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Teacher Candidates in Context: Investigating Inquiry Learning, Self-Efficacy and Stress within Teacher Education

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ABSTRACT

Global changes since the 2008 economic collapse continue to impact teacher candidates worldwide who are facing unparalleled challenges as they prepare for service in educational systems experiencing reform. Research exists on college student stress, yet absent is data showing teacher candidates in relation to stress and self-efficacy as they engage in socio-constructivist inquiry learning. Teacher candidates hold employment while taking classes and serving in schools, yet research shows that cognitive practices and critical thinking are impacted by work hours. Research demonstrates that inquiry learning can be an anxiety-producing activity for professors and teacher candidates as well. Collaboratively we examined elementary teacher preparation faculty and teacher candidates on two campuses, using the SAMPI inquiry observation instrument in 8 science, social studies, and literacy methods classes with 7 accompanying professor interviews. A stress and self-efficacy scale was given to 55 teacher candidates along with 19 interviews, to answer: How do teacher candidates perceive instructors' goals for and practice of constructivist learning situations in their teacher education programs? How does academic engagement and self-efficacy of teacher candidates relate to levels of stressors in their lives? How do teacher candidates and their education professors view teacher candidate participation in relation to outside demands on their time? Results address the inquiry teaching practices of methods professors, and include self-efficacy, stress, and inquiry indicators. Reported are participants' perspectives of stress and self-efficacy in constructivist-based settings, with the candidates' lived-experiences cited as bigger influences than the challenges of learning in and preparing to teach via inquiry methods.

Keywords: Inquiry learning, teacher candidate, self-efficacy, stress, methods course

1. Twenty-First Century Teacher Preparation

Pre-service teacher training can directly impact Pre-K-12 student learning (Bransford, Darling-Hammond, & Lepage, 2005), and according to Hammerness et al. (2005, p.389), the importance of the “interrelationships between teachers’ learning and development and the *context* of teachers’ learning” is relevant worldwide now in the 21st century. Today’s pre-service teacher or “teacher candidate” is positioned globally in many overlapping contexts, from the college campus and classroom, to field placement locations, to home and work environments.

What do we know about how teacher candidates currently function in a variety of contexts, and what factors in these contexts impact teacher candidates’ learning, particularly learning how to teach through inquiry? Teacher candidates are in a different world since the 2008 worldwide economic collapse which impacted access to jobs and resulted in loss in stock values and drops in real estate values, causing erratic government finances and large-scale loss of personal incomes (Swagel, 2010). We learn from Levine and Dean (2012) in *Generation on a Tightrope* as they examined the lives of college students, that undergraduates work more hours than ever as they see the economy as their most stressful challenge. The authors imply that colleges should help these students cope in light of their economic challenges.

Students who attended college after 2005 “grew up at a time of profound, swift, continuing, and disruptive economic, demographic, technological and global change” (Levine & Dean, 2012, p. 11). These issues of global change lead to uncertainties, thus how do teacher candidates and faculty view these changes and impacts? It has not been clear how these factors impact teacher candidates’ professional development while they learn to employ best-practices for 21st century teaching and learning. As researchers, we wondered how these demands on teacher candidates impact their ability to engage in and learn meaningful constructivist practices in content areas in the college and clinical placement classroom in preparation for serving the needs of diverse learners in complex settings in the future. We began to notice increasing student stress levels and we considered that the challenges faced by teacher candidates were impacting their ability to learn how to teach using inquiry methods and constructivist teaching practices. Thus, this research study was established in a theoretical framework of constructivism (Palincsar, 1998) and stress and self-efficacy (Bandura, 1997), to address these questions. Constructivism is defined within a social constructivist approach which “emphasizes the interdependence of social and individual processes in the co-construction of knowledge” with the goal of understanding learning within a social environment (Palincsar, 1998, p. 345), and Bandura’s defines: “perceived self-efficacy (as) concerned with judgments of personal capability,” or the way a person perceives their ability in certain situations (Bandura, 1997, p. 11).

1.1. Teacher Candidates in Context

Informal conversations in the college of education classroom often revolve around teacher candidates’ challenges in meeting deadlines and balancing individual and professional roles. Students tell stories of working “until 7 a.m.” at the local hospital or agency and then trying to get to their 8 a.m. class, their evening class, or to their school field placement on time and staying awake through rush hour traffic, driving 1 ½ hours one way to campus. Or trying to find last-minute child care for sick children or family members. Some seem little able to focus,

let alone participate in constructivist discussions, activities, or loosely-defined inquiry projects, with often concomitant anxiety at figuring it all out on little sleep (researchers' observation and this report). This leads to questions about undergraduate teacher candidates' health, cognitive focus, thinking ability, learning, and self-efficacy in the academic and clinical training setting. How do the teacher candidates and their education professors view this stress and the outside demands on their time? Hearing from students is valuable, and "is essential to moving higher education research and institutional practice into areas and orientations that are consonant and supportive of students' lives" (Perna, 2010, p. 68). Perna (2010) calls for further research on working students by looking at the intersection of faculty expectations and the challenges of today's working students.

Much is written about college and university student stress and anxiety (Hamaideh, 2011; Landow, 2006; Mahmoud, Staten, Hall, & Lennie, 2012; Misra & McKean, 2000; Misra, McKean, West, & Russo, 2000; Robotham & Julian, 2006) and some research exists on pre-service teacher stress (Fives, Hamman, & Olivarez, 2005) and pre-service self-efficacy and anxiety (Ebrahim, 2012) but there is no literature which gives an understanding of current teacher candidates' contextual stress, anxiety, or self-efficacy in relation to their outside work and personal responsibilities, relative to their teaching methods courses, with concomitant perceptions and practices or support by the faculty that serve them in constructivist learning settings. This research fills that void.

The goal of this research was to more clearly understand the demands, practices, and lived-experience of undergraduate elementary teacher candidates/pre-service students in relation to the context of their teacher preparation program, particularly focusing on candidates' and professors' perceptions and constructivist and inquiry practices through participation in undergraduate science, literacy, mathematics and social studies methods courses in two college settings.

1.2. Stress, Anxiety, and Mental Health of Undergraduate Teacher Candidates

Studies of university students reveal that the stress of college can impact mental health, and that depression and hopelessness are factors which can lead to suicide, the third-leading cause of death in young adults (Lester & Lamis, 2011). There is a call to study the level of academic stress on campuses (Lester & Lamis, 2011) to learn what factors lead to suicide or mental illness. Howard, Schiraldi, Pineda, and Campanella (2006) agree with the imperative to examine college student stressors in order to provide better services and supports, and they offer a framework for looking physically and biologically at stress along with social factors. Colleges across the nation now offer mandatory faculty training in *Student Mental Health* modules which alert faculty to student mental health issues to build awareness of the importance of not ignoring student behavior, engagement, safety, and mental health issues (Hedrick, 2017). Faculty are seen as important gatekeepers for students to receive services for mental health and suicide prevention, with recent trainings now available to support faculty in these roles (Hedrick, 2017; Eisenberg, Hunt, & Speer, 2012).

Teaching is one of the top 10 most stress-producing jobs in America ("Top 10 Most Stressful", n.d.). To look at stress in student teachers, Fives et al. (2005) examined stress and

self-efficacy; they found that burnout lessened when self-efficacy rose and that self-efficacy acts as a cushion for student teachers (Fives et al., 2005). They suggest that university faculty may indeed be able to ameliorate some stress by supporting teacher candidates' self-efficacy which then impacts their teaching practice (Fives et al., 2005).

1.3 Teacher Candidate Self-Efficacy, Anxiety, and Constructivist Learning

Bandura (1997) explained the physiology and emotion involved with self-efficacy, with a focus on the relationship between anxiety and stress, and described one way to strengthen efficacy is by reducing stress. He connected stress with illness and taught that an inability to sustain self-efficacy related to handling stressors can impair immune function and overall health (Bandura, 1997). His research revealed that “perceived coping efficacy operates as a critical cognitive mediator of biological stress reactions” (Bandura, 1997, p. 263). Self-efficacy is tightly related to biology, and has implications for stress and learning. Having fragile self-efficacy “arouses anxiety and decreases achievement” (Mills, Pajares, & Herron, 2006, p. 277). Mills et al. (2006) reference Bandura (1997): “that it is one’s sense of efficacy to control or dismiss apprehensive emotions that accounts for anxiety” (Mills et al., 2006, p. 279). Self-efficacy, stress, and anxiety are interrelated in learning situations. While researchers have studied self-efficacy of pre-service teachers and science instruction (Settlage, Southerland, Smith, & Ceglie, 2009), there has been ambiguity about how stressed or anxious teacher candidates and their professors navigate situations where candidate self-efficacy in teaching and learning is an important component, particularly in methods courses and in inquiry-based settings requiring cognitive and metacognitive focus. Teaching the pedagogical practices which include inquiry learning varies, depending on the contextual setting (Ramnarain, 2016), and the milieu and perspectives of participants where the teaching of inquiry learning is situated must be considered.

1.4 Pre-Service Teachers and Inquiry Learning

Ebrahim (2012, n.p.) found that science teaching methods courses can influence self-efficacy for pre-service teachers, and he calls for more research on methods courses because of the close connection between pre-service teacher self-efficacy and their own teaching practice. In a contrasting study, Spector, Burkett and Leard (2007) uncovered the striking fact that pre-service students put up much resistance and can actually feel the stages of grief similar to experiencing a traumatic event when engaging in science through inquiry. Learning through inquiry is something that these teacher candidates may not have experienced in their own past learning and they may have lingering unenthusiastic ideas related to inquiry learning. The researchers also emphasize the importance of self-efficacy for the pre-service teacher and note:

An effective way to convince pre-service teachers of the value of inquiry teaching is to enable them to experience the benefits to themselves as learners. Once they experience success by learning through inquiry, they are apt to be enthusiastic about teaching children to learn through inquiry (Spector et al., 2007, p. 205).

How do teacher candidates perceive these inquiry learning situations in light of their personal life stressors? Perna suggested that working students may have lower cognitive and critical thinking skills (2010), though suggests that faculty can help working students through stimulating activities to intentionally support critical thinking within cooperative learning

settings. The point is that working undergrads will struggle but that faculty can purposefully choose activities and settings to support students' cognitive and critical thinking development.

1.5 Constructivist Framework

Observing mounting pre-service teacher stress in science and social studies methods courses makes one wonder: Where and how do teacher candidates participate in inquiry or constructivist learning situations in their teacher preparation program, and does the practice of inquiry within ill-defined learning situations add to student stress? For this study the term constructivism is defined as "emphasizing the interdependence of social and individual processes in the co-construction of knowledge" with the goal of understanding learning within a social environment (Palincsar, 1998, p. 345). The research is based in constructivist learning framework, as questions arose as to how methods professors structure courses for inquiry learning and how then do the professors perceive teacher candidates' socio-emotional contexts, working schedules and class participation?

Swackhamer, Southerland, Smith, & Ceglie (2009) establish that effective teachers are serious about using methods such as inquiry, yet Hills reminds us that learning through inquiry in a constructivist milieu requires uncertainty and that teacher candidates and teacher educators may or may not set up or participate in learning situations which involve risk (Hills, 2007). Students and professors may not be willing to take these chances in order to escape from ambiguity or uncertainty in order to maintain a controlled learning environment, and this is very prevalent (Hills, 2007). If learning through inquiry is risky due to cognitive disequilibrium, one wonders what happens when an already stressed teacher candidate experiences an inquiry-based learning situation. If professors offer inquiry-based learning scenarios how might this relate to candidates' use of inquiry in their own teaching?

Litmanen, Lonka, Inkinen, Lipponen, & Hakkarainen (2012) reported that teacher candidates experienced "higher levels of negative affect (stress, irritation, nervousness, anxiety) and challenge" during inquiry learning (p. 1096-97) and note that too much stress impacts concentration and motivation (p. 1097). The researchers share that if there is not enough support from the professor, then students will revert to "survival strategies of surface-level learning" as opposed to embracing inquiry's ambiguities (Litmanen et al., 2010). What supports or scaffolds do professors offer teacher education students in methods courses?

Bandura (1991, p. 100) reminds us that no human endeavor is without some level of risk and shares Kent and Kent 's research which shows that anxiety is provoked by the individual's level of self-efficacy. Spector et al. (2007) demonstrated teacher candidate resistance to inquiry learning and Litmanen et al. (2010) uncovered negative affect while learning through inquiry. Also, Hill (2007) suggested that pre-service teachers and their professors routinely avoid risky learning situations. Given these findings, what can we learn about the state of teacher candidates' current level of self-efficacy while embracing constructivist approaches, particularly in light of Perna's research highlighting college students' level of stress related to work hours?

2. Methodology

This research followed a multi-methods approach to gather data to answer the research questions and to create a snapshot of lived experience of teacher candidates in context in the semester/s prior to student teaching at two colleges. Using mixed methods can help clarify a study's interpretation from various perspectives (Creswell & Plano Clark, 2007), in this case to answer these **research questions**: How do teacher candidates perceive their instructors' goals for and practice of constructivist learning situations in their teacher education programs? How does academic engagement and self-efficacy of teacher candidates relate to levels of stressors in their lives? Academic engagement includes in-class participation, assessments, and assignment completion. The researchers wondered how both the teacher candidates and their education professors viewed teacher candidate class participation in relation to outside demands on their time. What are the inquiry teaching practices of professors of literacy, science, social studies and mathematics methods courses in elementary teacher education programs? What are the self-efficacy, stress, and inquiry indicators of the university teacher candidates?

2.1 Sample

One college was Miller State, a large, urban, Midwestern state-system university in a metropolitan area with almost 3 million people. The second college, McNeill University, is a small-town parochial university in a neighboring state, where the town's population is 40,000. The large state college has 16,814 students; with over 32% minority enrollment on a mostly commuter campus and the College of Education has over 190 faculty. The private college's enrollment is 1,300 students, with around 12% minority enrollment, and there are 116 total education faculty.

Data were collected from 55 participants: 48 undergraduate pre-service teachers (n=36 at Miller State; n= 12 at O'Neil) and 7 methods professors (n= 5 at Miller; n= 3 at McNeill) in math, social studies, science, and literacy courses. Pre-service teachers at Miller State were education majors aged 21 to 48 years old (many of whom were non-traditional students with families and jobs); 26 were female, 10 were male, with a racial composition of 2 African American and 34 Caucasian students. Pre-service teachers at McNeill were education majors aged 21 to 25 years old (traditional college aged undergraduates): 11 were female, 1 was male, with a racial composition of 0 African American and 12 Caucasian students.

2.2 Procedure

Nineteen semi-structured interviews were scheduled with teacher candidates and professors during the fall 2014 and winter 2015 semester on each campus at a time convenient for students. The 27-item stress and self-efficacy scale rated with "high" internal validity (Zajacova, Lynch & Espenshade, 2005, p. 695), was given to 48 students who were selected from each of the author's two courses. Zajacova et al. (2005) related stress and self-efficacy for college students and designed a valid and reliable 27-item Likert-scale (where "both scales have high reliability", p. 1) where 0 =not stressful to 10 = very stressful; and where 0 = not confident to 10 = extremely confident on the corresponding self-efficacy scale. The stress and self-efficacy scales for 48 students were examined for means and standard deviations and totals were calculated for each of the 27 Likert sub-scales. Group means and standard deviations were calculated for each of the two subscales.

To review each professor's inquiry practice, two observations in each classroom were made to find mean scores and standard deviations using the SAMPI Observation Instrument (Science and Mathematics Program Improvement, 2003). SAMPI, tested and approved for reliability and validity, is a "comprehensive protocol for observing, analyzing and reporting data from observations" to examine the use of classroom inquiry (SAMPI, 2003) in K-16 classrooms. SAMPI has validity and reliability: "Cronbach's Alpha .8769, and high (90 – 100%) interrater agreement" (SAMPI, 2003, p. 4). The lead researcher received training twice over two years on using the SAMPI instrument which measures twenty-three items in these categories: *learning interactions*, *lesson implementation*, *content*, and *classroom culture* on a 7-point scale.

SAMPI mean scores for inquiry were determined for observed science, social studies, literacy, and math methods lessons (where ratings of 1-3 show "needs improvement" or low alignment with inquiry, 4-5 demonstrates "making important progress" or mid alignment, and 6-7 represents "well done", or high alignment in using classroom inquiry) (SAMPI, 2003, p.4).

Constant comparative analysis (Lincoln & Guba, 1985) was employed when studying transcribed interview data to discern initial and final themes. Themes and codes were confirmed when multiple examples were discovered and themes were saturated over the two campuses. Peer review corroborated consistent themes from the interviews, observations and stress scales.

Interviews, SAMPI scores and self-efficacy stress scale data were triangulated to compare results and to integrate the data for a clearer picture of perceptions, perspectives, and experiences of pre-service teachers and their professors in context.

3. Findings

Findings for each type of data collected are reported here, with the data triangulation, comparison, and blending reported in the *Integration of Data* section below.

3.1 Interviews

The constant comparative analysis and coding for interviews resulted in these main themes: the presence or absence of inquiry, structure of assignments, nature of pre-service teacher stress, and impact of work demands on teacher candidates.

3.1.1 Theme: The presence or absence of inquiry

The data revealed the perspectives of methods professors and teacher candidates about the practice of inquiry in the college and elementary classroom. In this theme, professors and teacher candidates agreed that inquiry learning is often lacking in the classroom.

When asked: "Do you see your teacher candidates engaging in inquiry learning during class time?" Ms. Monroe (pseudonym), an adjunct faculty member at McNeill, pined negatively, hoping her students would ask for inquiry methods. Going further Ms. Monroe revealed a desire for her own professional development in inquiry learning.

Regarding inquiry in methods classes, students equivocate. When asked whether professors lead students in inquiry, Natalie revealed that she didn't know. Marilyn offered a perspective: "We do open-ended sorts, just like concepts in the book. She'll make notecards of the concepts and we have to organize them - like organize our thoughts. I guess - and that's kind of open-ended." Aubrey added: "I find it frustrating". Marilyn confirms: "Like I'm not sure where this one fits." Marilyn said: "You do it as a group and it leads to discussion". Marilyn clarifies that the teacher may say "there's not really an exact answer" but that the teacher "will guide you." Participants reported inquiry as categorizing vocabulary words, with some guidance from the teacher, which can lead to discussion, which is sometimes frustrating and sometimes beneficial.

One McNeill student shares "I see a lot of hands-on, cooperative learning but not much inquiry" and is unsure if inquiry should be found in the early elementary grades. The McNeill program is organized in the Professional Development School Model, so the pre-service students often take class in the elementary school building where they are allowed to teach.

Marilyn stated that she has seen inquiry in the elementary classroom: "Mainly in science... and (there was) an earthquake, what would you do? Students didn't have all the information. They actually had to think of it." She seemed excited to have viewed this thinking process with students. Though when asked "What do you think the teacher has to do to allow that to happen?" Marilyn replied: "I really don't know; As far as inquiry goes...even in reading...I don't think I've actually had too much."

Katie described her connection between inquiry and the Common Core Standards when asked if she had seen inquiry: "I'd say so. It's student centered because it's based off what their prior knowledge is and it's building on that knowledge." Some students note inquiry in methods classes though others note its absence. Data showed a focus on practical aspects of teacher preparation rather than developing inquiry learning. From classroom management skills, to developing lessons and applying the Common Core, the need for clarification and training on inquiry learning methods, techniques, and processes in elementary and college classrooms emerged in this study.

A Miller State math methods professor related the challenges with inquiry due to the classroom arrangement and not being able to aid student thinking. Professors are challenged with balancing subject matter, pedagogy and inquiry methods. A science methods professor at Miller leads students in 'simulated science experiments' though they "are uncomfortable taking the role of a curious child". Students are uncomfortable with their own knowledge and asking questions at first, but as they progress "work becomes more valuable and genuine" when they become aware of the focus on learning about learning rather than their own content knowledge. Seeing the methods class as a time to teach about teaching and to review assignments while leaving knowledge-building and inquiry theory and practice aside is a common temptation and is discussed further in the SAMPI observation section.

Ms. Bradford, a Miller literacy methods professor, gives a view on inquiry situations: "They don't like it...They want to be told what the answer is. And if I throw out a question they want to know what the answer is." There is some resistance from some students for inquiry

methods and literacy practices which don't line up with the students' perspectives. A sub-theme found in this study is that professors are aware of student resistance, yet from the students we heard that: "Professors do not want to hear the student's opinion." In Ms. Bradford's situation, we see a professor wary of students' contrasting views and criticism.

Miller students see most professors welcoming questions, engaging in constructivist practices, and supporting their design of classroom inquiry learning. "I'm encouraged to, and where I think it's appropriate I will, but otherwise I tend to stick with straightforward methods." As we learned from McNeill students, stretching to utilize inquiry methods in the classroom creates discomfort; it is more comfortable to stick with traditional methods.

A special education major confirms that professors use constructivist methods, but implies that instructors have differing views than hers on inquiry methods. Some methods professors model inquiry and some "just lecture" and "you don't learn anything". Students report that most professors try and listen to student ideas, though in some of the three-hour day and evening classes this doesn't happen. "More than anything it's a lot of lecture...the entire time. They do ask us questions and we respond and we do a little discussion, but it's mostly just lecture." "In that class you just sit....and watch." Students on both campuses told of professors lecturing and asking questions and reported that they prefer practicing constructivist teaching in the classroom.

3.1.2 Structure of assignments

Data about student engagement and assignment development and completion gives a glimpse into stress and self-efficacy of teacher candidates. Results show that an important element of methods course assignment development to students and professors is the close alignment with clinical placement work. Teacher candidates feel more fulfilled when assignments directly relate to the school placement which requires close communication and collaboration with the field placement settings. When this is lacking, such as when students receive notice of placements late in the semester, stress increases. On the larger urban campus, lack of support staff, advisor turnover, and incomplete information during large program transitions was reported by students as causing much stress, including being set back a semester or two.

Students poignantly describe their desire to serve elementary students. Communicating with busy classroom teachers while completing methods course requirements is one of the skills teacher candidates are developing. Students report "teaching different topics for different methods classes": "I think it's hard - like we're all in methods courses, so each class we're in at a different school and a different classroom, so it's adjusting. OK, I'm here at this time. Then I'm at [this school; I'm teaching writing here. I am teaching this here. Each day is a different lesson plan." Though some students see placements positively within a career context, and having the experience on their resume is a plus.

Students elaborate about lesson planning; from a student's perspective: "I think everything is just time consuming. TPA (a new requirement) is killing me". A glimpse into her thinking:

It's a lot of work because we have to plan around six lesson plans a week. For every single detailed lesson, we have to do a detailed evaluation. Then on top of that... the resources needed. I have to contact my teacher, go meet up, find a time to be able to meet up to get the lesson plan because they don't have enough materials to provide me with a book to teach from. Then I have to plan the lesson. But I also have to be able to make sure that I can meet with my co-teacher on that lesson. It's like, a big time not only to plan but to communicate.

We saw teacher candidates such as this growing dynamically in professionalism as they adjusted to serving learners who had many needs. The example of teacher candidate Esther, who was often ill, shows that true dedication to the profession often impacts personal health. Esther missed methods classes several times, and when she was asked about her absences and ongoing ill health, she reported working with a child daily who had no heat or air conditioning at home and who often went hungry, his parent working a double or triple shift or often absent, with not enough money at home for food. This first grader was supervised by his third-grade sibling, and went to bed without food. Esther felt she was a stabilizing influence in the classroom with this child, who often came to school ill and gave her his germs, but who enjoyed her reading books regularly on his favorite topics. This teacher puts the situation in perspective, serving willingly. Students also report wanting to serve more often during the week in their placements in order to help elementary students improve reading skills.

Perhaps it is because the teacher candidates are developing professionally in the clinical field placement setting that they ask for assignments to be "meaningful". Samone: "Other classes - it just seems like so many [assignments] piled on, piled on, busy work assignments that you do on your own time that you don't see any [meaning] and maybe there IS meaning to it but we're not seeing it." Ms. Bradford tried to make assignments meaningful but has been challenged in her attempts. Professors shared confusion and puzzlement at students who did not meet deadlines, and they all mentioned students' lack of time management skills. One professor commented "Nine out of thirteen students did not turn their projects in on time", and another shared that multiple students missed the deadline for a final project but wanted another chance to turn in work.

Students forget deadlines or report they have a hard time with deadlines: "Especially when a test is due at 5 p.m. on a Friday - I'm like - I obviously have to *work* on Friday." Another professor asks for Friday deadlines and multiple students dislike this day. It appears many students haven't figured out they can turn work in early, as professors suggest.

A positive finding was that students rely on each other and the few very organized students who use planners: "What I do on the first day when I get all of my syllabus' I go through every one and put it in my planner....and then I have a list for what is due before mid-term and a list for what's due after mid-term and I work weeks and weeks ahead...so that whenever something is due I can have it done." says Samone who regularly travels more than 100 miles round trip and then to her placement on top of working 25 to 30 hours per week. A mother in her mid-thirties who runs a business and has a family, pipes in: "I have stolen that from Samone...the lists." Students share that it is stressful when due dates change, even in their favor - with extra time given them - as this requires re-arranging the schedule. Placing these

comments in context of student work and commuting demands helps us understand, as students on both campuses have fearfully said that making a simple change in the schedule could mean “everything is so loosely controlled, if one thing goes wrong it all falls apart!”

3.1.3 Impact of work demands

A look at the data on hours worked by students reveal demands of a 20 to 40-hour work week for students at both campuses. Only two students reported quitting work for college. “I don’t work because it just proved to be unmanageable with all of the homework and finding time” said a McNeill student. Students work on top of 15 to 21 credit hours. In the urban area, it is compounded by the students’ commute.

One case is Sal, a special education major, who is a single parent to a special-needs teen and lives 60 miles southwest of campus and holds down three part-time jobs. One job is 25 minutes from campus; one is 20 minutes from campus in the other direction. She also travels to her field placement, which is 50 minutes southwest of campus (41 miles away). In all, she could travel more than 200 miles a day during her commute, not to mention the time required to travel. Susan is in a similar situation, and reports a similar commute to campus, to her placement 40 miles away, and back home, an hour from campus. Samone, the very organized student, lives 50 miles from campus and has a 100 to 160-mile commute from campus to placement to home. It is not uncommon at Miller State for students to travel this distance. In the case of Sal and Susan at Miller State, two hours from campus to home roundtrip, plus hours to placement and work can lead to 15 to 25 hours a week commuting. Students at McNeill live in the small town or on campus, and only one reported a long commute of 30 minutes, most likely causing less stress than the state college student commuters experience.

3.1.4 Nature of pre-service teacher stress

Teacher candidates and professors differ on elements of stress, and a goal of this research was to understand these perspectives. Aspects of students lived experiences not explored by professors include long days and long commute and the impacts of 5 to 20 hours commuting, 15 - 35 hours working, 12 to 16-hour days, some multiple jobs, on learning to teach. Other influences on student health include the physical impacts (eating and sleeping). For example, Nicole lives 40 miles from campus and leaves home at 6:15 a.m. and gets home around 9:30 or 10 p.m. on class days. She runs a business and has a family. A strategy she uses is keeping a cooler in her car with food for all three meals “just like going on a float trip”. Preparing for the commute and coursework just like planning for a trip, though some students report not eating on the long days, per Jill: “I also sit in class and I’m just hungry, I’m not paying attention to you. I’m hungry.”

3.1.5 Physical and emotional impacts

Professors report students working from midnight to 3 a.m. on assignments, or right before class. Some students say they cannot work on assignments after a long day of classes, commuting, and working. Laura at Miller, taking 21 credit hours, a practicum, a 10-mile commute, and a job of only 15 hours per week, became pale and weak by the last day of class.

We learned she became anemic. “I work Friday, Saturday, and Sunday and have Monday through Thursday with classes and practicum, so I have 7 days a week this semester. I have to be really organized.” Julie at McNeill shared: “Right now since I have so many night classes, I’ll work early in the morning and then go to class. Then after class I’ll stay up late and study. It really just affects my sleep more than anything.”

In addition to the physical impacts, there are emotional impacts of working to complete assignments (or forgetting assignments). Students appreciate flexible due dates doing group work in class hours. However, every professor interviewed showed a perspective which basically said “Students have to deal with it” showing they sometimes do not fully understand students in context of their 21st century lived experience. Students have informally stated they feel they are ‘hanging on by a thread’, yet professors compare students to times past when they were teaching or in college.

3.1.6 Finding support

Students at both colleges and professors found support in others. Students in both campuses travel in a type of cohort through classes:

We were just talking that having friends in the program and in classes helps. Because you have other people you don’t feel so alone in the whole process. Samone (the organized one) adds: A lot of people text me like Sunday night. Janet, a single parent, says: If it weren’t for Samone and Dale I wouldn’t have made it through my last semester. I cried...there were times I cried. Samone confirms: There were times I wanted to drop out...it was my worst semester. Janet: I would go home and tell my mom - I can’t do it. I can’t be a teacher...this isn’t for me....and it was...a very rough semester.

3.2. SAMPI Inquiry Lesson Observations

The SAMPI-trained researcher visited each methods classroom twice using the SAMPI Lesson Observation Instrument (once for “Literacy 2” class at McNeill). Ratings of high, mid, and low were determined. Ratings of 1-3 show “needs improvement”, or low on inquiry alignment, 4-5 demonstrate “making important progress”, or mid, and 6-7 represents “well done”, or high inquiry alignment (SAMPI, 2003).

The science methods course at McNeill rated high in: lesson implementation, content, and classroom culture; the instructor has training and experience in inquiry methods and models it with students. The science methods course at Miller State rated lower in these categories due to lessons being more about assignment details, points, and due dates than methods or content. Student-to-student interaction/collaborative relationships, use of abstractions and teacher-to-student interaction probing were rated low. Students came late to the 8 a.m. class and one student came in and directly put her head on the desk to sleep. Could the long commute mentioned earlier have had an impact on commuting students in this early class and does the student stress level require the professor to re-iterate and restate assignment requirements to this level of detail at the end of semester?

The literacy class at Miller rated high in inquiry elements in each category. In contrast, in Miller student interviews students were equivocal about inquiry in methods classes. Students on both campuses need awareness, training, and practice in inquiry teaching methods.

The literacy classes at McNeill had some mid and low scores in areas such as ‘student-to-student-interaction’ and ‘student-to-student collaborative relationships’, and ‘students encouraged to generate ideas’. Over the course of the observations the instructor talked and sometimes interacted with students, but did not encourage students to interact with questions with each other.

The McNeill social studies lessons were rated high for inquiry, though student-to-student interactions were low and student-to-student collaborative relationships and “students encouraged to generate ideas” was a mid-inquiry score. Social studies lessons blended questioning and probing with content and high teacher-to student interactions.

Math lessons at McNeill were mid-inquiry for teacher-student interactions and student-student interactions and student-to-student collaborative relationships and high in the other SAMPI criteria. This was offered on the school placement site and benefitted pre-service students practicing teaching in the elementary classrooms. Math at Miller was rated high for inquiry in most categories and one math lesson was an exemplar of solid inquiry teaching. Low to mid scores for inquiry across both campuses in some categories reflect a need for an increased faculty awareness for modeling inquiry teaching and learning in pre-service methods courses.

3.3 Stress and Self-Efficacy Scale

On the stress scale students were asked to answer “how stressful these tasks are for you” and on the self-efficacy scale “please answer how confident you are” from 0 to 10. Data show that participants on both campuses found the most stress in having enough money, finding time to study/prepare, completing multiple assignments in a week, and getting projects in on time. The self-efficacy scores corroborated with the stress scores for both campuses, in that for self-efficacy, McNeill students were least confident in having enough money, managing time efficiently, keeping up with required readings, getting papers/projects in on time, and having multiple assignments in the same week. They were most confident in: getting along with family, significant-others, family significant-other expectations, taking good notes, asking questions in class and getting help and info for class. Miller students were least confident in understanding policies, having enough money, keeping up with required readings, participating in discussions, and having multiple assignments in the same week. They were most confident in talking to college staff/advisors, getting help and information from class, communicating with professors, background preparation and research for lesson plans/projects, and managing school and work.

Both Miller and McNeill students had the lowest self-efficacy in 3 out of the 5 same tasks: “keeping up with required readings”, ‘having enough money’, and ‘having multiple assignments in the same week’. They were both confident in ‘getting help and info for class’. From the data, it is clear that teacher candidates on both campuses were concerned about money and had low self-efficacy in meeting course assignments, readings and academic demands in the teacher education program.

4. Data Integration and Discussion

Data from the two campuses were triangulated to give a picture of teacher candidates' lived experiences, including student self-efficacy related to stress within a constructivist teaching environment, with supporting and contradictory reports from their professors about assignment completion, stress, and classroom inquiry, with a clearer picture of the practice of inquiry in two diverse undergraduate teacher education programs.

Fives et al. (2005) found that when levels of efficacy increase, the 'degree of burnout' (p. 26) decreases and suggest that efficacy may provide some type of buffer to burnout. Data show that students on both campuses have high self-efficacy in "getting help and information for class", which relates to another finding from Fives et al. (2005) suggesting that teacher educators and cooperating teachers may support teacher candidates to increase self-efficacy. If students and faculty explicitly dialogue about stressors and types of help available, it could serve to ameliorate impacts of student stress. For this to happen faculty need to be aware and self-reflective of possible bias towards having students "just deal with it", as the rapid pace of 21st century society has caused unprecedented changes which now impact teacher candidates. Professors' perceptions of undergraduate mental health are important elements impacting communications and support in constructivist communities of learners.

To illustrate, examples from the SAMPI and interview data showed students arriving late to 8 a.m. classes, with one late-comer promptly sitting down and falling asleep. Some students in the urban area experience one hour or more commutes on the way in to campus, with 10 to 20 hours of commuting time in the car weekly and 12 to 16-hour days. A few students travel 100 to almost 200 miles daily, with work hours adding to the demands. Perna (2010) confirms that cognitive abilities are impacted by hours of student work, yet cognition is enhanced when faculty use best practices to support and engage with students. Intentionally taking time to have discussions or take simple surveys about commuting, traffic, and work-related issues in relation to stress and self-efficacy will bring the subject into the open for professors and students to find ways to increase understanding and support. Professors and students can exercise and practice dialogic inquiry (Wells, 2009) in these instances, having conversations and asking each other questions about their learning holistically (the whole person) from a student-centered approach; using the Zajacova et al. stress/self-efficacy (2005) scale will reveal topics of concern for these discussions. Using the stress self-efficacy scales as a focal point for classroom dialog opens up opportunities for all members of the learning community, including professors, to identify and address areas in need of support.

Moving forward, instructors should intentionally model student-centered inquiry learning in all methods courses, as the interview and SAMPI data show students having a mixed understanding of goals for inquiry learning in the college and elementary classroom. Elements of inquiry are present in the methods courses but students often fail to "take up" the practice. Professors report resistance from students ("who just want the answer") and students report professors not always being interested in student ideas. Modeling and practicing inquiry as sometimes messy, time-consuming, and unstructured will help students understand learning differently than the traditional ways they feel more comfortable with now. Professors can deliberately switch from asking questions (or lecturing as reported at Miller State) to designing

instruction to support student-generated questioning and student to student investigative communications modeled in the SAMPI instrument in science methods and beyond.

Student interviews helped determine the nature of student stress (multiple jobs, 20 to 35-hour work weeks, long commutes, assignment issues) and the stress scale data confirms this. Students on both campuses rate: *'finding time to study or prepare'* and *'having multiple assignments in one week'* as very stressful. Looking at student schedules, with sometimes seven full days of work and school, often students stay up late or do not complete assignments. Bandura (1997) relates anxiety, stress, and self-efficacy, and this is confirmed by Miller students who shared that the stress was too much and some thought of dropping out, and students on both campuses saying that things (in the schedule) could topple at any moment. Bandura (1997) also exposes the physical connection to stress and anxiety, and data from interviews show students being impacted physically (eating and sleeping) from working 12 to 16 hour days. While one student who lives 40 miles from campus brings a cooler for all of the days' meals, other students miss meals and come to class hungry. Addressing these issues openly, and giving breaks for eating in the three hour or night classes, will give students strategies to help them stay healthy. As we learned from the anemic student who took 21 credit hours, had a job and a student placement, there's only so much a student can handle in one day or one semester before the impacts become too much. In contrast, we learned from the stress and self-efficacy scales that students are confident in making connections with family, staff, and faculty, which can be viewed as a positive support for buffering teacher candidate levels of stress.

5. Conclusion

The comparison, contrast, and triangulation of data from these diverse settings in two states presents a contextual understanding of professors' and pre-service teachers' varying and conflicting perspectives in relation to how teacher candidates perceive their instructors' practice of constructivist learning situations in their teacher education programs and how academic engagement and self-efficacy relate to levels of stressors in their lives. In particular, the data revealed how teacher candidates and their education professors view teacher candidate participation in relation to outside demands on their time, and gave a glimpse into the inquiry teaching practices of professors of elementary literacy, science, social studies and mathematics methods courses.

Outcomes of this study consist of suggestions for faculty on small to large campuses worldwide, including increasing awareness for professors to re-think prior assumptions of student learning and stress, and being aware of outside demands on teacher education students with the realization that students' self-efficacy and mental health are important factors impacting their current health, achievement, and future careers. In light of current trends to train faculty in campus safety and college student mental health issues, we see opportunities for faculty to become more aware of student mental health via this research and by potentially using the student interviews and the stress and self-efficacy scales in order to "foster resilience and create positive learning environments" (Hedrick, 2017, n.p.). Recent efforts to train faculty as one of many gatekeepers of student mental health (Eisenberg et al., 2012) are in line with these results. In addition, an awareness that inquiry learning can be stress provoking (Spector & Leard, 2007) and then re-thinking how inquiry learning is modeled and practiced with teacher candidates in a

social constructivist environment, within methods courses, is an important result of this study, as the inquiry discourse which ensues sets the stage for meaningful student to student and student to professor discussions in general. Educators will find the SAMPI Observation (2003) instrument (through Western Michigan University) to be a useful tool in examining where and how inquiry learning is taught and implemented throughout the K to 16 environments in which they practice.

The results show contrasting views, multiple challenges, and hopeful scenarios of teacher candidates supporting one another while working hard to learn how to best serve their future students in a complex society. The research exposed new ideas for supports and constraints for colleges preparing 21st century teacher candidates on each continent.

References

- Bandura, A. (1991). Perceived self-efficacy and anxiety. In R. Schwarzer, R., & A. Wicklund, (Eds.), *Anxiety and self-focused attention* (p. 100). Chur, Switzerland: Harwood Academic Publishers.
- Bandura, A. (1997). *Self-Efficacy: The exercise of control*. New York, N.Y.: W.H. Freeman and Co.
- Bransford, J., Darling-Hammond, L. & LePage, P., (2005). In L. Darling-Hammond & J. Bransford, (Eds.), *Preparing teachers for a changing world: What teachers should learn and be able to do* (pp. 358-389). San Francisco, CA: Jossey-Bass.
- Creswell, J. W., & Plano, C. V. L. (2007). *Designing and conducting mixed methods research*. Thousand Oaks, CA: Sage Publications.
- Ebrahim, A. H. (2012). The self-efficacy of preservice elementary teachers in Kuwaiti science programs. *Education, 133*(1), 67-76.
- Eisenberg, D., Hunt, J., & Speer, N. (2012). Help-seeking for mental health on college campuses: review of evidence and next steps for research and practice. *Harvard Review of Psychiatry, 20*(4), 222-232.
- Fives, H., Hamman, D., & Olivarez, A. (2005). *Does burnout begin with student teaching? Analyzing efficacy, burnout, and support during the student-teaching semester*. Paper presented at the Annual Meeting of the American Educational Research Association, Montreal, CA.
- Hamaideh, S. H. (2011). Stressors and reactions to stressors among university students. *The International Journal of Social Psychiatry, 57*(1), 69-80.

- Hammerness K., Darling-Hammond, L., Bransford, J., Berliner, D., Cochran-Smith, M., McDonald, & M., Zeichner, K. (2005). How teachers learn and develop. In L. Darling-Hammond & J. Bransford (Eds.), *Preparing teachers for a changing world: What teachers should learn and be able to do* (pp. 358-389). San Francisco, CA: Jossey-Bass.
- Hedrick, B. (2017). SafeColleges Online Training: *Student Mental Health*.
<http://www.safecolleges.com/courses/student-mental-health/>
- Hills, T. (2007). Is constructivism risky? Social anxiety, classroom participation, competitive game play and constructivist preferences in teacher development. *Teacher Development*, 11(3). 335-353.
- Howard, D.E., Schiraldi, G., Pineda, A. & Campanella, R. (2006). Stress and mental health among college students: Overview and promising prevention interventions. In M. V. Landow (Ed.), *Stress and mental health of college students* (pp. 91-123). New York: Nova Science Publishers.
- Landow, M. V. (2006). *Stress and mental health of college students*. New York: Nova Science Publishers.
- Lester, D., & Lamis, D. (2011). *Understanding and preventing college student suicide*. Springfield: Charles C. Thomas.
- Levine, A. & Dean, R. (2012). *Generation on a tightrope: A portrait of today's college student*. San Francisco, CA: Jossey-Bass.
- Lincoln, Y.S., & Guba, E.G. (1985). *Naturalistic Inquiry*. Beverly Hills, CA: Sage.
- Litmanen, T., Lonka, K., Inkinen, M., Lipponen, L., & Hakkarainen, K. (2012). Capturing teacher students' emotional experiences in context: Does inquiry-based learning make a

- difference? *Instructional Science: An International Journal of the Learning Sciences*, 40(6), 1083-1101.
- Mahmoud, J. S., Staten, R., Hall, L. A., & Lennie, T. A. (2012). The relationship among young adult college students' depression, anxiety, stress, demographics, life satisfaction, and coping styles. *Issues in Mental Health Nursing*, 33(3), 149-56.
- Mills, N., Pajares, F., & Herron, C. (2006). A reevaluation of the role of anxiety: Self-Efficacy, anxiety and their relation to reading and listening proficiency. *Foreign Language Annals*, 39(2), 276-295.
- Misra, R., McKean, M., West, S., & Russo, T. (2000). Academic stress of college students: Comparison of student and faculty perceptions. *College Student Journal*, 34(2), 236-245.
- Misra, R., & McKean, M. (2000). College students' academic stress and its relation to their anxiety, time management, and leisure satisfaction. *American Journal of Health Studies*, 16(1), 41-51.
- Palincsar, A. (1998). Social constructivist perspectives on teaching and learning. *Annual Review of Psychology*, 49, 345-75.
- Perna, L. (2010). *Understanding the working college student: New research and its implications for policy and practice*. Sterling, VA: Stylus Publishing, LLC.
- Robotham, D., & Julian, C., (2006). Stress and the higher education student: A critical review of the literature. *Journal of Further and Higher Education*, 30(2), 107-117.
- Ramnarain, U. (2016). Understanding the influence of intrinsic and extrinsic factors on inquiry-based science education at township schools in South Africa. *Journal of Research in Science Teaching*, 53(4), 598-619.

Science and Mathematics Program Improvement. (2003). *SAMPI Lesson Observation System*.

Observing Lessons in K-12 Classrooms: Instrument and Methods. Kalamazoo, MI:

SAMPI, Western Michigan University.

Settlage, J., Southerland, S. A., Smith, L. K., & Ceglie, R. (2009). Constructing a doubt-free teaching self: Self-efficacy, teacher identity, and science instruction within diverse settings. *Journal of Research in Science Teaching*, 46(1), 102-125.

Spector, B., Burkett, R. S., & Leard, C. (2007). Mitigating resistance to teaching science through inquiry: *Studying self*. *Journal of Science Teacher Education*, 18, 185-208.

Swackhamer, L. E., Koellner, K., Basile, C. & Kimbrough, D. (2009). Increasing the self-efficacy of inservice teachers through content knowledge. *Teacher Education Quarterly*, 36(2), 63-78.

Swagel, P. (2010, April 28). The cost of the financial crisis: The impact of the September 2008 economic collapse. Retrieved from:

http://www.pewtrusts.org/our_work_report_detail.aspx?id=58695

Top 10 Most Stressful Jobs in America. (n.d.). Retrieved from:

http://abcnews.go.com/GMA/be_your_best/page/top-10-stressful-jobs-america-14355387

Wells, C. G. (1999). *Dialogic inquiry: Towards a sociocultural practice and theory of education*. New York: Cambridge University Press.

Zajacova, A., Lynch, S., & Espenshade, T. (2005). Self-Efficacy and stress as predictors of academic performance and persistence of nontraditional students in an urban commuter college. *Research in Higher Education* 46(6), 677-706.