Pre-service STEM Teachers' Views of Teaching Before and After Their First Lesson

Sarah Ferguson & Latanya Sutphin

Old Dominion University

Evaluating comments from pre-service STEM teachers before and after their first teaching experience, this study examines changes in pre-service STEM teachers' viewpoints regarding the most challenging aspect of teaching and the most important traits of a teacher. Pre-service STEM teachers were asked the same survey questions on the first and last days of their initial introduction to STEM education course. Through this course, students partook in their first opportunity to plan and teach a lesson. Findings suggest student's initially reviewed teaching from an extrinsically observable vantage point before moving to a more intrinsic reflection point after their first teaching experience.

INTRODUCTION

After being a student for 12+ years, many people claim to understand the role of a teacher (Hong, 2014). Teaching is more inclusive than the outwardly observable attributes exhibited in the classroom (Korthagen, 2004). While non-teachers often claim to understand the role of a teacher, Eingurt (1983) argues that teaching is an art which only a few people are able to master. "An important component of the process of learning to become a teacher is the development of a professional identity...learning to be a teacher is as important as learning how to teach" (Friesen & Besley, 2013, p. 23). Students entering the teaching profession have dreamt about their future classroom and believe they possess the characteristics necessary to be a teacher. But, do they fully understand the vital attributes that characterize a good teacher? Do they understand the challenges teachers face in the classroom? To explore these two questions, this study reviews 59 pre-and post-survey responses from pre-service STEM teachers. For this study, pre-service STEM teachers are classified as students who seek to become secondary science, technology, engineering or mathematics (STEM) teachers. Results are then reviewed and analyzed for common themes and trends. This article seeks to share the trends realized through a review of students' pre and post survey responses.

LITERATURE REVIEW

There is no secret recipe for categorizing the qualities of effective teachers, but there are certain characteristics that effective teachers possess (Stronge & Hindman, 2003). A good teacher must show students they care about student learning, know the content, and deliver the content in an exciting manner (Fajet, Bello, Leftwich, Mesler, & Shaver, 2004). Murphy, Delli, and Edwards (2004) found that students, pre-service teachers, and in-service teachers all believe good teaching means having student-centered instruction, happy students, and the teacher actively moving around the classroom. Most of the pre-service teachers in the study by Minor, Onwuegbuzie, Witcher, & James (2002) ranked student-centered as the most important characteristics of effective teachers. Walker (2008) collected data from pre-service teachers on what makes a good teacher and identified 12 characteristics. These 12 characteristics of effective teachers included qualities such as prepared, fair, respect for students, forgiving, and cultivates a sense of belonging. These studies all demonstrate how the classrooms of effective teachers are centered on the students and engaging them in learning the content.

Stronge and Hindman (2003) found, when anyone is asked to recall a special teacher, words such as caring, competent, humorous, knowledgeable, demanding, and fair are often used. These descriptors deal with personal characteristics of teachers and do not reference how the teacher taught the content. Research shows the traits of a good teacher include elements of character, skills, mastery of content, enthusiasm, and a love of helping students learn (Murphy, Delli, & Edwards, 2004; Stronge & Hindman, 2003; Korthagen, 2004; Walker, 2008). Pre-service teachers generally relate back to their own personal classroom experiences and tend to identify interpersonal and strong management skills as essential qualities of a good teacher (Bauml, 2009). Studies have found pre-service teachers favor personal traits over pedagogical knowledge as the most important aspects of a good teacher (Fajet et al., 2004; Minor et al., 2002). These findings demonstrate pre-service STEM teachers are recalling their best memories as students and seek to emulate their past teachers in order to replicate positive learning environments for their future students. Hamachek (1999) contends the question of what qualities comprise a good teacher is unresolved and Korthagen (2004) expands this notion to suggest "trying to put the essential qualities of a good teacher into words is a difficult undertaking" as the qualities of a good teacher depends on the context in which this question is asked (p. 78).

Meijer, Korthagen and Vasalos (2009) and Korthagen (2004) use the imagery of the layers of an onion to categorize the characteristics of teachers. The onion model was developed by Korthagen (2004) as a framework from which to structure the qualities of a good teacher and grew from the Humanistic Based Teacher Education (HBTE) model (Meijer et al., 2009). The HBTE model stressed the "unicity and dignity of the individual" (Meijer et al., 2009, p. 79) and focused on the development of the individual who is to be the teacher as the key foundation for teacher development (Poutiatune, 2005). The HBTE model "centered itself in the notion of the person as teacher and focused on the idea that developing the person who teaches is central to the idea of developing teachers" (Poutiatune, 2005, p. 125) In developing the onion model, Korthagen (2004) argued it was critical to develop the individual but it is also critical to develop pedagogical competencies as well. The onion model serves as a framework to consider teacher development in a more holistic sense. As shown in figure 1, the onion model breaks teacher characteristics into six layers.

Figure 1. Onion Model
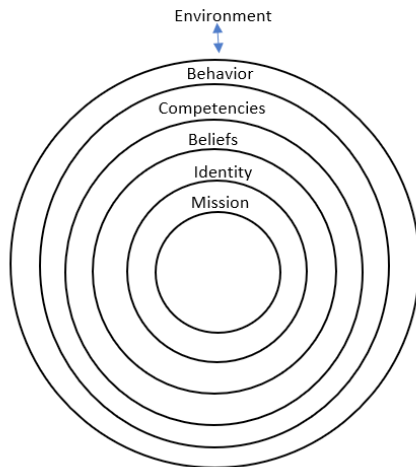
The outer layers exhibit characteristics of the environment, such as interactions with education stakeholders, the classroom, the school, and the learning surroundings. Moving towards the center of the model, characteristics become less outwardly focused and more self-focused as teachers are encouraged to reflect on their beliefs, identity, and mission as a teacher. Outer layers and inner layers are not independent of each other; each layer contributes to the holistic development of the teacher and teaching experience. The purpose of this study is to explore what traits pre-service STEM teachers identify as qualities of a good teacher both before and after their first teaching experience; these traits will then be compared to the onion model to identify trends in perceptions.

PRESENT STUDY

The present study uses the onion model as a framework to structure pre-service STEM teachers' reflections on teaching before and after their first teaching experience. There does seem to be a gap in the literature on pre-service STEM teachers' perceptions of important teacher attributes. One study examined pre-service science teacher beliefs about teaching after their first field experience through drawings (Hancock & Gallard, 2004). Fajet et al. (2005) studied pre-service teachers' perceptions during their first education course, but it did not include any field experience. Weinstein (1990) conducted a comparative study of pre-service teachers' beliefs about teaching, but the field experience only required observations without teaching an actual lesson. This study seeks to advance the literature on pre-service teachers' comparative perspectives on qualities of effective teachers, before and after their first teaching experience while also attending to the void of current research exploring pre-service teachers budding teacher identities as a result of their first teaching experience. Akkerman and Meijer (2011) share a graphic depicting the increase in publications relative to exploration of teacher identity, but their data concludes in 2008. There is a void of current research on this topic as well as a lack of a clear definition of the key aspects of teacher identity (Akkerman & Meijer, 2011). Additionally, most of the existing literature does not include pre-service teacher's views in a comparative perspective, before and after their first teaching experience. Arvaja (2016) comments "a need exists to develop practices that would actively support reflective identity work" (p. 392). This study evaluates student's

reflective thoughts before and after their first teaching experience, helping students begin to form their reflection practices relative to their developing teacher identity. Ruohotie-Lyhty and Moate (2016) describes teacher identity development as "investment in becoming a teacher" (pg 318). At the level of the course from which this data was gathered, students are just being introduced to the art of teaching and what it means to be a teacher; stimulating the beginning of their teacher identity development. With the help of teacher educators, pre-service teachers learn to reflect on their classroom instruction and interactions with students; a skill that is reemphasized and grown over time. The reflections gathered for this study are rudimentary, but serve as a way to analyze how students' opinions of teachers and teaching have solidified or changed after their first teaching experience.

Effective teachers are reflective of their practice and learn from their teaching experiences (Minor et al., 2002). The findings of this study are important for pre-service STEM teachers' self-reflection of their teaching practices and the development of their professional identities. A teachers' professional identity is constantly changing throughout the time during their preparation program and even once they enter the profession (Chong, Low, & Goh, 2011). Teacher education programs can use the findings of this study to guide their instruction and offer earlier field experiences and more self-reflective practices to ensure pre-service STEM teachers are understanding the roles of a teacher from a teacher's viewpoint rather than the viewpoint of an observer of teaching.

METHODS
Participants

Participants in this study were undergraduate students at a mid-size university in Virginia. All students were enrolled in a semester long introductory STEM education course designed to allow them to explore teaching. This course is the first of many required STEM courses for teaching licensure certification, so students' collegiate experiences varied depending on when they decided to pursue a teaching career. If the students go on to pursue a teaching career, they would be completing their undergraduate degree and seeking initial teaching certification in the area of their major. While some students may have previous experiences working with young children, each student was new to teaching and majoring in Biology, Chemistry, Ocean Earth & Atmospheric Sciences, Physics, or Mathematics. Fifty-three students with diverse demographics started the study, the focus of this study is on all pre-service STEM teachers, so the data was not divided into subgroups. General themes relative to the students as a group were desired and future studies will be conducted to more closely dissect variations of responses relative to demographic data. Due to attrition, attendance, and electing not to complete the post survey, 43 participants completed the post survey; 37 of which were able to be paired with their correlating pre-survey responses.

Procedures

Before receiving any instruction about the teaching profession, participants were asked to complete a short survey on the first day of the STEM education course. As part of their course requirements, the pre-service STEM teachers were assigned to an elementary science or mathematics course and mentor teacher. While technology and engineering students are prevalent in the

STEM education program, technology and engineering courses were not available at the elementary level during this study. Technology and engineering pre-service teachers were thus assigned to a mathematics or science classroom and mentor teacher. In cooperation with their mentor teachers, the pre-service STEM teachers observed the classroom as the mentor teacher taught, became familiar with the mentor teacher's classroom environment, and were provided with a learning standard from which to build their lesson. Pre-service STEM teachers were given the opportunity to observe the classroom twice before engaging in their first teaching experience and presenting their developed lesson to the class. Following their teaching experience, the pre-service STEM teachers observed the mentor teacher to conclude their classroom experience sequence. During each observation, students were provided with observation guides and given questions to focus their attention to different classroom attributes and teacher characteristics.

All students present during the final class meeting were asked to complete the post survey. The post survey was the same as the pre-survey. Prior to the pre-survey, participants were assigned a number which they were asked to record on their survey and remember. Students were asked to record the same number on their post survey. Surveys were collected, paired where permissible, and analyzed by the researchers.

Instrument

Student views before any exposure to teaching were desired, so the instrument development was crafted to be short, basic, and specific. The surveys contained four questions. Question 1, "What is the most important attribute of a teacher?" and question 2, "What is the hardest part of being a teacher?" are the focus of this article. These questions were selected to gather student viewpoints on the critical attributes of a teacher as well as the most challenging attributes of teaching. Views were desired both before and after exposure to course content and a teaching experience, so the same questions were used on both the pre and post-surveys.

Analysis Process

Two researchers coded survey responses independently and created tally charts to explore emerging themes. The researchers then compared codes and discussed any differences until agreement was reached on all codes. After coding, the researchers worked cooperatively to identify categories and themes to further refine and synthesize the data. Data was then divided into five categories with each category having 2-9 sub headings. Once researchers completed data analysis and identified trends, the categories were then compared to the onion model suggested by Korthagen (2004). As part of the analysis, researchers observed some pre-service teachers listed more than one characteristic in their responses for questions 1 and 2. Each characteristic mentioned was considered as a data point, which means there were more data points retrieved than participants in this study.

FINDINGS

Students' responses were reviewed and placed into categories. Before reviewing our findings, we will first explain our definitions for the headings developed. Table 1 shows the category headings assigned to a selection of student responses. It was necessary to delineate headings to ensure researcher congruency when coding. While these are not the only headings used, figure 2 showcases the headings which necessitated specific delineations.

Table 1 Student Responses and Categories

Category Headings	Student Responses
Content Delivery	Conveyance of Knowledge
Content Delivery	Lesson Delivery
Personal	Empathy
Personal	Effectiveness
Personal	Patience
Personal	Rapport with students
Lesson Plan	Lesson Creativity
Content Delivery	Student Engagement
Teacher Responsibility	Professionalism
Personal	Passionate
Personal	Flexibility
Teacher Responsibility	Content knowledge
Personal	Strength
Lesson Plan	Differentiated Instruction
Teacher Responsibility	Time management
Content Delivery	Student content mastery
Personal	Fun
Personal	Teacher energy

Figure 2. Heading necessitating specific delineations

Heading	Student Responses
Professionalism	Interacting appropriately with parents, students, administrators and colleagues Professional development Organization Maintaining teacher responsibilities Role model for students Budgeting
Classroom Management	Student behavior Classroom structure and routine
Rapport	Trust from students Relationship with students
Differentiated Instruction	Adjusting to different learning styles Changing instruction to meet student's individual needs

Once each student's responses were assigned an appropriate heading, headings were then grouped into categories for further review. Figure 3 shows the complete category and headings alignment list.

Question 1: What is the most important attribute of a teacher?

Student responses for question 1 fell into five categories. The categories of content delivery, lesson plan, personal, and teacher responsibilities were found through both the pre and post survey responses. Learning environment is the only category on the post survey that was not mentioned in the pre-survey responses. Table 2 shows the percentage of increase or decrease for each category from the pre-survey to the post-survey.

Figure 3. Heading and category alignments

Category	Headings
Personal Traits	Effectiveness Empathy Flexibility Fun Passion Patience Rapport with students Strength Self-Motivation
Lesson Plan Traits	Differentiated Instruction Lesson Creativity
Content Delivery Traits	Lesson Delivery Student Content Mastery Conveyance of Knowledge Student Engagement
Learning Environment	Classroom Management Embracing Diversity Student Lack of Motivation
Teacher Responsibilities	Content Knowledge Professionalism Teacher Energy Time Management Workload

Table 2 Question 1 Percentage Change from Pre to Post-Survey

	Pre	Post	% Change
Content Delivery	15	6	-60
Learning Environment	0	1	N/A
Lesson Plan	6	5	-16.7
Personal	35	46	31.4
Teacher Responsibility	13	7	-46.2

When asked the most important characteristic of a teacher, initially most students responded with characteristics from the teacher responsibility or personal traits categories with patience, rapport, and professionalism comprising just over 42% of student responses. Figure 4 shows a wordle of students' answers from their pre-surveys and figure 5 shows student answers from their post-surveys.

Figure 4. Pre-Survey Wordle

Figure 5. Post-Survey Wordle

In both the pre and post responses, patience was frequently mentioned as the most important attribute of a teacher. Four students who listed patience for their pre-survey did not complete a post survey. One student listed patience as their sole most important attribute on both their pre and post surveys while a second student, who only listed patience on their pre-survey, commented both patience and lesson delivery are the most important attributes on their post survey. Nine students who initially listed qualities such as rapport, content knowledge, lesson delivery, embracing diversity, empathy, flexibility and professionalism on their pre-survey listed patience as the most important attribute of a teacher on their post survey. Of these nine students, four listed patience with other attributes, such as flexibility, professionalism, content knowledge, and passion as being the most important attributes. Six of the 20 students who listed patience as the most important attribute on their post survey listed patience as the sole most important attribute. Only two students who listed patience as the most important attribute on their pre-survey did not include patience in their post survey response to question one; these students instead listed flexibility and embracing diversity as the most important attribute on their post survey.

While patience doubled, the number of students who listed rapport as the most important attribute fell from 10 on the pre-survey to three on the post survey. Four students who listed rapport as the most important teacher attribute on the pre-survey did not complete the post survey. Of the other six students who listed rapport as the most important attribute of a teacher on the pre-survey, one again listed rapport, three listed patience, one listed lesson creativity and one listed effectiveness as the most important attributes of a teacher on their post survey. One student who initially listed flexibility and one student who initially listed student engagement on their pre-surveys listed rapport as the most important attribute of a teacher on their post surveys.

Responses in the categories of content delivery and teacher responsibility fell by 57% and 46% respectively from the pre to post survey. Under the content delivery category, students initially listed lesson delivery, student engagement and conveyance of knowledge as the most important attributes of a teacher. Fourteen students listed attributes of content delivery on their pre-survey, but eight of these students listed other attributes as most important on their post survey. Interestingly, while lesson delivery was the most commonly reported heading in the content delivery category on the pre-survey, zero of the seven stu-

dents who listed lesson delivery initially listed lesson delivery on their post survey. Five of these seven students listed headings of patience on their post survey while the other two listed student engagement. Nine students initially listed professionalism as the most important attribute of a teacher. On their post surveys, three of these students again listed professionalism while six students listed the most important attributes as patience, empathy, lesson creativity, and conveyance of knowledge. Two students who initially listed empathy and conveyance of knowledge listed content knowledge on their post-survey, while one student who initially listed rapport listed both professionalism and content knowledge on as the most important attributes on their post survey.

Question 2: What is the hardest part of being a teacher?

Question 2 asked students their views on the hardest part of being a teacher. Figures 6 and 7 show pie charts of students' responses by category. On the pre-survey, learning environment and teacher responsibilities were the categories with the highest responses, 27% and 21% respectively. Personal and teacher responsibilities were the categories with the highest responses on the post-survey with response percentages of 24% and 23% respectively.

Classroom management, differentiated instruction, and maintaining professionalism were headings most commonly listed by students as the hardest part of teaching on their pre-surveys. In comparing the responses for classroom management,

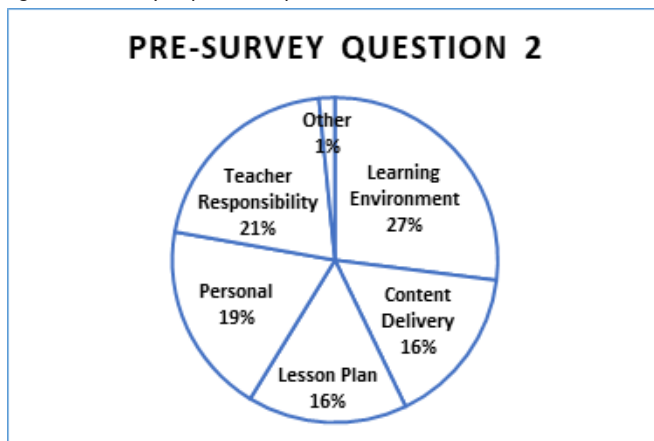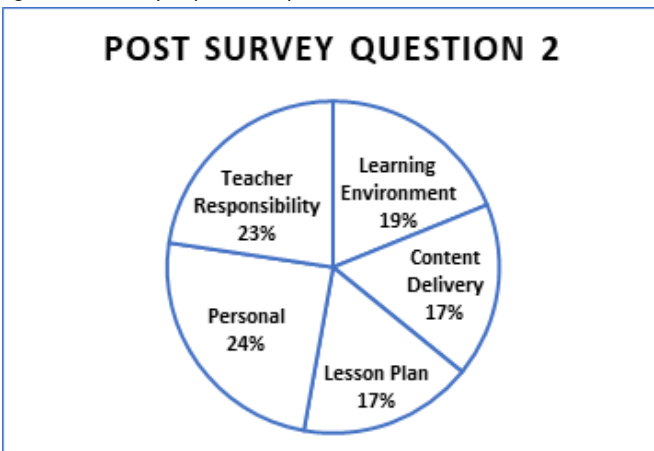*Figure 6. Pre-Survey responses for question 2*

Figure 7. Post Survey responses for question 2

nine students listed classroom management as the hardest part of teaching on their pre-survey while 6 students listed classroom management as the hardest part of teaching on their post-survey. Initially, nine students listed classroom management as the hardest part of being a teacher; two of these responses were from students who did not complete a post survey. Of the remaining seven students, only two listed classroom management as the hardest part of being a teacher on their post survey; one of these two students also listed professionalism. The remaining five students listed lesson creativity, learning environment and differentiated instruction on their post survey. Of the other four students who listed classroom management on their post survey, two did not take the pre-survey and two initially listed student engagement and professionalism.

Nine students listed differentiated instruction as the hardest part of teaching on the pre-survey, while eight students listed differentiated instruction as the hardest part of teaching on the post-survey. Similar to the comparison of classroom management, three students who listed differentiated instruction initially did not complete the post survey while three students again listed differentiated instruction on their post survey.

Eight students listed professionalism as the hardest part of teaching on the pre-survey and four students listed professionalism as the hardest part of teaching on the post-survey. Of the eight students who initially listed professionalism as the hardest part of being a teacher, one student repeated this answer on their post survey and one student commented classroom management on their post survey, while the other six students reported different teacher responsibilities and traits of the learning environment were the hardest part of teaching.

Figure 8. Onion model comparison

Category	Onion Layer
Learning Environment	Environment
Teacher Responsibility	Behavior
Content Delivery	Competencies
Lesson Plan Traits	Beliefs
Personal	Identity/Mission
Other	N/A

Like question 1, patience and developing a positive rapport with students were listed as the most critical traits in the personal category on both the pre and post survey responses. In addition to patience, students listed self-motivation, rapport with students and empathy as key personal characteristics of being a teacher. On the post survey, students also mentioned the importance of teacher consistency, flexibility and understanding. Understanding in this context was described relative to concern for student situations and ensuring an amicable relationship with students while remaining open minded and showing holistic value of the student as an individual.

DISCUSSION

The onion model suggests "there are various levels in people that can be influenced" (Korthagen, 2004, pg. 80). The identified most important attributes of a teacher and hardest aspects of being a teacher align nicely to the onion model. Our selected categories align to the onion model layers suggested by Korthagen (2004). Figure 8 shows the identified categories and their correlating onion layer.

The outer most layer of the onion model is the environment. Korthagen (2004) suggests the environment layer of the onion model includes "the classroom, the students, (and) the school," which corresponds to the learning environment category (p. 80). Moving inward on the onion model, behavior is the next layer and relates to the teacher responsibilities category because these are actions others can observe the teacher doing such as: being professional, managing their workload, and exhibiting energy in the classroom. Continuing to move inward, competencies is the next layer and addresses the question "what can you do" as a teacher (Meijer et al., 2009, p. 299). This layer correlates to content delivery because delivering content in ways students understand and can relate to the goal we are presenting to pre-service teachers. Teachers must develop lessons that accurately convey the content, engage students, and ensure students' mastery of the material. The way the teacher manages themselves during the lesson is their behavior, but the planning process of designing the lesson demonstrates their competencies. Teachers' beliefs about teaching and learning determine their actions (Korthagen, 2004), which are shown in their lesson plan designs. Through their lesson plans, teachers are able to show their creativity and how they believe the students will best learn the content; aligning the category of lesson plan traits aligns with beliefs onion layer. The inner most layers of the onion model are identity and mission, which relate to how a person views themselves. These two layers, identity and mission, encompass the personal traits of the teachers, and align to the personal category. Using the onion model to break down the layers of teaching in alignment to the layers of personal qualities provides a framework through which to evaluate students' perceptions of both the roles of a teacher and the important attributes of teachers.

Addressing question 1, 35 out of 59 pre-service STEM teachers identified the most important attribute of a teacher on their pre-survey to be characteristics aligned to the personal category. While 35 students responded with traits in the personal category, patience and rapport with students were the most commonly reported headings. On their post-survey, pre-service STEM teachers again identified personal traits as the most important attribute of a teacher with approximately 74% of pre-service STEM teachers listing headings of personal attributes. Conversely to the onion model, personal attributes are aligned to the identity/mission layers of the onion model, suggesting pre-service STEM teachers initially identified inner, more intrinsic qualities as most critical for teachers to possess. Korthagen (2004) suggests teacher education is becoming more focused on instilling consciousness of "one's own personal practical knowledge" and less focused on scientific knowledge transfer (pg. 81). Personal reflection and changes to the perceived role of a teacher are leading to "a surge of interest in the question of how beginning teachers think about themselves" as they gain their teacher identity (Korthagen, 2004, pg. 82). Our findings suggest pre-service students are intrinsically reflecting on personal attributes and their alignment to the classroom when they consider the critical attributes of teachers.

Responding to question 2, pre-service STEM teachers identified the hardest part of being a teacher on the pre-survey as items characteristic of the learning environment. Korthagen (2004) suggests the classroom, students and school would be correlational to the environment layer of the onion model, which is indicative of the surface level attributes initially reported by pre-service students in question 2. In reference to the onion model, Korthagen (2004) claims the outer layers of environment and behavior are often the focus areas for student teachers. As a novice teacher, student teachers and pre-service STEM teachers focus on problems in the classroom and seek ways to fix the observable problems. When referencing the hardest part of being a teacher, the pre-service STEM teachers gravitated to observable traits that they would like to amend. This result suggests the commonality of courses designed to help pre-service STEM teachers learn strategies for improving, managing and developing a successful classroom environment.

After their initial teaching experience, pre-service STEM teachers listed personal characteristics relative to the identity/mission onion levels as the hardest part of being a teacher. Showcasing a more intrinsic understanding of the role of a teacher. This finding suggests students began to reflect on their teaching experience from an intrinsic viewpoint rather than their previously only extrinsic observations. Meijer, et al. (2009) suggests individuals first go through an inward movement through the onion layers, beginning at the outer layers of environment and beliefs and then progressing through the inner layers of identity and mission before being able to then go through an outward movement where the inner identity and mission begin to flow into the beliefs, competencies, behaviors and environment. This inward movement followed by outward movement enables individuals to identify their sense of self and their mission and then apply these realizations to their professional identity (Meijer et al., 2009). On the pre-survey, students focused on outwardly observable traits of teachers. Like Meijer, et al. (2009) suggests, it is suspected that students were thinking about the role of a teacher from an outsider's observation standpoint. The 5% increase in personal characteristics reported o the post survey suggests students moved from an outward perspective to more personal reflections relative to teaching.

CONCLUSION

With little input into what it takes to be a teacher or opportunities to have experienced teaching first hand, students are entering teacher preparation programs because of what they have perceived teaching to be through their positions as students. There is a dissonance that can result from mismatched perspectives gained through observations of the teaching profession and the reality of teaching practices (Chong, 2011). This dissonance can "lead to disillusionment, doubt and frustration if student teachers are not inducted into the 'real' world of teaching" (Friesen & Besley, 2013, p. 29). This study was designed to investigate pre-service STEM teachers' perceptions of the most important attributes of a teacher as well as the hardest part of the teaching role. These questions were selected to help students begin to differentiate between teachers as an identity and the role of a teacher as a profession and to gain insight into students' perceptions of teaching both before and after their first experience. The researchers desired to see if a dissonance would be observable and if students' perceptions would change as a result of their first teaching experience. To gather students' perceptions, students enrolled in an introductory STEM teacher preparation course were given identical pre and post surveys which were analyzed to give researchers an opportunity to identify trends relative to student's perception changes. The course used for this study's data collection is designed to provide students a true

teaching experience while still being supported and mentored by both their university instructor and the classroom teacher. Students spend the full semester learning pedagogy, teaching practices and how to write lesson plans. Additionally, students conduct observations, reflect on classroom attributes, and have poignant discussions with their classroom teacher mentors. Students prepare, practice and then teach a lesson, and conclude the course by reflecting on their lesson and teaching experience.

When asked to identify the most important attributes of teachers and the hardest part about teaching, initially pre-service STEM teachers categorized extrinsic qualities of the learning environment, content delivery, and teacher responsibility as essential while also challenging, but on their post surveys, intrinsic qualities and personality traits were increasingly reported as important qualities of a teacher as well as the hardest part of being a teacher. This leads the researchers to deduce that initially students looking to enter the teaching profession react to their outwardly observed knowledge of the teaching profession.

Findings suggest students initially perceived personal traits of patience and rapport with students to be the most important attributes of a teacher. On their post survey, the number of students listing patience as the most important attribute of a teacher doubled and made up approximately 31% of responses. When describing the hardest part of being a teacher, students initially reported elements of the learning environment. On their post survey, students identified more personal characteristics as the hardest part of being a teacher, signifying a more intrinsic point of reflection relative to their teaching experience. Moving from an extrinsic perspective to an intrinsic perspective indicates students are beginning to reflect on their personal beliefs regarding the teaching profession and their own identity as a teacher. Further development of individual identities and teacher identities is necessary and will come as students continue to progress through their life experiences and their teacher education program. The need to start students on the process of identity reflection early in their teacher preparation program is the key take-away achieved from this study. Through this study, we have seen how students' views of teaching solidify or adjust after their initial teaching experience. Friesen and Besley (2013) argue "if student teachers are encouraged early in their training to explicitly examine their personal beliefs, philosophies and life-course experiences" (p. 29) while critically reflecting upon pedogeological philosophies and ideologies shared by their teacher educators, their professional teacher identity can develop instead of adhering to their previously held naïve assumptions regarding the teaching profession.

To expand upon this study, it would be interesting to add a qualifying question regarding experience pertaining to teaching, such as tutoring, mentoring, or coaching, and use that as an additional indicator for addressing the discovered themes. It would also be interesting to track students and identify the individuals who continue in their teacher preparation program of study or change to other programs outside of education while also tracking student's movement through the onion model as they gain more experience planning and teaching lessons.

REFERENCES

Akkerman, S. F., & Meijer, P. C. (2011). A dialogical approach to conceptualizing teacher identity. *Teaching and teacher education*, *27*(2), 308-319.

Arvaja, M. (2016). Building teacher identity through the process of positioning. *Teaching and Teacher Education*, *59*, 392-402.

Bauml, M. (2009). Examining the unexpected sophistication of preservice teachers' beliefs about the relational dimensions of teaching. *Teaching and Teacher Education, 25*(6), 902-908.

Chong, S. (2011). Development of teachers' professional identities: from pre-service to their first year as novice teachers. *KEDI Journal of Educational Policy,* 8(2), 219-233.

Chong, S., Low, E. L., & Goh, K. C. (2011). Emerging professional teacher identity of pre-service teachers. *Australian Journal of Teacher Education*, *36*(8), 50-64.

Eingurt, N. (1983, August 24). Good teaching is an art, not a science [Letter to the editor]. *The New York Times*, p. A00022. Retrieved from https://www.nytimes.com/1983/08/24/opinion/l-good-teaching-is-an-art-not-a-science-118935.html

Fajet, W., Bello, M., Leftwich, S.A., Mesler, J.L., & Shaver, A.N. (2005). Pre-service teachers' perceptions in beginning education classes. *Teaching and Teacher Education: An International Journal of Research and Studies, 21*(6), 717-727.

Friesen, M. D., & Besley, S. C. (2013). Teacher identity development in the first year of teacher education: A developmental and social psychological perspective. *Teaching and Teacher Education, 36*, 23-32.

Hancock, E. S., & Gallard, A. J. (2004). Preservice science teachers' beliefs about teaching and learning: The influence of K-12 field experiences. *Journal of Science Teacher Education*, *15*(4), 281-291.

Harnachek, D. (1999). Effective teachers: What they do, how they do it, and the importance of self-knowledge. In R.P. Lipka, & T.M. Brinthaupt (Eds.) *The role of self in teacher development* (pp. 189 – 224). Albany, NY: State University of New York Press.

Hong, D. (2013, December). The hardest job everyone thinks they can do. *Virginia Journal of Education* Retrieved from http://www.veanea.org/home/2254.htm

Korthagen, F.A. J. (2004). In search of the essence of a good teacher: Towards a more holistic approach in teacher education. *Teaching & Teacher Education: An International Journal of Research and Studies, 20*(1), 77-97.

Meijer, P. C., Korthagen, F. A., & Vasalos, A. (2009). Supporting presence in teacher education: The connection between the personal and professional aspects of teaching. *Teaching and teacher education*, *25*(2), 297-308.

Minor, L. C., Onwuegbuzie, A. J., Witcher, A. E., & James, T. L. (2002). Preservice teachers' educational beliefs and their perceptions of characteristics of effective teachers. *Journal of Educational Research, 96*(2), 116-27.

Murphy, P. K., Delli, L. M., & Edwards, M. N. (2004). The good teacher and good teaching: Comparing beliefs of second-grade students, preservice teachers, and inservice teachers. *Journal of Experimental Education, 72*(2), 69-92.

Poutiatine, M.I. (2005). *The role of identity and integrity in teacher development towards a grounded theory of teacher formation* (Doctoral dissertation). Retrieved from ProQuest.

Ruohotie-Lyhty, M., & Moate, J. (2016). Who and how? Preservice teachers as active agents developing professional identities.

Teaching and teacher education, *55*, 318-327.

Stronge, J. H., & Hindman, J. L. (2003). Hiring the best teachers. *Educational Leadership, 60*(8), 48-52.

Walker, R. J. (2008). Twelve characteristics of an effective teacher: A longitudinal, qualitative, quasi-research study of in-service and pre-service teachers' opinions. *Educational Horizons, 87*(1), 61-68.

Weinstein, C. S. (1990). Prospective elementary teachers' beliefs about teaching: Implications for teacher education. *Teaching and teacher education*, *6*(3), 279-290.