (Ambrose et. al, 2007; Beswick & Muir, 2006 and Ma, 1999). The findings that relate to the importance that pre-student teachers place on certain areas of development, like developing weaknesses over strengths, is not discussed in the literature. In addition, the literature does support the notion that even when educators intend to further strengthen their knowledge, sometimes this proves less effective than could be hoped (Hill, 2010 and Wu, 2011). If this is, in fact, as Wu suggests, an issue due to lack of effective means of securing effective development, the findings of this study would support the implication that pre-student teachers could benefit from guidance relating to professional development, like the sort received during both of these programs.

Research Question Three Implications. The data gathered in this study imply that the pre-student teaching experience is one that helps the prospective teacher envision ways

that they will need to continue to develop and grow as professional educators. The information provided to pre-student teachers during their theory course, combined with their teaching experiences give them a realistic view of their own capabilities. This allows them to determine ways that they can become expert teachers.

One interesting feature of the pre-student teaching experience that should be considered is the absence of any sort of concrete requirement that pre-student teachers reflect on their need for future development. No requests for this sort of reflection from the university supervisors or cooperating teachers was observed or documented or reflected upon during interviews. This sort of supportive interaction could be beneficial to the pre-student teacher. One case, in particular, illustrates this point. Barb underwent a transforming experience during this semester in her thoughts on whether to pursue certification in a topic she had previously considered a weakness. A venue that would allow a student such a Barb to discuss this issue and consider options could encourage some prospective teachers to pursue challenges, like Barb may.

I believe the study yielded the results it did, again, because of the influence of the students and professional culture on the pre-student teachers. I believe it is natural to have plans and goals for the future of one's career. However, over the course of the semester, the pre-student teachers found that they had particular strengths and weaknesses or confirmed that they had particular strengths and weaknesses. I believe it was the desire to be effective in their interactions with their students that most impacted the considerations about development of the pre-student teachers. I believe that the fact that these experiences occurred simultaneously to experiences where pre-student teachers discussed professional teacher organizations, intermediate school districts or even attended seminars is what allowed

the pre-student teachers to not only consider altering their view on what development they would need, but also to formulate more concrete ideas about what that development could look like and how it could be achieved. I believe that the pre-student teaching experience is a valuable one in developing awareness about how a teacher can continue to grow and develop.

Research Question Four

What aspects of involvement in an alternative pre-student teaching placement lead to a different evolution of the practice of pre-student teachers from the evolution of practice of pre-student teachers in a traditional pre-student teaching program?

Research Question Four Conclusions. In many of the studied aspects, the two programs included in this study were very similar. Both programs provided sources of engagement for the pre-student teachers. For both groups, their students were a significant source of engagement. Also for both groups, the experienced professional educators were a source of engagement as well. For both groups, there were experiences where the pre-student teachers utilized their subject matter knowledge. Despite this, there were few changes in either group in how the pre-student teachers perceived their capacity in subject matter. In addition, the experiences the participants in both programs had, influenced their intentions for further development. All of these constituted considerable similarities.

The differences between the two programs mostly related to the role of the cooperating teacher as well as the influence of the peer pre-student teachers. These differences were most notable concerning engagement in the process. However, the roles of the cooperating teacher and peers also presented some differences in the areas of capacity and continuity.

The role of the cooperating teacher is different in the two programs in the significance it holds for the pre-student teachers. For the pre-student teachers in the traditional program, the relationship formed with their cooperating teacher was very significant for them. The cooperating teacher was a source of engagement, and a source of support for the various activities that took place during teaching days for pre-student teachers in both programs. However, other than student interactions, for the pre-student teachers in the traditional program, this relationship with the cooperating teacher is the main source of engagement and support over capacity matters mentioned by those in the traditional program. The university supervisor was an additional source for the pre-students in the traditional program when it came to influencing matters about continuity. For the pre-student teachers in the GO-GIRL program, the cooperating teacher and university supervisor shared many of the responsibilities for providing similar experiences. In this way there was some difference. But the biggest difference is that they were not the only non-student sources.

For the pre-student teachers in the GO-GIRL program, their peers proved to be an additional source of valuable experiences not mentioned by the pre-student teachers in the traditional program. The fellow pre-student teachers provided experiences that influence engagement, provided a source for supporting capacity experiences and information about opportunities to pursue future development. The pre-student teachers from the GO-GIRL program viewed their peers as an important and positive source for providing these experiences that influence engagement, support capacity experiences and as a source of information about future development. The literature supports the expectation that these kinds of experiences can be present in pre-student teaching (Ambrose et. al, 2007; Franzak, 2002; Scheff & Singer, 2008 and Singer & Zeni, 2004). What is not as evident in the

literature is the way the different structures of these two programs resulted in the different levels of significance of these relationships.

Research Question Four Implications. The implications of this study are that the pre-student teachers from the differing programs have a different set of experiences, but that these different experiences lead to many of the same sorts of evolutions within the context of the triad of engagement, capacity and continuity. The biggest differences are in the significance of the various other players during the internships on the experiences of the pre-student teachers. These results suggest that both programs are similarly equipped to guide pre-student teachers through the transition from learner to teacher.

This is significant given the current educational culture. Increasingly, there is more pressure on school districts, single school communities, and individual teachers and administrators to demonstrate accountability for the learning of their students. With the ever-growing demands of the No Child Left Behind mandate and the wave of test-based measurements of educational success, teachers, schools and districts feel pressure in ways that go beyond what has historically existed. As a result a new trend has begun. School districts are becoming reluctant to take on the responsibility of providing classrooms in which the prospective teacher can complete their internships. If individual schools and teachers can be penalized for the underperformance of even a few students, it is understandable that they would hesitate to risk the gains their students could make under the guidance of an experienced teacher in order to give a novice an opportunity to learn his or her craft. This could mean that more and more colleges of education will struggle to find quality classrooms in which their pre-student teachers might be placed.

In addition, the experience of having a support network of peers during the pre-student teaching experience was a positive one for the participants in the GO-GIRL program. Given the added demands placed on teachers, the more resources for support, information, and expert knowledge that a novice teacher can call on, the better. Though this was not a long-term study, the presence of individuals who had previously been pre-student teachers with the program demonstrates the existence of such a support network within the GO-GIRL program. This is an important feature to consider when thinking about aspects of teacher training that can best equip prospective teachers for the realities of their future profession.

I believe that the basic requirements of the university where this research took place play a big role in why the pre-student teachers from both programs had such similar outcomes in many aspects examined by this study. The university requires a certain number of hours of working with the students. The university requires that lesson plans be created and that they adhere to the university's preferred format. Written assignments are the same across both programs and they adhere to the same standardized rubric. Also, both programs include a great deal of interaction with students and the seasoned professionals. These have proven to be the greatest influence on the pre-student teachers' experiences in all three areas, engagement, capacity and continuity. The different settings were not enough to alter basic outcomes of the different programs. I believe that it is the increased amount of responsibility and the importance of relying on teammates that provided the biggest reasons for the differences. The GO-GIRL pre-student teachers receive modeling of good instruction and guidance on good lesson plan creation and teaching strategies from their supervisors during the professional development days at the beginning of the term and then as a routine part of the wrap-up sessions at the end of their teaching days as well as during their theory course.

However, in addition, they rely on their teammates to provide a similar source of guidance and assistance. The common curriculum means that the GO-GIRL pre-student teachers are teaching the same lessons each week as several of their peers. As they prepare for these lessons, they are able to turn to each other for suggestions and clarification. In addition, the structure of their teaching day, where they share responsibilities with other mentors who are present with them throughout the day, means that they observe numerous other teaching styles and can experience a wide variety of teachings strategies. The GO-GIRL pre-student teachers have greater responsibility for teaching lessons to their students, and are not only relying on observing a seasoned professional. Therefore it is not surprising that their reliance on the supervisors and peers was more fluid. They did not appear to observe the same hierarchical structure in how they went about procuring support, information and advice as their peers in the traditional setting. Their need for support and guidance in a more immediate fashion was due to their continuous teaching role during the program. Therefore, they needed to feel free to turn to people rather than the singular source of the cooperating teacher. I believe this, in combination with the added presence of volunteers and former mentors, is what added the extra dimension to the GO-GIRL pre-student teaching experience not present in the traditional program. The benefits of this sort of support structure that includes peers could be adapted to a traditional program. This sort of addition could enhance the already effective traditional pre-student teaching experience.

Limitations of the Study

There are several limitations to this study that need to be noted. First, the number of participants in the study is small. Therefore, the findings cannot be generalized. Second, the two programs included in this study were not examined in an identical manner. More focus

was given to the alternative pre-student teaching program. This is particularly significant as a limitation for the research question comparing the two programs. The lack of matching sources of data may have led to an incomplete picture of the traditional program. This may, in turn, have had an impact on the comparison of the two programs. During the evaluation of the data and subsequent presentation of the findings, every attempt has been made to provide a fair and balanced representation of the data without making assumptions. However, it remains a limitation of the study that ought to be kept in mind.

Further Research

The findings of this study suggest several areas for further research. It would be beneficial to do a longitudinal study of the alternative pre-student teaching program participants to determine if and how their experiences in the program impact their student teaching experiences and subsequently, their experiences during their initial teaching years. It would also be interesting to study whether the inclusion of a peer pre-student teaching partnership component, or some similar structure to capitalize on the peer pre-student teacher support structure could be effectively added to the traditional pre-student teaching program. It would be interesting to determine if the experiences in the different pre-student teaching programs resulted in a different perspective as the prospective teachers continued on their path toward becoming master teachers. It would be interesting to determine if the pre-student teachers intentions for continued development persisted through student teaching and on through their initial teaching years, or if the subsequent experiences of student teaching and the first professional teaching positions altered the plans of the prospective teachers.

An additional avenue of research would be relating to the pre-student teachers' perceptions about their own subject matter capacity growth during their internship experience.

It would be interesting to conduct a larger scale study to determine if this phenomenon occurs routinely for most pre-student teachers in a variety of programs and with a variety of curricula.

Summary

Adequately preparing prospective teachers for the realities of their future profession is a task that colleges of education persist in trying to improve and perfect. Addressing the need to equip prospective teachers with the myriad skills and competencies that teachers must possess presents a significant challenge for colleges of education. In addition, the educational environment is dynamic necessitating regular examination of practices of teacher training to ensure the best preparation is being delivered to prospective teachers.

This study examined prospective teachers as they embarked on the pre-student teacher phase of their teacher preparation path. Pre-student teachers in two programs at the same college of education were included in order to examine the transition that these prospective teachers undergo from both perspectives. The triad of engagement, capacity and continuity was use as a theoretical framework in order to examine the experiences as completely as possible.

The findings illustrate that in most ways, the two programs provide different experiences that support the pre-student teachers in very similar ways. Though the particulars of the two environments that the experiences occur in are different, the results, in many ways, are the same. Pre-student teachers are engaged by working with their own students, experienced professionals and peer pre-student teachers. Pre-student teachers have experiences that require them to utilize their subject matter knowledge and expertise.

However, they remain mostly ambivalent about their perceived growth in capacity to teach subject matter. Pre-student teachers from both programs also underwent experiences that impacted how they considered their needs for continued growth as a teacher. These considerations were highly influenced by what they felt would best prepare them to meet the needs of their students. The biggest differences were in the role of peer pre-student teachers and the singular importance of the cooperating teacher in the different programs. Given the current atmosphere in school communities, where the presence of the novice may be less welcome, and also given the potential benefits of a professional support network, an alternative program, such as the GO-GIRL program, could be considered by colleges of education as a strong alternative to traditional pre-student teaching programs.

APPENDIX A: INTERVIEW QUESTIONS FOR INITIAL INTERVIEW

1. Tell me about a topic you are excited to teach. Why are you excited to teach it?

2. Consider this scenario: You have found a lesson plan that you think will allow you to teach certain objectives on "insert topic from interviewees response to item 1". How do you anticipate you will prepare to teach this lesson?

3. Consider this scenario: You are teaching a lesson, again on "insert topic from interviewees response to item 1" What will you look for to determine if the lesson is going well?

4. Consider this scenario: You have taught your lesson on "insert topic from interviewees response to item 1" Suppose that you decide to teach a follow-up lesson on this topic. What experiences from teaching the first lesson do you think you could use to prepare for teaching the follow-up lesson?

5. You will teach mathematics in the future. What experiences in your teacher education program have prepared you for this task? Do you have any areas that you think are lacking in your preparation?

6. Consider this scenario: You are a certified teacher. What experiences in your teacher education program have best prepared you for the realities of teaching? As a certified teacher, you will need to engage in ongoing development. What areas do you anticipate will be possible targets for future development?

APPENDIX B: INTERVIEW QUESTIONS FOR FINAL INTERVIEW

1. Tell me about a your favorite teaching experience in pre-student teaching. What about that experience made it your favorite?

2. As part of your pre-student teaching, you have taught lessons from lesson plans. Think of one specific incident. How did you prepare to teach that lesson.

3. As part of your pre-student teaching, you taught a lesson (or several lessons). What evidence did you look for to determine if the lesson was going well? Was there any part of the lesson that didn't go as planned? Did you alter your plans while you were teaching? If so, how?

4. As part of your pre-student teaching, you taught a lesson (or several lessons). Think of one instance in particular, and assume that you will be teaching a follow-up lesson on this topic. (Or if multiple lessons were taught in a row consider a situation where you taught a follow-up lesson). What experiences from teaching the first lesson did you use to prepare for teaching the follow-up lesson?

5. You have taught mathematics during pre-student teaching. Based on this experience, what experiences in your teacher education program best prepared you for that task? Based on your experience, did you discover any areas that you felt are lacking in your preparation?

6. Consider this scenario: You are a certified teacher. What experiences in your teacher education program have best prepared you for the realities of teaching? As a certified teacher, you will be engaged in ongoing development. What areas do you anticipate will be possible targets for future development? Why? What are the influences of

your pre-student teaching experience on the areas you have targeted for possible future development?

APPENDIX C: CATEGORIES AND SUB-CATEGORIES

Actions, Comments and Writings Related to Management

1. (M1) To keep students on task
2. (M2) To facilitate student understanding
3. (M3) To develop a relationship with students
4. (M4) To keep students active or busy
5. (M5) To assess students
6. (M6) Preparation of materials
7. (M7) Collaboration with peers
8. (M8) Using resources- like state standards
9. (M9) To enhance the student experience
10. (M10) To finish the lesson on time

Actions, Comments and Writings Related to Subject Matter

1. (S1) Personal love of subject matter
2. (S2) Desire to inspire students to love the subject matter
3. (S3) Specialty of subject matter as being useful in other areas (e.g. Needing reading to do science)
4. (S4) Build on strengths
5. (S5) Recognition of weaknesses

Actions, Comments and Writings Related to University Training

1. (U1) Working with seasoned professionals
2. (U2) Help develop growth as a professional
3. (U3) Work toward master's degree
4. (U4) Working with Inspiring professors
5. (U5) Strengthen weaknesses
6. (U6) Pursue and interest

Actions, Comments and Writings Related to Non-University Training

1. (O1) Importance of involvement with students
2. (O2) Strengthen weaknesses
3. (O3) Attending conferences
4. (O4) Build strengths

Actions, Comments and Writings Related to Other Miscellaneous Significant Themes

1. (X1) Addressing Learning styles
2. (X2) Non-subject matter growth
3. (X3) Placement dynamics
4. (X4) Cooperating teacher dynamics
5. (X5) Peer dynamics

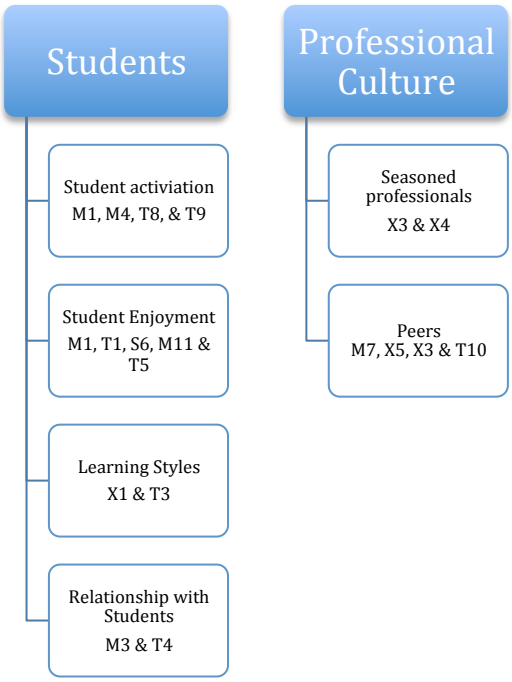
Actions, Comments and Writings Related to Student Thinking/or the Student Experience

1. (T1) The desire to inspire students to learn
2. (T2) Awareness of student understanding
3. (T3) Learning styles

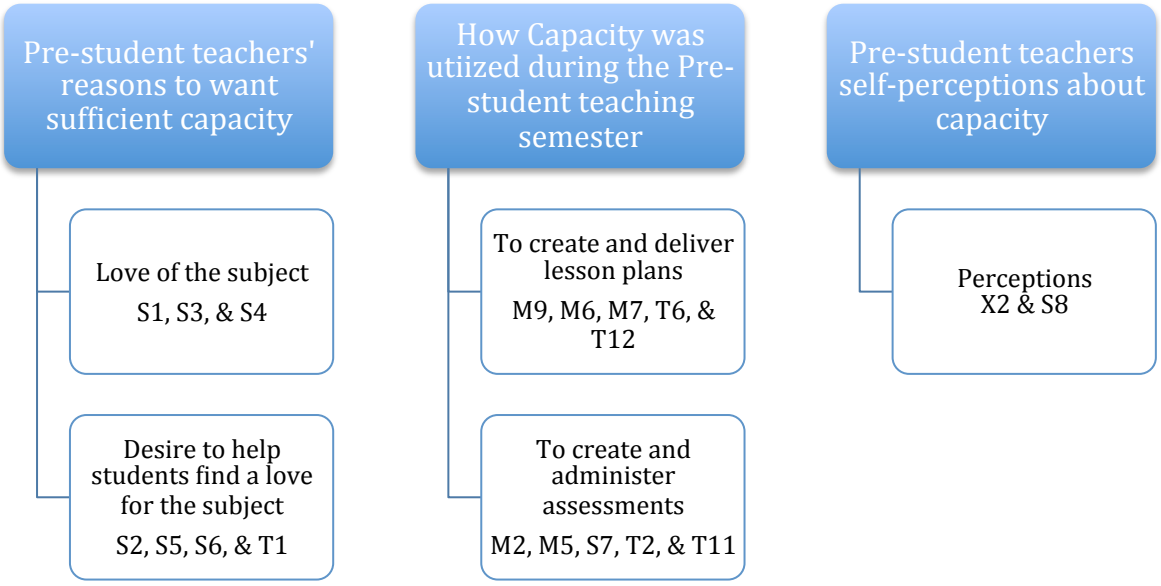
4. (T4) Relationship with students
5. (T5) The student experience
6. (T6) To complete the lesson effectively
7. (T7) Improve self for the benefit of students
8. (T8) Student attention to task
9. (T9) To keep students moving
10. (T10) Collaboration with peers
11. (T11) Tasks to assess
12. (T12) Using expertise

APPENDIX D: ORGANIZATION OF THEMES INCLUDING SUB-CATEGORY ELEMENTS

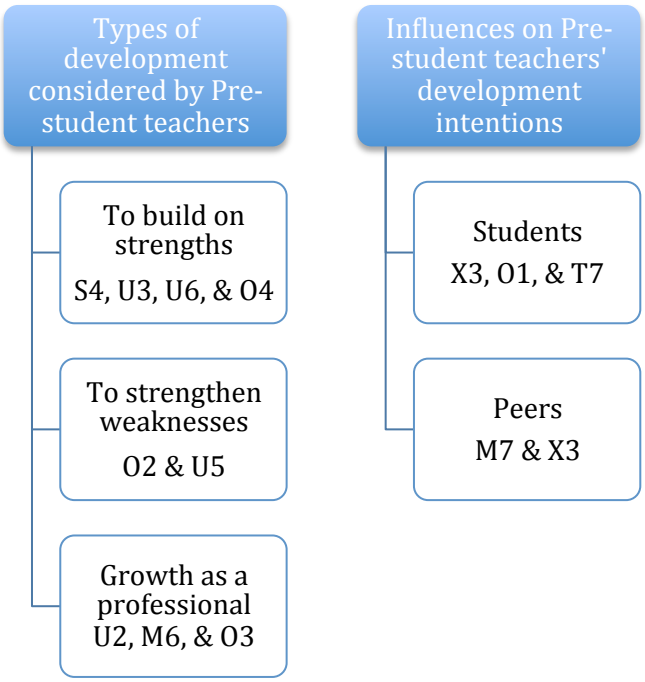
Engagement



Capacity


Pre-student teachers' reasons to want sufficient capacity
Love of the subject
S1, S3, & S4
Desire to help students find a love for the subject
S2, S5, S6, & T1
How Capacity was utiized during the Pre-student teaching semester
To create and deliver lesson plans
M9, M6, M7, T6, & T12
To create and administer assessments
M2, M5, S7, T2, & T11
Pre-student teachers self-perceptions about capacity
Perceptions
X2 & S8

Continuity


Types of development considered by Pre-student teachers
To build on strengths
S4, U3, U6, & O4
To strengthen weaknesses
O2 & U5
Growth as a professional
U2, M6, & O3
Influences on Pre-student teachers' development intentions
Students
X3, O1, & T7
Peers
M7 & X3

APPENDIX E: DISCUSSION BOARD TOPIC

Teaching is not a "one size" fits all profession. As you develop as a teacher you will discover what works for you and develop your own teaching persona. One of the things that will help you develop your teaching style is to observe what others are doing. For our first discussion, you will reflect on the day and think about what worked and what you would like to have have done differently.

Thread 1

What are two things you observed your peers doing during day 1 that really "worked"?

Thread 2

If you could go back and change one thing that you did today what would that be and what would you do differently?

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ABSTRACT

ENGAGEMENT, CAPACITY, AND CONTINUITY: A STUDY OF THE IMPACT OF PARTICIPATION IN ALTERNATIVE PRE-STUDENT TEACHING PLACEMENTS

by

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Advisor: Dr. Thomas Edwards

Major: Education Curriculum and Design

Degree: Doctor of Philosophy

The training and preparation of prospective teachers includes an important phase where the future teachers begin to make a transition from learner to teacher. During this time, prospective teachers begin to utilize the knowledge they have gained through coursework and life experience to begin teaching students of their own. During this time, assignments and activities that prospective teachers undergo become less about conveying personal knowledge to professors, being learners, and more about being able to effectively convey knowledge to others, being teachers. These initial experiences are valuable in the development of effective teachers.

For many future teachers, these initial experiences occur during a phase in the university training called pre-student teaching. Pre-student teaching is a transitional phase between coursework and student teaching. At the school where this study was conducted, pre-student teaching takes place in two differing internship programs. In the more traditional program, pre-student teachers are placed in a K-12 classroom where they mostly observe the classroom teacher, but also participate in some teacher responsibilities, including a few experiences where they teach lessons to students. In the alternative program, pre-student

teachers work with a partner pre-student teacher to instruct their own group of 12-year old students during a full-day Saturday extra-curricular program.

To better understand the influence of these internship experiences on the prospective teacher's development, pre-student teachers from both programs were studied. The conceptual framework of Engagement, Capacity and Continuity, developed by Campbell, Jolly & Perlman (2004), anchored this study. Interviews, observations, and written artifacts were utilized during this study to illuminate the pre-student teachers' transitional process.

AUTOBIOGRAPHICAL STATEMENT

I am Jodie Rose and I am a doctoral candidate at Wayne State University in the process of preparing to defend my research for my dissertation. My academic career includes a Bachelor of Arts degree from the University of Michigan with a duel major in women's studies and communications as well as a Bachelor of Arts degree in elementary education, with certifications in mathematics, social science and language arts. I received a Master of Arts degree in education from Wayne State University, with an emphasis on mathematics education. The culmination of my academic career has been the completion of all necessary coursework for a Ph.D., the successful completion of my competency exams and defense of my research proposal and the completion of my research.

In addition to my academic pursuits a variety of professional experiences have shaped my career. I have taught for many years. My experiences in education range from elementary school on through university instruction. A large portion of my experience is in the area of mathematics instruction. I have instructed a variety of student populations, most notably middle school students and college students with a history of academic difficulties in mathematics. I enjoy opportunities to work with populations that struggle with the subject. Another focus of my professional career has been the work I have done with both preservice and inservice teachers. I have worked with this population as a professor of mathematics for elementary education majors, as a high school mathematics coach at Wayne RESA, and as an adjunct professor for the GO-GIRL pre-student teaching students.