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The Impact of Reflective Practice on Teacher Candidates' Learning

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Abstract

Reflection is a high impact practice that develops teacher candidates' learning. Critical reflection requires teacher candidates to continually examine their own thoughts, perspectives, biases, and actions. Reflective practice facilitates the development of new knowledge, skills, and dispositions in teacher candidates by fostering critical contemplation of actions in a real-world environment. Reflection practice is specifically used when students study education in a university course and apply what they learn in a related field experience in a K-12 school. This study was conducted in order to determine the impact of reflective practice on teacher candidates enrolled in a course focused on developmental sciences in a context of poverty. Results demonstrate what level of research is required to prepare teacher candidates to make instructional decisions as well as become self-aware of their perspectives and attitudes in teaching.

Keywords
Reflection, Reflective Practice, Preservice Education

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Reflection is a high impact practice that develops teacher candidates' learning. Critical reflection requires teacher candidates to continually examine their own thoughts, perspectives, biases, and actions. Reflective practice facilitates the development of new knowledge, skills, and dispositions in teacher candidates by fostering critical contemplation of actions in a real-world environment. Reflective practice is specifically used as teacher candidates study education in a university course and apply what they learn in a related field experience in a K-12 school. This study was conducted in order to determine the impact of reflective practice on teacher candidates enrolled in a course focused on developmental sciences in a context of poverty. Results demonstrate what level of reflection is required to prepare teacher candidates to make instructional decisions as well as become self-aware of their perspectives and attitudes in teaching.

INTRODUCTION

One of the cornerstones of teacher preparation is the application of course content to the world of practice during field-placed practicum experiences in education. Traditionally, the real-world practice of teaching at least occurs during the student teaching practicum, but increasingly involves additional field-based experiences as well. All field-based learning opportunities are strengthened by the inclusion of reflective practice as it requires critical thinking that connects course content to real-world applications.

Reflective practice facilitates the development of new knowledge, skills, and dispositions in teacher candidates by fostering critical contemplation of actions in a real-world environment. Specifically, reflective practice occurs when an individual or group engages in reflection before, during, and after applying what has been learned in a course to a field placement. When accompanied by a practicum experience, what is taught during coursework enables teacher candidates to apply new knowledge to the world of practice through problem-solving, data-driven decision-making, and problem resolution in educational practice. Thus, the purpose of reflective practice in preservice education is to empower teacher candidates to make the necessary applications of coursework to the classroom in a way that impacts their diverse students' success.

A popular definition of reflection depicts reflective thinking as an active, persistent, and careful consideration of a belief or supposed form of knowledge (Dewey, 1910). Thus, reflective practice emboldens the teacher to engage in life-long learning and continue to learn from experience and bridge the gap between theory and practice (Kolb, 1984). It is the application of what is learned to the profession that leads to educational decision-making necessary to best serve the evolving social and academic needs of diverse students.

Reflective practice transpires at various levels of sophistication and complexity; therefore, it is a developmental process. Typically, teacher candidates move from the technical level of reflecting to a deeper contextual and deliberative level after only several weeks of practice (Dervent, 2015). Further, Dervent (2015) discovered that once participants of reflective practice are able to enter a more critical level of reflection, a comprehensive focus on relevant practice in the classroom occurs.

Similarly, transformative reflection allows the teacher candidate to challenge assumptions and beliefs that also lead to appropriate educational practice in the classroom regarding students' diverse needs. For example, reflective practice can lead to a committed effort to use appropriate pedagogies that demonstrate an understanding of student cultures (Carrington & Selva, 2010). Thus, teacher candidates examine their thoughts and feelings and move toward a plan of action to promote improvement for teaching and learning (Crichton & Valdera, 2015). The notion of reflection and its connection to teaching competence moves the teacher to a deeper level of transformative learning (Lawrence-Wilkes, 2014) that instills a sense of professional autonomy and allows educators to make educational decisions on behalf of their students.

A study was conducted in order to determine the impact of reflective practice on undergraduate teacher education candidates enrolled in a foundational course focused on student development in a context of poverty. Specifically, the research is driven by the question, How does reflective practice enhance teacher candidates' understanding of developmental sciences within the context of poverty? Reflective practice is measured by the appropriate application of dispositions, knowledge, and skills related to addressing their students' diverse social and academic needs.

REVIEW OF THE LITERATURE
Reflective Practice

Although reflective practice has received much attention in the past few decades, the concepts of personal reflection, self-assessment, and reflective dialogue have been around for centuries. However, recent practice was impacted significantly from theory emerging during the early twentieth century when John Dewey linked reflection with action. Specifically, Dewey (1910) described reflection as a deep and interpretive process that allows for careful judgement. This definition of reflection is characterized best as "active, persistent, and careful consideration" of beliefs and knowledge (Zeichner & Liston, 1996). Thus, reflective thinking is an active, persistent, and careful consideration of a belief or supposed form of knowledge (Dewey, 1910). Today, reflective thinking in education is explained as a means for enhancing student learning when contemplation of what is being taught

occurs during practical applications, leading to connections between knowledge and experiences.

Although Dewey's work establishes a critical relationship between reflective thinking and practical applications, it is Schon (1983) who notes that reflection can take place before, during, or after action. Reflection that occurs before or after application is called reflection-on-action; and reflection during the application is called reflection-in-action. Reflection in and on action develops a deeper understanding of theory and practice and moves beyond the traditional notion of reflective practice (Zeichner & Liston, 1996). The impact of this revelation on teacher education accounts for how instructors use reflective practice before, during, and after field-work to support the formation of connections between course content and the world of practice. Subsequent models for reflective practice that focus on- and in-action, allow for a deeper understanding of what is being learned.

Models of Reflective Practice

Models addressing in-action reflective practice concentrate on observing and experiencing an event and how accompanying reflective thinking leads to new thoughts and actions for improvement. For example, one model extends the ideas of adult learning and reflective practice to include four stages of experiential learning. The cyclical stages include: concrete experience, reflective observation, abstract conceptualization, and planning active experimentation (Kolb, 1994). In Kolb's model, reflective practice encourages a teacher to be autonomous and self-directed. This autonomy allows the teacher to engage in life-long learning and continue to learn from experience and bridge the gap between theory and practice (Kolb, 1984).

Similar to Kolb's model of experiential learning, a particular model of reflection looks at three stages of learning. Participants engage in reflective thinking guided by three questions regarding action: What?, So What?, and Now What? (Rolfe, Freshwater, Jasper, 2001). The model concentrates on experiencing an event and reflecting on it in order to promote new thoughts and actions for improvement. The initial stage, "the what," helps the participant summarize the real- world experiences, while the "so what" stage requires reflective thinking about the significance or importance of what has been learned through the experience. Finally, stage three, "now what," requires one to reflect about how the experience will lead to meaningful actions in the future. Thus, the models presented by Kolb and Rolfe et. al. work together to promote experiential learning through higher-order thinking and reflection.

The models of experiential learning and reflective stages stem from the notion of cognitive theory as explained by Bandura's classic work. Three reciprocal forces of learning all interact with one another playing a key role in reflective thinking. A teacher must actively consider the behavioral factors, personal factors, and environmental factors when reflecting on teacher effectiveness. Rolfe et al.'s (2001) three questions of What?, So What?, and Now What? involve emphasizing cognition, experiences, and personal expectations and beliefs to the reflective process (Woolfolk, 2019).

Reflective Practice in Teacher Education

Reflective practice transpires at various levels of sophistication and complexity; therefore, it is a developmental process. Typically, teacher candidates move from the technical level of reflecting to a deeper contextual and deliberative level after only several weeks of practice (Dervent, 2015). Further, Dervent (2015) discovered that once participants of reflective practice are able to enter a more critical level of reflection, a comprehensive focus on relevant practice in the classroom develops. Thus, reflection must be repeated over time in order to provide the developmental growth necessary for the participant to reach the most complex and sophisticated levels of practice.

This reflective practice becomes crucial when teaching students in poverty. Students at risk face additional factors that impact their learning. These adverse conditions make it essential for teachers to actively reflect on their teaching and their students to effectively differentiate and meet all student needs (Jensen, 2009). The goals of building teacher-student rapport, creating a positive classroom climate, teaching student skills, and employing effective instructional strategies all require a dedicated teacher who is willing to adjust and improve daily (Downey, 2008). These goals are accomplished using a high level of reflection and professional autonomy.

The notion of higher-level reflection and its connection to teaching competence moves the teacher to a deeper level of transformative learning (Lawrence-Wilkes, 2014) that instills a sense of professional autonomy that allows educators to serve as change-agents on behalf of their students. Thus, transformative reflection allows the teacher candidate to challenge assumptions and beliefs that also lead to choosing appropriate pedagogies in the classroom that are responsive to students' diverse needs (Carrington & Selva, 2010). Accordingly, teacher candidates examine their thoughts and feelings and move toward a plan of action for teaching and learning (Crichton & Valdera, 2015).

If the purpose of reflective practice is transformative learning leading to the development of teaching competencies, then assessment of teacher candidates' progression toward competency is imperative. The ways that educator preparation programs define teaching competence is rooted in established and universal paradigms. First, undergraduate initial licensure programs typically align with the Interstate New Teaching Assessment Support Consortium Standards (CCSSO, 2017) for accreditation and accountability purposes. Specifically, the standards outline what teaching should look like for pre-K-12 student success (CCSSO, 2011). Similarly, Danielson (1996) developed a framework for defining the specific teacher candidate competencies associated with the InTASC standards. Therefore, the Framework for Teaching Evaluation Instrument (Danielson, 2013) serves as a measure of expected teaching competency.

METHODOLOGY

The undergraduate course, EDCO 200: Developmental Sciences and the Context of Poverty, is the first in a sequence of eight field-based courses developed to encompass many opportunities to utilize reflective practice in order to increase cognitive development and acquisition of course content. One of the course requirements is the completion of a case study focusing on a student living in poverty. The accompanying field-based experience involves at least 21 hours of work in a school setting under the guidance of a mentor teacher. During a series of course-integrated field activities, teacher candidates examine the context of poverty and its influence on the student's physical, cognitive, language, and social-emotional development. Further, teacher candidates plan and implement evidence-based instructional strategies

differentiated for students living in poverty. Teacher candidates complete an activity using one of the instructional strategies with their student each day they are in the school. These activities coincide with content specific topics taught during the lecture-based component of the course, including: cognitive development, student attention, language development, social relationships and moral development. One of the course objectives embraces the use of reflection to examine teacher candidates' educational practice as well as their own beliefs about poverty.

Subjects

The study took place in a small liberal arts university in the southeastern region of the United States. The undergraduate student enrollment is approximately 5,000 students. Most of the undergraduates are female (67%). The student body is ethnically diverse, including: 28.15% Black/African American, 2.2% Latino/Hispanic, and 1.41% Asian.

The study participants were enrolled in EDCO 200, Developmental Sciences and the Context of Poverty, during the Spring semester of the 2016-17 academic year. In total, 243 undergraduate students were enrolled in the multiple sections of the course. All students completed the course prior to making application to the College of Education. After attrition resulting from students changing their majors, failure to complete the assignment, and assignments that did not follow requisite reflection model, 186 students comprised the study sample. Most (79%) of the participants are female and all of the students are freshmen and sophomores. The participants represent more than 8 majors, however, most of the participants studied early childhood or elementary education (see Table 1).

Table 1. Participant Majors

Major	Number of Students
Early Childhood Education	42
Elementary Education	49
Middle School Education	15
Secondary Education	43
Physical Education	11
Visual and Performing Arts (dance, theater, music, art education)	54
Special Education	25
Human Development and Developmental Sciences	4

DATA COLLECTION

As a course requirement, teacher candidates must engage in approximately 22 hours of field-based engagement with at least one student in a local public-school. As a result of their interaction with a school-age student, the teacher candidate must compose a case study on the student. Along with the case study, teacher candidates also submit a written reflection of the field-based experience electronically. Therefore, students wrote approximately 3 pages of reflection responding to three prompts: (1) What? (summary of experience), (2) So what? (significance of the experience), and (3) Now what? (impact for the future) (Rolfe, et. al., 2001). Students are provided feedback and a grade from the course instructors. Upon completion of the course, the blind copies of the reflections were downloaded from online postings and saved in a digital file for analysis by independent raters.

DATA ANALYSIS

Blind copies of students' written reflections were analyzed by three raters. Inter-rater reliability was 90%. Blind copies of students' written reflections were distributed to the raters to conduct three assessments. First, written assignments were assessed to determine the developmental level of reflection using the four-category scheme (Kember, McKay, Sinclair, & Wong, 2008). This scale was created and has been used extensively in teacher education. Second, the incidence of content related to professional practice was analyzed in written reflections. Danielson's (2013) Teaching Evaluation Instrument is comprised of four categories of teaching competencies which served as the a priori themes used in content analysis. Finally, reflection content was analyzed for efficacy by determining whether or not references to course content and personal connections are noted (Ottesen, 2007).

Levels of Reflection

Written reflection content was analyzed for evidence of levels of reflection (Kember, McKay, Sinclair, & Wong, 2008). This instrument assesses the degree or level of reflection represented by the written assignment. At the lowest level, students may write habitual actions. Students exemplify this level when they practice knowledge and skills as directed by their instructor without any consideration of how or why they are doing so. At the next level, understanding, students' reflections represent underlying meaning but there is no reflective thought about their understanding. At the next highest level, reflection, students have accurate understanding and they reflect on personal experiences or practical applications. And at the highest level of reflection, critical reflection, students' writing implies the transformation of a perspective. Each level is awarded one point during the analysis to designate the level or degree of reflection. Therefore, at the lowest level, one point is awarded, while at the highest level, four points are awarded.

Figure 1. Levels of Reflection	
Level of Reflection	**Level Description**
Habitual Action	In professional practice, habitual action occurs when a student offers an answer without attempting to understand it.
Understanding	In this case, there is an attempt to understand the topic or concept. Students will report that content accurately and with understanding but do not add any personal response to it.
Reflection	At this level, students not only have accurate understanding, they reflect on that understanding and are able to relate it to personal experiences, or they can make practical applications.
Critical Reflection	This highest level of reflection implies the transformation of a perspective. Students start by recognizing their beliefs and new information or experiences disrupt that belief system, forcing students to reconstruct it.

Note. Harland, D. & Wondra, J. (2011).

Professional Practice

The content analysis of the written reflections included identifying the frequency of references to the core standards of teaching. The instances of references to the standards in each reflection were recorded. The Council of Chief State School Officers (CCSSO), through InTASC, has produced a set of teaching standards that address what teachers should know, understand, and

be able to do in a pre-K-12 setting (see Figure 2). The standards reflect the generally accepted principles for effective teaching that is necessary for quality pre-K-12 student learning. In addition to providing a list of the standards, descriptions that explain what effective teaching and learning should be at a minimum are provided (Council of Chief State School Officers, 2011).

Figure 2. Description of InTASC Model Core Teaching Standards	
Standard	**Description**
Learner Development	The teacher understands how learners grow and develop.
Learning Differences	The teacher uses understanding of individual differences and diverse cultures to enable each learner to meet high standards.
Learning Environment	The teacher works with others to create environments that support individual and collaborative learning.
Content Knowledge	The teacher understands the central concepts, tools of inquiry, and structures of the discipline(s) he or she teaches.
Application of Content	The teacher understands how to connect concepts and use differing perspectives to engage learners in critical thinking, creativity, and collaborative problem solving related to authentic local and global issues.
Assessment	The teacher understands and uses multiple methods of assessment to engage learners in their own growth, to monitor learner progress, and to guide the teacher's and learner's decision making.
Planning for Instruction	The teacher plans instruction that supports every student in meeting rigorous learning goals.
Instructional Strategies	The teacher understands and uses a variety of instructional strategies
Professional Learning & Ethical Practice	The teacher engages in ongoing professional learning and uses evidence to continually evaluate his/her practice.
Leadership & Collaboration	The teacher seeks appropriate leadership roles and opportunities to take responsibility for student learning, to collaborate with learners, families, colleagues, other school professionals, and community members to ensure learner growth, and to advance the profession.
Note. Council of Chief State School Officers (2011).	

Aligned with the InTASC Standards, a framework for understanding the competencies or professional aspects of teaching was created (Danielson, 1996). Specific teacher competencies denote "what a teacher does during teaching (Danielson, 1996, p. 3)." Thus, Danielson provides a framework that defines the expectations of teachers as outlined in the empirical literature and for best practices that lead to student learning (see Figure 2). The framework was subsequently translated into a teaching evaluation instrument (Danielson, 2013) that illustrates how teaching is broken down into competencies that denote expertise in teaching via twenty-two competencies that are grouped into themes of teaching expectations: (1) planning and preparation, (2) the classroom environment, (3) instruction, and (4) professional responsibilities. The Framework for Teaching Evaluation Instrument (Danielson, 2013) was used to assess the degree to which students' written reflections refer to expected teacher competencies. Specifically, the resulting data were analyzed to measure

student impact in the acquisition of the knowledge, skills, and dispositions associated with developing teaching competency.

Figure 3. Framework of Professional Practice for Teachers	
Planning & Preparation	• Content & Pedagogy • Students • Instructional Outcome • Resources • Instruction • Student Assessment
Classroom Environment	• Respect & Rapport • Culture of Learning • Classroom Procedures • Student Behavior Management Physical Space
Instruction	• Communicating with Students • Questioning & Discussion • Student Engagement • Using Assessment in Instruction • Flexibility & Responsiveness
Professional Responsibilities	• Reflection on Teaching • Accurate Records • Family Partnerships • Professional Community • Developing Professionally • Showing Professionalism
Note. Danielson, C. (2013)	

Both the standards for teacher candidates and the framework for professional practice are correlated (see Figure 4). For the purpose of this study, the written reflections were analyzed for evidence of the four domains of teaching competencies. Because the Framework for Teaching is related to InTASC Standards, both can be accounted for in the analysis of the four domains and related competencies of the Danielson (2013) Framework for Teaching. Thus, in order to assess the degree to which teacher candidates' reflective practice incorporated the expectations for teaching practice, the written reflections were analyzed for frequency of occurrences.

Figure 4. Correlation Between Framework for Teaching & InTASC Standards	
Framework	**InTASC Standard**
Learner Development	Planning & Preparation Instruction
Learning Differences	Planning & Preparation
Learning Environment	Classroom Environment Instruction
Content Knowledge	Planning & Preparation Instruction
Application of Content	Instruction
Assessment	Planning & Preparation Instruction
Planning for Instruction	Planning & Preparation
Instructional Strategies	Instruction
Professional Learning & Ethical Practice	Professional Responsibilities
Leadership & Collaboration	Professional Responsibilities

Reflection efficacy

The presence of two essential aspects of reflective practice were recorded in written reflections in order to denote efficacy in the process. First, reflections must identify course content as the primary purpose of the pedagogical tool is to link what is learned in a course to the world of practice (Ottesen, 2007). Second, effective reflections consist of personal connections to the course content (Ottesen, 2007). Hence, the written reflections were an-

alyzed for frequency of incidence of both identification of course content as well as personal connections.

RESULTS
Student Impact Data
Professional Practice
The teacher candidate's reflections contain evidence of all four components of professional practice as outlined in the framework teaching (see Table 2). Most often (215 times), students reflected about the classroom environment. More than half of these instances (51%) refer to the creation of a climate of respect and rapport in the classroom. One student writes about a climate of respect and rapport by writing, "We need to take the time to understand the students for who they are and to treat them equally." Another student writes, "I will make sure to know my students well and keep track of their lives in and outside of the classroom." One reflection includes this comment, "If my students greet me with respect and smiles, I will make it my job to be enthusiastic, caring, supportive, and a leader for them." Another 29% of the students' references to classroom climate reference behavior management. A sample statement from a reflection notes, "I noticed that my host teacher took unique approaches to working with students who had behavioral issues." Another student wrote, "I was not aware that there would be a lot of behavioral issues that would need to be addressed many times." And a final student states, "My host teacher was a great instructor who understood why many of her students acted out and misbehaved, but never make excuses for their behavior."

The reflections also contain 149 references to planning and preparation. Almost half of the instances (53%) demonstrate knowledge of students. One illustrative student comment stated, "The student would lash out at everyone, including me. Now

believing that this is related to his struggles at home, I understand why he was so angry and how it was triggered." Another comment reflected an awareness of the host teacher's understanding of how the student learns, "My host teacher approached topics with many different lesson styles and activities to be sure that each student understood the concept." Twelve percent of the reflections contain references to the knowledge and pedagogies presented during class meetings. One student wrote, "In our textbook we read about how children in poverty might not always have their basic needs met. I could see this in some of my students." Another student commented, "I learned about teaching students of poverty and how the theories I read about apply to the classroom."

Of the 159 incidences of comments regarding professional responsibility, most often reflections on teaching (61%) are noted. One reflection comment demonstrates that candidates are thinking about their own future teaching, for example, "This experience will allow me to better my teaching skills and implement a plan when it comes to having a classroom that is responsive to poverty." Another student wrote, "I learned that as a teacher, I will need patience." Similarly, one student reflects, "I won't make assumptions about students and their capability to achieve."

The remaining 84% of the references to professional practice in the teaching reflections mention instruction. Twenty-four percent of the comments include the engagement of students in learning. A sample passage includes, "Learning while balancing life challenges is hard. It requires baby steps and a lot of understanding." Another comment included, "One group of students was not understanding fractions, so I gave them another way of looking at it. It helped." A candidate wrote about her own future instruction, "I feel that incorporating modern artists into lessons and projects could be beneficial to knowledge of the students and would get them sufficiently excited about making their own art."

Reflection Efficacy
The written reflections on teaching include both criteria for effectiveness, references to course content and personal experiences (see Table 3). Almost two-thirds (64%) of the reflections contained personal experiences or connections to the classroom experience. A typical comment regarding personal connections noted, "Going forward, I intend to focus more on supporting students individually." Another candidate writes, "This experience has motivated me to push myself and ask for help that I need in order to be successful, just like the students who inspire me." Another personal connection included, "I learned that you can't know that a stu-

Standard	Component of Professional Practice	Component n	Percent (N=186)	Standard n
Planning & Preparation	Demonstrating knowledge of content and pedagogy	22	12%	149
	Demonstrating knowledge of students	99	53%	
	Setting instructional outcomes	10	5%	
	Demonstrating knowledge of resources	9	5%	
	Designing coherent instruction	5	3%	
	Designing student assessments	4	2%	
Classroom Environment	Creating an environment of respect and rapport	109	51%	215
	Establishing a culture for learning	32	17%	
	Managing classroom procedures	17	9%	
	Managing student behavior	53	29%	
	Organizing physical space	4	2%	
Instruction	Communicating with students	13	7%	84
	Using questioning and discussion techniques	5	3%	
	Engaging students in learning	44	24%	
	Using assessment in instruction	9	5%	
	Demonstrating flexibility and responsiveness	13	7%	
Professional Responsibilities	Reflection on teaching	114	61%	159
	Maintaining accurate records	0	0%	
	Partnerships with families	10	5%	
	Participating in a professional community	7	4%	
	Growing and developing professionally	5	3%	
	Showing professionalism	23	12%	

Table 2. A Framework for Teaching Components of Professional Practice

dent experienced the impact of poverty by just looking at them." And finally, "I understand and have more compassions for children growing up in poverty."

Approximately a third (34%) of the reflections specifically mentioned course content within the narrative. On example applies the text to the field, "I can apply Jensen's SHARE factors now that I have been in a classroom and seen the benefits." Similarly, a student noted that Jensen's book was very helpful, "I used and referred back to the book throughout my field experience. I learned the SHARE factors by using them." Yet another comment concludes, "I learned from the course lectures that I have to pay close attention to my students and communicate with the family in order to really understand the impact of the home life on school."

Table 3. Reflection Content		
Reflection Components	**n**	**Percent (N=186)**
Identification of Course Content	63	34%
Personal Experiences	119	64%

Levels of Reflection

The level, or sophistication, of written reflections are assessed (see Table 4). About 25% of the candidate's reflections are at the lowest level, or habitual action level. However, more than half (56%) of the teacher candidates' written reflections are at understanding level or level two. Very few teacher candidates wrote reflections at the higher levels of reflection (18% at level three and 1% at level four).

An illustrative reflection at level four, for example, states "I will use the skills and techniques acquired during this experience in the future when working with students of poverty. I have a new appreciation for instructors who are able to create a welcoming and inviting classroom for all students, regardless of their background." Similarly, another comment states, "I didn't mean to, but I think I changed how I see the purpose of teaching. I am absolutely convinced that my teaching can impact societal change. If we see all students as capable of learning, then the world is a better place. This is my goal." On the other hand, level one reflections contain comments such as, "I have always believed that using indirect classroom management. This is the best way to manage students so I do not distract me from teaching." Yet another comment concluded, "I learned in class that I am supposed to build relationships with my students. It will help build trust."

Table 4. Levels of Reflection		
Level	**n**	**Percent (N=186)**
Critical Reflection	2	1%
Reflection	34	18%
Understanding	103	56%
Habitual Action	47	25%

DISCUSSION

As a reminder, the research question guiding the study is, how does reflective practice enhance teacher candidates' understanding of developmental sciences within the context of poverty? The results of this study address the research question and the nature of the course and initial teacher preparation program.

First, the results indicate that reflective practice directly impacts teacher candidates' knowledge, skills, and dispositions related to pre-K-12 education. Thus, students foremost benefit from reflective practice in their understanding of critical course content. Second, the study results provide feedback that could impact course design and implementation related to the use of reflective practice in teacher preparation program coursework. And finally, analysis of reflective practice indicate impact on the nature and design of teacher education preparation programs.

Student Impact

Perhaps the most promising aspect of using reflective practice in teacher preparation is the potential for enhancing students' acquisition of knowledge and skills. In this study, a third of the students who participated in reflective practice referenced one or more course topics in their initial reflections. Given that these are the first reflections that teacher candidates have written, there is promise that references to course specific content and skills will increase as teacher candidates progress through their programs.

Similarly, reflective practice can positively impact students' perceptions of target subject matter. The reflective writing studied was completed during a course that focuses on teaching and learning in a culture of poverty. The greatest frequency with which any standard for professional practice was captured in the reflective writing is classroom environment. Within in this standard, the component of professional practice most often noted in reflection was creating an environment of respect and rapport. Analogously, 149 incidences of the planning and preparation standard were included in the reflections. Slightly more than 50% of those incidences included references to demonstrating knowledge of students. These professional practices bear specific relevance to the course content regarding poverty.

The practice of reflection provides opportunities for firsthand experiences in real-world applications of knowledge and skills. In our study, 159 references were made to the professional responsibilities of educators in the written reflections. Further, 114 (61%) of these references spoke directly to thinking about teaching from the firsthand experience of working with children of poverty.

Students' self-awareness during reflective practice may result in building confidence and patience in working with real-world problems. There were 114 incidences of teacher candidates reflecting on teaching as professionals. This type of critical reflection about oneself as a professional lends itself to a self-awareness that promotes and supports growing in the profession.

Reflective practice may result in self-professed changes in personal belief systems and world views. Throughout the written reflections, teacher candidates made references to their beliefs and what in the classroom promoted personal changes. Although this information was not tabulated, comments that represent this type of student impact are interesting. For example, one student wrote, "As a result of working with my student, I saw poverty differently. I can connect this to my future by not going in with a pre-bias and assume all students in poverty will look the same; this experience prepared me with a new attitude for preparing to teach and creating a positive learning environment in my classroom; I learned that not every case of poverty looks the same."

Reflective practice can support students' ability to overcome apprehension and fear of performing in real-world settings. Reflection content included references to pre-existing or newly formed fears and concern for the various aspects of teaching in classrooms with students of poverty. For example, one reflection entry included, "I learned that many students in poverty are going to seek attention in as many ways as possible because they do not receive as much as they want, and even though the students need attention, you have to make sure that you are not favoring one because your know how rough their background is; these students typically have more behavior issues, less focus, and more academic problems, which I thoroughly experienced, but the experience reminded me that people are people, no matter where they come from or what situation they are in."

Reflective practice may lead to the affirmation, modification, or change of career paths. The teacher candidates' written reflections sometimes reference the profession. Almost 160 incidences of references to the professional responsibilities standard demonstrated how teacher candidates focus on their own careers in education. References to the teacher candidates seeing themselves as teachers in their own classrooms were rampant in the reflection narratives. For example, "I want to teach my students more than just academic skills, but also life skills; I feel that the attention I give my future students will create a more comfortable classroom environment that will foster increased achievement and more positive interactions between myself and the students, as well as interactions between the students in my classroom; the lifelong learning process has been impacted positively. I will be able to notice the effects of poverty and know ways in which to work with students to overcome them; I realized that I no longer want to be a teacher. Instead, I have decided to change my major to become a school guidance counselor so that I am the next step in helping these children."

Implications for Practice

Course Development

Given the positive impact of reflective practice that has been reported, it follows that reflection should play a vital role in teacher preparation courses. However, although pre-service teachers are accustomed to completing reflection assignments, few receive any direct instruction focused on defining and improving reflective thinking techniques (Choy & Oo, 2012; James, 2007; Rodgers, 2002). Although reflection is unique to each learner, it does not occur by chance. Educators must provide exercises, strategies, and practical tools to promote reflective thinking (Harrison, Short, & Roberts, 2003).

Twenty-five percent of participants did not progress beyond the Habitual Action level of reflection, highlighting the need for instructional scaffolding to progress beyond reflective practice that is primarily thoughtless and formulaic. This finding is not surprising, given that research has revealed a general lack of evidence of advanced reflection among future educators and a vague understanding of the factors that impact reflective practice (Farr and Riordan, 2015; Hatton & Smith, 1995; Sellars, 2014; Yang, 2009). Pre-service teachers often view reflection as a tedious and superfluous activity (see Hartman, 2001), which is actually quite true if they do not progress beyond the Habitual Action level. Given the rich learning outcomes illustrated by the content analysis of the more advanced reflective writing samples, a practical, yet noteworthy, implication of the study is the importance

of explicit instruction for successful reflective practice. Advanced reflective practice develops over time, and thus teacher preparation programs should emphasize reflection from the start, infusing reflective practice into all courses and providing the appropriate time and support for future educators to develop and exercise the metacognitive skills necessary for critical reflection (McNamara, 1990; Noffke & Brennan, 1988).

Program Outcomes

Analysis of reflective practice can inform the design and operation of teacher preparation programs. Extracting data from teacher candidates' written narratives of reflective practice can be useful to various types of reporting completed voluntarily or as required by teacher preparation programs and colleges. Further, data analysis can inform practice. As programs and colleges develop strategic plans, reflective practice can guide goal setting as well as serve as measures of attainment of intended outcomes. Several ways in which reflective practice can inform program development and operations are discussed here.

Earlier, the authors provided evidence of reflective practice leading to enhanced understanding of knowledge and skills which were part of a course of study. Many of the accreditation and related agencies that require regular reporting on teacher education programs require data as evidence of student learning. Therefore, reflective practice can provide verification of teacher candidates' enhanced course content. This data can be displayed in various formats. For example, individual comments from written reflections can be used to illustrate self-awareness of self-reported changes in personal skill and value systems. Additionally, the content of reflections can be aligned with specific course outcomes or professional standards of practice in order to exemplify mastery of course and program content.

As teacher candidates progress through preparation programs, developmental growth and enhanced knowledge and skills are expected. Therefore, assessments of change over time are critical to documenting program success. One method for assessing growth is through measuring reflection levels across coursework and field experiences. In this study, the level of reflection was assessed to ascertain an onset measure. Later reflections can be compared to the initial measure to demonstrate change over time. The expectation for program success should be increased levels of reflective practice for teacher candidates across program experiences.

Reflective practice associated with specific coursework can provide evidence of target competencies of particular relevance and importance. For example, this study took place during a course emphasizing teaching students of poverty. The reflective practice revealed student understanding of various aspects of classroom environment and instructional planning indicative of cultural competence. Given the specific nature of this course, analysis of written reflections revealed increased intercultural competence in addition to self-awareness of bias. This type of information provides confirmation of programs appropriately addressing institutional missions, accreditation standards, and global outcomes for educators such as working with twenty-first century learners.

CONCLUSION

In summary, the research presented illustrates how high-impact pedagogies, such as reflective practice, have significant influence on teacher education preparation programs in multiple ways.

First, the study results demonstrate the positive impact of reflective practice on student learning as indicated by acquisition of educational knowledge, skills, and dispositions. Subsequently, the positive effects on student learning become a stimulus for demonstrating program effectiveness as the two outcomes are intricately related. And finally, the research discussed herein provides a model for using effective pedagogy to inform the development, enhancement, and evaluation of coursework in teacher education. Looking toward the future, a similar study that uses baseline data and studies student reflections across courses within a teacher education program would be advantageous for documenting student impact and institutional change.

REFERENCES

Bringle, R. G., and Steinberg, K. (2010). Educating for informed community involvement. *American Journal of Community Psychology, 46*(3-4), 428-41.

Brookfield, S. (1995). *Becoming a Critically Reflective Teacher*. San Francisco, CA: Jossey-Bass.

Butin, D. (2003). Of what use is it? Multiple conceptualizations of service-learning within education. *Teachers College Record,105*(9), 1674-1692.

Carrington, S. & Selva, G. (2010). Critical social theory and transformative learning: Evidence in pre- service teachers' service-reflection logs. *Higher Education Research & Development, 29*(1), 45-57.

Choy, S.C., & Oo, P.S. (2012). Reflective thinking and teaching practices: A precursor for incorporating critical thinking into the classroom? *Online Submission*.

Council of Chief State School Officers (2017). In*TASC Model Core Teaching Standards and Learning Progressions for Teachers 1.0*. Washington, D. C.: Council of Chief State School Officers.

Council of Chief State School Officers (2011). In*TASC model core teaching standards: A resource for state dialogue*. Washington, D. C.: Council of Chief State School Officers.

Crichton, H. & Valdera, G. (2015). Student teachers' perceptions of feedback as an aid to reflection for developing effective practice in the classroom. *European Journal of Teacher Education, 38*(4), 512-524.

Cuesta, J., Azcarate, P., & Cardenoso, J.M. (2016). The role of reflection and collaboration in the evolution of a group of novice secondary education science teachers. *Australian Journal of Teacher Education, 41*(5), 136-152.

Danielson, C. (2013). A framework for teaching evaluation instrument. The Danielson Group. https://www.danielsongroup.org/framework/.

Danielson, C. (1996). *Enhancing professional practice: A framework for teaching*. Alexandria, VA: Association for Supervision and Curriculum Development.

Dervent, F. (2015). The effect of reflective thinking on the teaching practices of preservice physical education teachers. *Issues in Educational Research, 25*(3), 260-275.

Dewey, J. (1910). *How we think?* Boston, MA: Houghton Mifflin.

Downey, J. (2008). It's not as easy as it looks: Preservice teachers' insights about teaching emerging from an innovative assignment in educational psychology. *Teaching Educational Psychology, 3*(1), 1-11.

Farr, F., & Riordan, E. (2015). Tracing the reflective practices of student teachers in online modes. *ReCALL: Journal of Eurocall, 27*(1), 104-123.

Harland, D. & Wondra, J. (2011). Preservice teachers' reflections on Clinical Experiences: A comparison of blog and final paper assignments. *Journal of Digital Learning in Teacher Education*, 27(4), 128-135.

Harrison, M., Short, C., & Roberts, C. (2003). Reflecting on reflective learning: The case of geography, earth and environmental sciences. *Journal of Geography in Higher Education,* 27, 133- 152.

Hartman, H. J. (2001). Developing students' metacognitive knowledge and skills. In H. J. Hartman (Ed.), *Metacognition in Learning and Instruction: Theory, Research and Practice* (pp. 33-63). Boston: Kluwer.

Hatton, N., & Smith, D. (1995). Reflection in teacher education: Towards definition and implementation. *Teaching and Teacher Education, 11*(1), 33-49.

James, A. (2007). Reflection revisited: Perceptions of reflective practice in fashion learning and teaching. *Art, Design, and Communication in Higher Education, 5*(3), 179-196.

Jensen, E. (2009). *Teaching with Poverty in Mind*. ASCD: Alexandria, VA.

Kember, D., McKay, J., Sinclair, K., and Wong, F. K. Y. (2008). A four-category scheme for coding and assessing the level of reflection in written work. *Assessment & Evaluation in Higher Education, 33*(4), 363-379.

Kolb, D.A. (1984). *Experiential Learning.* New Jersey, Englewood-Cliffs: Prentice Hall.

Gibbs, G. (1988). *Learning by doing: A guide to teaching and learning methods.* Oxford Further Education Unit: Oxford.

Lawrence-Wilkes, L. & Ashmore, L. (2014). *The Reflective Practitioner in Professional Education*, Basingstoke: Palgrave Macmillan.

McNamara, D. (1990). Research on teachers' thinking: Its contribution to educating student teachers to think critically. *Journal of Education for Teaching, 16*(2) 147- 160.

Noffke, S., & Brenna, M. (1988, April). *The dimensions of reflection: A conceptual and contextual analysis.* Paper presented at the annual meeting of the American Educational Research Association, New Orleans.

Ottesen, E. (2007). Reflection in teacher education. *Reflective Practice: International and Multidisciplinary Perspectives, 8*(1), 31-46.

Rodgers, C. (2002). Defining reflection: Another look at John Dewey and reflective teaching. *Teachers College Record, 104*(4), 842-866.

Rolfe, G., Freshwater, D., & Jasper, M. (2001). *Critical Reflection for Nursing and the Helping Professions: A user's guide*. London: Palgrave Macmillan.

Schon, D. A. (1983). *The Reflective Practitioner: How Professionals think in Action*. New York: Basic Books.

Sellars, M. (2014). *Reflective practice for teachers.* Los Angeles: SAGE.

Smyth, J. (1989). Developing and sustaining critical reflection in teacher education. *Journal of Teacher Education*, 40(2), 2- 9.

Woolfolk, A. (2019). *Educational Psychology*. New York: Pearson.

Yang, S. H. (2009) Using blogs to enhance critical reflection and community of practice. *Educational Technology & Society, 12*(2): 11–21.

Zeichner, K. & Liston, D. (1996). *Reflective teaching: An Introduction*. Mahwah, NJ: Lawrence Erlbaum Associates.