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Critical Issues in Teacher Education

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Issues in

Teacher

Education

The Journal of the Illinois Association of Teacher Educators

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The Journal of the Illinois Association of Teacher Educators

Volume XXV, 2018

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Multi-Thematic

Synopsis and Reviews

CITE

Critical Issues in Teacher Education

Critical Issues in Teacher Education (CITE) is a double blind reviewed refereed scholarly journal of the Illinois Association of Teacher Educators. CITE will publish empirically based or original research articles, synthesis papers, book reviews, and special reports on topics of interest to teacher educators.

The purposes of the publication of CITE are to:
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3. Provide a forum for discussion of significant issues and problems in teacher education.

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CONSEQUENTIAL EDTPA: PERCEPTIONS OF TEACHER CANDIDATES REGARDING EDTPA PREPARATION AND IMPLEMENTATION
by
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Abstract
This study addresses questions about how teacher candidates experience preparation and implementation of edTPA. The 2015-16 academic year was the first year in which candidate scores were consequential for earning a teaching license in Illinois. This small sample design study included semi-structured interviews of teacher candidates as they completed the edTPA portfolio submission process. Candidates were asked how they experienced the edTPA preparation process and we explored their perceptions of support they received. Research findings should help teacher educators understand implications that may lead to improved support for candidates, faculty, and program design. Findings reveal emergent trends in preparation and raise questions concerning planning, equity issues, and overall program improvement.

What is the edTPA? The Stanford Center for Assessment, Learning and Equity (SCALE), developed the edTPA (formerly the Teacher Performance Assessment) to measure teacher candidates' readiness to teach. The official website for edTPA explains that Stanford University and the American Association of Colleges for Teacher Education (AACTE) developed this assessment as a multiple-measure system aligned to state and national standards intended to guide development of curriculum and practice to make sure new teachers can teach effectively and improve student achievement. SCALE oversees the design and development of edTPA and this organization partners with the AACTE for implementation with Pearson providing the scoring and reporting component. According to Burns, Henry, and Lindauer (2015), edTPA is the first nationally available performance assessment for teachers. The AACTE website explains:

> *edTPA is a subject-specific assessment with versions in 27 different teaching fields covering Early Childhood, Elementary, Middle Childhood and Secondary. edTPA includes a review of a teacher candidate's authentic teaching materials as the culmination of a teaching and learning process that documents and demonstrates each candidate's ability to effectively teach subject matter to all students.*

Implementation of edTPA requires participation by numerous faculty and personnel outside the university. Burns et.al. (2015) studied "the effectiveness of one model for supporting candidates in their work in preparing and submitting their edTPA portfolios" (p. 20). In their study, they developed a model designed to maximize support for student teachers in their edTPA work where they opted to "leverage placements and partnerships as support structures for student teachers completing the edTPA" (p. 20).

In research reported by Pecheone and Whittaker (2016) they explain that "we've learned that educators are implementing edTPA more frequently when states have endorsed policies that support the work. Faculty have discovered that edTPA is an opportunity for them to learn and to invigorate their programs for teacher candidates" (p. 10). They cite five case studies that they purport demonstrates the "educative" nature and impact of edTPA. They define "educative" as meaning that "everyone who is engaged in this assessment process learns something" (p. 11).

In order to pass the edTPA, teacher candidates prepare a portfolio containing video samples and detailed narratives in sections on Planning, Instruction, and Assessment which are uploaded for scoring several weeks into the student teaching experience. Illinois teacher candidates taking the edTPA feel the impact of their scores through the consequence of either being able to graduate from their university and earn a teaching license, or being informed that they failed the test and cannot earn a license until they complete remediation and attempt to pass the test after another try. This new protocol raises the stakes of the edTPA for teacher candidates as well as for teacher preparation institutions.

Various measures have been implemented to address issues of quality and accountability in teacher education with the edTPA being one of the most recent. According to the National Education Policy Center report (Cochran-Smith et. al. 2016) the edTPA is designed to accomplish three goals; (1) to reflect and predict candidate success in the classroom and improve student learning, (2) to positively impact the professional learning of teacher candidates and lead to program improvement, and (3) to steer improvement from inside the profession and boost the status of the profession.

Methodology

This study was designed to gather and analyze data regarding some aspects of the preparation process for teacher candidates as they crafted their edTPA materials. We hoped to better understand student perspectives concerning the content and process that was designed in our MAT teacher preparation program. Ideally, findings reveal program strengths or areas for growth of preparation design.

During the Fall, 2015 and Winter, 2016 academic terms, we sent invitations to two classes of student teachers. Ultimately, five teacher candidates volunteered to participate. Using a convenience sample, six candidates volunteered to participate and all were fully informed of their rights as part of the IRRB process of disclosure. One candidate was dropped when he did not come to the interview appointment and was not responsive to follow-up attempts to communicate. We conducted interviews via interactive video software and transcribed responses. Interviews were coded and analyzed for common themes, trends and patterns. We acknowledge our potential for subjectivity in this study given that it was conducted with candidates who are enrolled in classes where we are familiar with the instructors. Additionally, the researchers are involved with aspects of teacher education at the university where the data collection took place. Use of transcriptions, coding, and triangulation were expected to minimize the effects of our own biases.

We interviewed candidates after they submitted their edTPA materials to Pearson and conducted brief follow-up interviews once they received their scores. Interviews were conducted at times that were convenient for both the subject and the interviewer. Our research design employed a standard qualitative protocol (interview). We spoke with seminar leaders and teacher candidates to identify candidates working in diverse environments and we investigated a variety of school settings including one each from an early elementary, mid-level elementary, and middle school. We developed a protocol of investigation (Hesse-Biber, 2015) to conduct semi-structured interviews of the teacher candidates. While the sample size was relatively small, we believe that the results provide useful data for better understanding the preparation process. As a qualitative study, sample size may be any variety. According to Efron and Ravid (2013) "It is not uncommon to have a sample size of one to four individuals who have experience and in-depth knowledge about the topic being investigated" (p. 62).

We recruited volunteers from among MAT student teaching groups. This made use of Patton's (2008) concept of purposeful sampling. Patton describes "purposeful sampling" as qualitative inquiry that "involves small 'purposeful samples' of information rich cases" and that case studies become "particularly useful when the intended users need to understand a problem, situation, or program in great depth, and they can identify cases rich in needed information – 'rich' in the sense that a great deal can be learned from a few exemplars of the phenomenon of interest" (p. 457). The sample provided an important perspective of those who will experience the edTPA for the foreseeable future. All names of research participants have been changed to preserve anonymity.

Inquiry Questions

Following are the questions we asked of the teacher candidates. The interviewers asked for elaboration and clarification when necessary.

1. Please describe which activities and/or readings in seminar that helped prepare you for the edTPA submission.
2. Please describe what parts of the edTPA Components A, B, and C were easiest to prepare.
3. Which parts of the edTPA Components were most difficult to prepare?
4. What did your seminar leader do to support you in being ready to take the edTPA?
5. What did your Cooperating Teacher do to support you in being ready to take the edTPA?
6. Overall, what was most helpful in your preparation?
7. What could have helped you more in your preparation to take the edTPA?
8. If you were giving advice to someone taking edTPA next year, what would you suggest in terms of preparation that you wish you had known before you submitted your materials?

These are the questions asked of candidates after they received their edTPA score.

1. What scores did you receive from edTPA?
2. What was your reaction to the score(s) you received? Please explain.
3. In retrospect please assess the support you received from NLU in preparing for the edTPA assessment.
4. If you did not pass any section, what do you feel might have better prepared you in this area?
5. What changes to your preparation would you suggest?

Findings

Our aim was to learn from MAT teacher candidates from diverse schools concerning their experiences with being prepared to take the edTPA. Two of the candidates were from the early childhood program, one from secondary education, and the other two were from elementary and middle level. Four of the candidates spoke with the researchers after submitting their edTPA materials but before receiving their scores. Four of the candidates were also able to meet with the researchers for a reflection discussion after receiving their scores. It is important to note that all of these students received passing scores in their first attempt. After careful review of the data, several themes and sub-themes emerged. Following are findings from the responses.

When candidates were asked, which areas were most helpful in their preparation, they gave varied responses. Most enjoyed having the opportunity to practice their teaching skills and get feedback from peers and seminar leaders through teaching "mock" or simulated lessons. In some cases, candidates changed

lesson plans or created entirely new ones based on feedback they were given during practice sessions. Several referred positively to the support they received after completing a multi-part project assigned during an advanced practicum class where the work was closely aligned with edTPA goals and structure. Candidates referenced the positive value of this particular assignment in response to multiple questions. They also reported that having an opportunity to meet with completers who had successfully taken the edTPA as being highly valuable. Several students identified the vitally important advice they received from seminar leaders regarding the need to carefully organize portfolio materials for planning purposes. Candidates particularly appreciated being required to have their materials prearranged when it was time for submission to Pearson.

When asked which particular components of the edTPA were easiest to prepare one said that the planning segment was the easiest for her, and attributed this to the support she received from her seminar leader and cooperating teacher. Four of the five candidates identified the videotaping and the actual teaching components to be the easiest of the three required task areas, although none claimed that any of them were simple or without stress. Having opportunities to practice videotaping was a highly valued exercise for the candidates and contributed to confidence and lowered stress when completing the edTPA portfolio.

When asked which of the three edTPA components was most difficult respondents were almost unanimous in their reply. Four of the five candidates identified the third area "Assessment" as having been the most difficult. This area of edTPA requires a substantial amount of structured analysis, data presentation, assessment, and reflective discussion. While none of the participants identified "Instruction" as the most difficult area, one spoke of the challenges she faced in completing that component as particularly worrisome because she wanted to be sure she was doing it "right." All candidates referred to difficulties they experienced with the planning process and identified the most serious challenges as: mastering video mechanics, discussing syntax versus discourse, and writing up the assessment materials.

Candidates were asked what their seminar leaders did that supported their preparation and they identified a number of areas of importance. They gave a variety of responses. It was greatly valued for example, when seminar leaders provided a forum for peer review, answered technical questions, explained rubrics, showed exemplars, and helped review lesson plans. While most candidates were quite positive about the support they received from their seminar leaders, one expressed frustration, stating that she did not receive enough time to fully understand or apply information from the sample exemplars given out from her seminar leader.

Candidates valued support they received from their cooperating teachers who provided important guidance for four of the five participants. One candidate expressed disappointment explaining that her cooperating teacher provided no support at all. Of the four who felt positive about the types of support that they received, three identified getting assistance with lesson planning. One candidate told how the support and feedback she received from her cooperating teacher led this candidate to abandon her original lesson plan and create a new and improved one. Two of the other candidates discussed how their cooperating teachers provided help with making sure the video would depict the desired teaching events. It was reported that during one lesson a cooperating teacher removed a crying child from the room for a few moments in order to calm him down. This was appreciated as it allowed the lesson to continue undisturbed and to provide a more optimal teaching environment so the candidate could continue the flow of the lesson. Another candidate spoke of

how his cooperating teacher helped him to "be a better teacher in a global sense" that he believed reflected improved all-around performance for edTPA.

Each candidate gave a different response to the question about what was most helpful in their overall preparation. Responses included:

- having specific deadlines in seminar for completing work
- providing opportunities to practice through earlier preparation assignments
- practice of video recording,
- engagement in strategic planning
- talking with experienced former students
- discussing ongoing work with peers
- careful examination of Pearson materials

What might have helped candidates more in their preparation to take the edTPA? Respondents spoke of several areas that would have provided desired additional support during their planning.

- Two mentioned the need to increase focus on specific SCALE terms, in particular the required use of "syntax" and "discourse."
- Others recommended being assigned a mentor teacher who had gone through the process, breaking up the work into discrete parts, and having greater access to their seminar instructors.

Candidates had abundant advice for future student teachers. They suggest that people begin their preparation early, follow the rubrics with careful attention to scoring standards, organize lessons carefully and read the detailed instructions thoroughly. They also urge future candidates to closely examine exemplar samples. One suggested hiring a tutor.

Implications

Without question, the stakes for passing the edTPA are significant and most candidates experience stress during their preparation. The candidates we interviewed found the edTPA to be quite time consuming and they devoted a great deal of energy and attention in their efforts to secure a passing score. This comes at the expense of time that could otherwise be invested in other field based activities. Candidates revealed much about what was helpful in their preparation, ranging from getting useful advice and support from seminar leaders and cooperating teachers about planning and teaching. They also explained that having appropriate and sufficient resources and practice opportunities were vital in the preparation process. They appreciated receiving guidance in effective ways to prepare, organize, revise, and use their time wisely before submitting their materials. Candidates valued receiving feedback from their peers and ultimately were largely satisfied with the support they received from the university.

However, not all candidates had entirely positive experiences with their preparation. One expressed dissatisfaction saying she was given "no support" from her cooperating teacher, and another felt that for him, the planning preparation was inadequate. One area that stood out as a persistent concern was the need for candidates to understand, use, and discuss the concepts of "syntax" and "discourse" in their required analyses. They expressed frustration with the need to apply these particular academic terms in their work because they found them confusing, obscure, and hard to fully comprehend.

Conclusion

Several questions emerge from this study. One issue was the significantly different contexts in which candidates taught and received support for their edTPA preparation. For instance, some had cooperating teachers who proactively helped with planning or instructional areas by providing detailed lesson suggestions, operation of the video camera, and even removing a child who was causing a disturbance during the edTPA lesson as noted previously.

The question must be asked if proactive cooperating teacher support not only relieved stress for the candidate but perhaps created an environment providing an advantage that other candidates were not afforded. This relates to the issue about the degree to which cooperating teachers understand how they can or should provide appropriate assistance and support. Ambiguity exists about the types of feedback that can be provided to candidates. Also, as reported, one candidate recommended to others to literally hire a tutor which raises further questions about equity. With stakes so high, it is important to consider the vastly different environments for candidates in which they receive mentoring and support.

Candidates also struggled with academic language which is so strongly embedded in edTPA materials. Candidate responses raise the issue of the relative weight given to the use of specific academic terms such as "syntax" and "discourse". In the stated goal for edTPA of assessing the readiness of beginning teachers, it is a point of consideration as to how essential it should be to use terms not always common in teacher education programs. Candidates who currently cannot use and define a variety of specific edTPA parlance are in jeopardy of not passing.

A persistent question raised by critics of edTPA is the value of having a high-stakes assessment which requires this extensive expenditure of time during what is supposed to be a formative stage of development. Candidates spend many hours in preparing, revising, and submitting their materials, and while there are substantial benefits, it's important to ask if these benefits justify the costs. Preparation for edTPA requires resources which could be used in other avenues of initial teaching, preparation, and skill development.

The students who participated in this study appeared to be typical in the dedication they invested in making sure their work would meet or exceed all requirements. It appeared from their responses that they were largely satisfied with their efforts, the work of faculty, and with the preparation process as it supported their portfolio submission.

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TECHNOLOGY USE WITH CHILDREN BIRTH THROUGH FIVE YEARS: IMPLICATIONS FOR TEACHER EDUCATORS
by
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Abstract
With the prevalence of technology in today's society, including classrooms, students and teachers are expected to obtain competency in technology. This paper presents the results of a survey of early childhood practitioners' use of technology with children from birth to age five. Most early childhood practitioners use a variety of technology tools every day with all children, and computers, iPads, and CD players were used by most participants. Benefits of technology integration for early childhood practitioners included providing access, engagement, motivation, communication, and enhanced learning for their children as well as monitoring children's progress. Challenges of implementing technology within their teaching included failure of technology, as well as limited resources, time, and training. Implications for preparing technology competent early childhood education practitioners and recommendations for teacher education programs in general are suggested.

Use of technology has increased, worldwide, in all aspects of life. According to the International Telecommunication Union (ITU)'s 2015 report, 3.2 billion people (43 percent penetration level) in the world use the internet For the United States, 84 percent of the individuals used the internet in 2013 as compared to 43 percent in 2000 (ITU, 2015). Broadband subscription rates increased from 7 million subscriptions in 2000 to over 91 million in 2013. Ninety-six out of every 100 Americans had cell phone subscriptions in 2013; whereas only 39 out of 100 did in 2000 (ITU, 2015). In American public schools, 97 percent of teachers had at least one computer in their classrooms and 93 percent of the computers were connected to the internet in 2009, which translates to every five students in schools having access to one computer (Gray, Thomas, & Lewis, 2010). Today, a variety of interactive technology like smartboards, document cameras, iPads, clickers, blogs, wikis, and websites are also available for use within classrooms.

With the prevalence and variety of technologies in today's society, students and teachers are expected to obtain competency in technology. One of the 21st Century skills students will need to acquire is information, communications, and technology (ICT) literacy (Dede, 2010). In Kentucky, teacher candidates have to demonstrate competency in technology as one of the Kentucky Teacher Standards (Kentucky Education Professional Standards Board, 2003). Specifically, this teacher standard requires teacher candidates to integrate technology within instruction and facilitate students' use of technology for their own learning. Given this emphasis on technology integration for teacher candidates at the state and national levels, the authors wanted to explore the landscape of technology usage for early childhood professionals within the university's service area in order to examine implications for preparing technology competent early childhood education teachers and project suggestions for teacher education programs in general.

Literature Review
The National Center for Education Statistics 2009 report found teachers in public schools had access to liquid crystal display (LCD) or digital light processing

(DLP) projectors, interactive whiteboards, digital cameras; and computers with internet access. These teachers used these technologies, especially the LCD or DLP projectors, during instructional times. Only about half (49 percent) of the teachers used digital cameras. Teachers reported using word processing software and the Internet most (94 percent and 96 percent, respectively). The second most used by teachers was software for managing student records, then software for making presentations as well as spreadsheets and graphing programs (63 percent and 61 percent, respectively). The majority (78 percent) of teachers professed learning technology independently; and of those who participated in technology focused professional development activities (61 percent), one to eight hours was the most common duration for these professional development activities (Gray et al., 2010).

Grunwald Associates (2011) found that technology usage, especially digital media, was not as extensive in preschool classrooms as for K-12 classrooms. Teachers noted inappropriateness for preschool children and inaccessibility of appropriate equipment for accessing digital resources (Public Broadcasting Service & Grunwald Associates, 2011). Preschool teachers used the digital camera more than K-12 teachers as a supplement to their teaching and considered it the most valuable instructional technology tool (Public Broadcasting Service & Grunwald Associates, 2011). Preschool teachers, like K-12 teachers, viewed laptops, followed by iPads or electronic readers, as having the greatest educational value (Public Broadcasting Service & Grunwald Associates, 2011).

Early interventionists, who work with children under three years of age with special needs, integrate technology, especially assistive technology (AT), during their service delivery. Campbell, Milbourne, Dugan, and Wilcox (2006) reviewed AT usage with infants and toddlers from 1980 to 2004, and found early interventionists used switch interface devices, computers, power mobility devices, or augmentative/alternative communication devices. The critical factor for early interventionist's ability to integrate AT with higher frequency, sensitivity, and appropriateness was training (Wilcox, Guimond, Campbell, & Moore, 2006). Moore and Wilcox (2006) found professional development training on AT as well as early interventionists' years of experience with AT had more impact on practitioner's confidence levels than their formal education.

Various professional associations, government agencies and state initiatives such as the 5-2-1-0 campaign (Kentucky Cabinet for Health and Family Services Department for Public Health, n.d.) recommend caution in usage of technology with young children. For children under age two years, the recommendation is no screen time and one to two hours per day at maximum for children older than two years old (Alliance for Childhood, 2004; American Academy of Pediatrics, 2013; National Association for the Education of Young Children and the Fred Rogers Center for Early Learning and Children's Media at Saint Vincent College, 2012). Play, active engagement, hands-on experiences, and positive relationships with responsive adults are critical to young children's development and learning (Learner & Barr, 2014; National Association for Education of Young Children [NAEYC], 2009; National Research Council & Institute of Medicine, 2000). In fact, Zimmerman and Christakis (2005) found a significant negative correlation between the amount of television viewing and cognitive ability. They found six to seven year olds who watched more television during their first three years did not perform as well with their memory or reading when compared to their counterparts who spent less time watching television before three years of age. The challenge may be what children are not doing or missing out on when passively using technology. NAEYC's Developmentally Appropriate Practice for children birth through age eight includes the whole child emphasis, active play, and interactions with peers and adults (Copple

& Bredekamp, [eds.], 2009); therefore, a variety of opportunities in all developmental domains (i.e., physical, social, emotional, language, and intellectual) that are based on active exploration and interaction with responsive people (NAEYC, 2009; Miller, 2005; Monke, 2005) are important for young children's learning and may be compromised by overuse or inappropriate use of technology.

As Ernest et al. (2014) suggest, there is a need for a continual discussion of how to best integrate technology with young children to further enhance their active learning at home and at school. Young children's learning is dependent on adults as adults provide the learning environment and opportunities. In order to provide rich and engaging environments, decisions about materials and activities should be informed and purposeful. Screen time by default (i.e., to keep children busy) may come at the expense of other experiences. Gingold, Simon, and Schoendorf (2014) found children who spent more than four hours of screen time each day experience less frequent family meal sharing, exercise, and adult monitoring regarding television shows and they were more likely to have a television in their bedrooms than children who watched less than two hours per day. Additionally, children's technology behavior and screen time were reflective of their parents' media usage (Lauricella, Wartella, & Rideout, 2015).

Study

Given the increasing availability of technology, the inherent mis-uses and benefits of technology, and the need to place teacher candidates in settings in which the cooperating teacher uses technology appropriately, the goal of this research was to explore the types and extent to which technology is used in early childhood settings in the northern Kentucky region. An online survey was developed and sent out to a variety of sources known to the first two authors in order to reach developmental interventionists and public school preschool classroom lead teachers within the region. The known sources included existing groups such as the region's preschool coordinator cadre (consisting of 16 state funded public school preschool coordinators), and region's district early intervention committee (consisting of two Kentucky early intervention point of entry staff and six early intervention providers) as well as early childhood education program placement cooperating teachers. The e-mail message to the region's preschool coordinator cadre and district early intervention committee requested forwarding of the survey to their preschool teachers or developmental interventionists. For consistency, term "practitioners" will be used to represent both groups (i.e., preschool teachers and developmental interventionists) from this point.

Survey Results

Twenty-three practitioners completed the survey. Although this response rate is too low to make any inferences about the population of early childhood practitioners, the researchers deemed it important to consider the results from this group of respondents, as they represented a broad range of experience, certification areas, and age. Thirteen were certified in Interdisciplinary Early Childhood Education (IECE state teacher licensure for practitioners who want to teach children birth-five years with or without special needs in Kentucky), four in Special Education, three in Elementary Education, and two in Administration. Teaching experience ranged from two to 39 years, with a mean of 14 years and standard deviation of 9.8.

Table 1. Participants' age and percent reporting use of each type of technology

Participants in their	20s	30s	40s	50s	Whole Group
Computer	100	88	67	80	91
Ipad	67	75	33	80	74
CD player	67	88	67	40	74
DVD player	67	50	67	6	65
Smartboard	33	50	33	60	48
Document camera	33	50	50	40	43
Assistive technology	17	50	0	60	35
Ipod	0	0	0	20	4

Respondents ranged in age from 20s to over 50, but age of the practitioner did not seem to be a factor in the overall use of technology. As shown on Table 1, there were some differences in the type of technology used by practitioners at different age levels, but it was not the case that younger practitioners used more technologies than older practitioners. All reported using multiple types of technology. The most popular type of technology was computers, used by 91 percent. CD players, iPads, and DVD players were used by 74 percent. Smartboards and document cameras were used by nearly half of the participants. Least popular were iPods, used by only four percent.

Twenty-one practitioners (91 percent) reported using technology every day. Eighteen (78 percent) used technology during center time, 16 (70 percent) during large group time, and 15 (65 percent) during small group time. Participants also reported using technology for differentiation and for speech and language pathology. Twenty-one practitioners (91 percent) reported using technology with all children. Eight (35 percent) reported using technology with children with disabilities. Three (13 percent) reported using technology with students with limited English proficiency.

Analysis of the responses to the question "What are some of the benefits you have found with using technology?" revealed six key themes: access, engagement, motivation, communication, enhancing learning, and monitoring progress. Access included enabling participation in activities children would not be able to do without technology as well as being able to use materials not available at home. Access also meant being able to obtain information for lesson planning as one respondent noted, "I research computer programs, websites, and apps that pertain to the specific disabilities of my students," and another wrote, "I try to plan an introduction to the lesson to grab attention (Brain Pop, a song or video from YouTube), then I like students to get their hands on the tech usually in a center (an app on the iPad or Compass or Fastt Math on the computer)."

Student engagement was the most cited benefit. Technology use promoted engagement and active participation. According to one practitioner, technology is used "as a supplement to the curriculum if it will enhance the activities we plan. The CD player, digital and video cameras are used every day. The DVD, iPad and other technology is used periodically." The technology itself served as motivation for learning. One respondent described how various technologies such as "video presentation of science and social studies content/topics; interactive games promoting language/literacy, math, science development" were embedded in the lesson plans for motivating children.

Another reported benefit of technology was increased communication. Communication consisted of increased contact between students such as corresponding with classmates who had moved away using Skype or between teachers and parents through modes such as class websites or e-mails. One practitioner shared how technology enhanced children's learning by "reinforc[ing] things we have learned in a different way." At times, technology provided a connection to the real world by streaming video of real animals. Technology also allowed for differentiation of curriculum. Children could work independently and at their own pace. Finally, technology allowed for progress monitoring. Practitioners could "track student progress using data gathered from software and Turning Points" as one respondent noted, and children could monitor their own progress as feedback is provided when working independently.

In order to appreciate the listed benefits, practitioners first had to plan for technology use within the classroom. In response to the survey question, "How do you plan for use of technology?" one practitioner indicated integrating technology with the curriculum by stating "It is a regular part of what I do. I prep the same way as other things." Exploration of online resources and collaboration with other professionals are other ways practitioners use technology. The last strategy is considering individual child's needs: "It is used daily to enhance instruction. It is also used for individual students to support learning and communication."

Similar themes emerged from the questions, "What are some challenges you have faced in using technology?" and "What resources and supports do you need?" These themes included: lack of resources, failure of technology, limited time, and training. Lack of resources is an issue regarding both availability and quantity of hardware. Respondents indicated that they either did not have the equipment, brought their own (e.g., iPads), or they did not have enough for all of the students. Out of date technology was a concern as one teacher described having a "classroom filled with outdated technology that does not work well- CD player that constantly skips, headphones that sound comes in and out." This teacher also noted, "Would love to have smart board." Another issue was not having the human resources as one teacher explained, "We need more people. It is sometimes difficult to manage the smart board with only two adults in the room. The children often need help navigating it."

Even when technology was available, it might fail. One participant explained, "When the USB based device (pen/mouse) doesn't work because of network outage, battery, or program dysfunction or when the internet isn't working, this changes my plans and I am forced to improvise at times." Another issue is limited time. Some technology tools are shared within a program; thus, limiting the use within each classroom. Time is also needed for teachers to plan, practice using technology, and collaborate, such as: "Time to collaborate and learn the technology and good uses for it" or "having more time for teachers to share how they use technology for each particular grade level." Practitioners struggled to balance opportunities for social interaction, children's screen time and time "to research new ideas, develop materials such as turning point, set up blogs each year, update website, bookmark or put sites on website or desktop, and share ideas."

Finally, respondents identified a need for training. This may include working with families regarding what is developmentally appropriate or "additional training on how to integrate all forms of technology together" and how to evaluate appropriateness of different technologies for younger age children's use. Training is an ongoing issue if all (including substitute teachers, aides, and children) are to use technology within the classroom daily, as noted by one respondent: "Training staff takes time and money. Many staff are in the dark ages with technology." The need

for "extra guidance and support with new technology" was also indicated. Thus, practitioners in our survey wanted ongoing training and support in selecting and using latest technology as well as working with families regarding technology.

In summary, practitioners from our survey definitely view technology integration as beneficial to their instruction with young children and use a variety of technologies every day including computers and iPads as much as CD or DVD players. Smartboard and LCD Projector usage is also prevalent for whole class instruction and small group activities. Other instructional and assistive technologies such as Touch Screen, various switches and augmentative communication devices, document cameras, and wireless headsets are being integrated during instruction. Additionally, the benefits and challenges of technology shared by survey respondents are consistent with the research literature and the joint position statement of the NAEYC and the Fred Rogers Center on early learning and children's media although only one of our survey respondents indicated familiarity with this position statement.

Conclusion

Technology usage is an everyday occurrence for the majority of children and adults today. The ability to integrate technology during instruction is expected of teacher candidates graduating today. For early childhood teacher candidates, the challenge is how to appropriately integrate technology with young children so their learning and development are facilitated according to best practice principles as espoused by professional associations. The reason for this survey study was to explore what and how of early childhood professionals' technology usage within the university service area in order to inform preparation of early childhood teacher candidates.

Based on our survey results, technology use in early care and education environments can be beneficial in enhancing skills in various areas of development, but adult support can scaffold development further by encouraging attention to relevant details, asking questions to extend thinking and helping children to make connections to the classroom curriculum (Campaign for a Commercial-Free Childhood, Alliance for Childhood, & Teachers Resisting Unhealthy Children's Entertainment, 2012; McManis & Gunnewig, 2012). Technology use, like any other curriculum material, should be intentional. Rather than attempting to fit a piece of equipment into the classroom, practitioners ought to begin with the learning targets and then ascertain what technology tools they may need. It is then important to evaluate software with considerations of whether it is educational, appropriate, engaging, and customizable for individual needs (McManis & Gunnewig, 2012; McManis & Parks, 2011). Finally, providers need to decide how to use technology in an authentic manner within the classroom curriculum (McManis & Gunnewig, 2012).

In addition, practitioners need to consider access. The same device that supports learning for children without disabilities may serve as assistive technology that enables participation for individuals with disabilities (Campbell & Wilcox, 2012). A touch screen may allow a child who is not able to use a keyboard to be independent, but all children can benefit from the interactive nature of touch screens. While all children can draw or write letters on an iPad, children who are unable to grasp writing implements can use the device to access the curriculum, becoming active participants in the classroom (Campbell & Wilcox, 2012). All children should have the opportunity to engage with interactive media in the classroom setting in meaningful ways regardless of ability, income level or language (NAEYC & Fred Rogers Center, 2012). This requires teachers with digital literacy, which includes having the skills to be competent in the use of technology to support their own

learning as well as children's learning. Professional development and ongoing support are essential (NAEYC & Fred Rogers Center, 2012).

Implications for Preparing Technology Competent Practitioners for Early Childhood Education Programs

IECE educators are expected to use technology with children, families, and colleagues as well as for their own professional growth. Specifically, IECE teachers are to: 1) request and use appropriate assistive/ adaptive devices for children with special needs; 2) design lessons that use technology to address diverse needs and learning styles of children; 3) use computers and other technology for individual, small group, and large group learning activities; and 4) use technology to support multiple assessments of children's learning (Kentucky Education Professional Standards Board, 2003). Survey respondents used various technologies with children during instruction and for child assessment as well as for communicating with families. However, none reported using technology for their own professional development or collaboration. The survey results demonstrated that technology is a presence in early intervention and public school preschool classrooms, but the implementation process is not as consistent as it could be.

Technology is truly integrated into instruction when practitioners purposefully select technology to enhance children's active construction of knowledge, skills and dispositions (Keengwe & Onchwari, 2009). Therefore, technology needs to be viewed as one of the pedagogical tools, not the primary teaching tool, for early childhood providers as recommended by the NAEYC and the Fred Rogers Center for Early Learning and Children's Media joint position statement (2012). Technology use should facilitate creativity, play, hands on interaction, and authentic engagement; and also to build home school connections and documentation of learning (NAEYC & Fred Rogers Center, 2012). Hence, teachers' decisions matter when integrating technology within the classroom environment and instruction.

Implications for General Teacher Preparation Programs

All pre-service teachers need to be familiar, comfortable, and competent with all types of technologies, regardless of the age or grade level of their students so that teacher candidates can evaluate and select the most appropriate technology tool for upcoming instruction. Below are some suggestions for enhancing teacher candidates' competency level in technology integration.

- Require teacher candidates to use a variety of technology tools in various courses throughout their program. Provide opportunities for teacher candidates to demonstrate their ability to evaluate technology according to the appropriateness for children's age, activity and groupings. Course assignments can target the implementation of technologies for student differentiation or child assessment. Technology is one of the tools for instruction in order to provide access to *all* children, regardless of learning styles, abilities or exceptionalities and to complement, not supplement, teaching and learning.
- Have teacher candidates reflect on how technology is being used in their field placements. If technology is used to keep certain children occupied while the rest of the class is attending to teacher-guided whole class instruction, teacher candidates need time to analyze student outcome measures and brainstorm alternative means for inclusion. Teacher candidates should learn to use technology as a vehicle that removes barriers so that a young child is not limited to certain level of activity or is experiencing frustration because of less developed coordination. Teacher

candidates can engage in a task analysis process or scaffolding a task to allow children more direction and control or regulation.

- Teacher candidates need to re-conceptualize their role related to classroom management, interaction with children, and learning environment set-up. The unlimited possibilities of technology add a new layer to how teachers can be child-centered or intentional in teaching; hence, teacher candidates need to re-visit when/where to step in, guide, and challenge children with technology implementation.
- Teacher candidates need to judge which software, games, websites, and tools are cost-effective based on the alignment with the specific activity, purpose, lesson objectives, or audience. For example, teacher candidates need to leave the teacher education program with criteria for learning about the potential of technologies for collaborating with families and colleagues as well as new usages that can be applied flexibly in future contexts so that teachers, not technology, drive the instruction. Additionally, technology itself can be used to expand resources such as technical support and professional development. Online modules, wikis and video conferencing can facilitate collaboration and professional development. Technology can also be used to expand the circle of support across educational institutions, states and countries. Limited resources can be addressed by creatively sharing resources, and time limitations can be partially addressed through asynchronous and synchronous online professional development. The ultimate hope is for teacher candidates to feel confident of their ability to implement technology appropriately in their first year, rather than waiting until their 11th year as evidenced in Moore and Wilcox's (2006) study.
- Professional development should be ongoing, so partnership between universities and schools may be a vehicle for technology-focused professional learning communities for both pre-service and in-service teachers.

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EARLY CHILDHOOD MATHEMATICS TEACHER THINKING SHIFT FROM THE PERIPHERY TO THE CENTER OF A COMMUNITY OF PRACTICE
by
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Abstract
Communities of practice (CoP) support teacher development. Early childhood teachers benefitted from intentional professional growth experiences. Metacognitive abilities emerged as teachers participated in purposeful and successful professional development focused on reflection. This study found a shift in teachers' thinking as marked by reflective comments made on teachers' classroom practices moving from the periphery of a CoP through a transitional phase where educators thoughtfully move toward questioning their practices to the center of a CoP in early childhood classrooms. This center is marked by an emergence of a perspective that utilizes their knowledge base, their practical pedagogical knowledge, an appreciation of the way they see themselves in their professional identity, and their social-emotional competencies as a teacher. In the center of the CoP, teachers report realizations, discoveries, and additional interpretations of what they can do in their classrooms to support developmentally optimal experiences for children.

In our local community, a need for early childhood mathematics professional development was established through three avenues. These needs were identified in: 1) a local survey showing that 62 percent of the respondents needed more professional development in math (Heart of Illinois United Way Building Blocks Project, 2012), 2) a statement from Gaylor et al., (2012, p.29), revealing that Illinois had a significant decline in math skills and "students would benefit from increased participation in activities aimed at developing early math skills", and 3) results from the *Illinois Standards Achievement Test 3rd* grade math showed below state targets for meets/exceeds Adequate Yearly Progress (AYP) in the targeted urban zip codes (Interactive Illinois Report Card, 2012). Coupled with this need, Duncan, et al., (2007), state that basic mathematic skills matter most when predicting future reading and mathematics success for young students who are at risk. Therefore, the professional early childhood educators involved decided to pursue the professional development opportunity for mathematics in early childhood classrooms (Nugent, Antola Crowe, Wolffe, Hinnen, 2017).

Theoretical Frameworks
We use two theoretical frameworks to support our study. One framework based on Lave & Wenger's (1991) is the theory of CoP which helps to explain the transition that some of our participating educators experienced during their time in the program. A second framework by Clements (2004), provides a vehicle that facilitated the participants' transition toward the center of the CoP in their self-identity.

According to Wenger, McDermott & Snyder (2002), CoP can be defined as "groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis" (p. 4). The CoP we refer to is the community of early childhood educators. This community shares concerns and passion about the most efficient way to educate the young child. The participants in our study interacted with each

other (a smaller CoP within the larger CoP of all early childhood educators in the region), as well as their colleagues, before, throughout, and after the actual professional development experience.

Furthermore, "communities of practice create value by connecting the personal development and professional identities of practitioners to the strategy of the organization" (Wenger, McDermott & Snyder, 2002, p. 17). This value can be seen in the data that was collected in the participants' reflective responses. In addition, "[t]hrough its practice – its concepts, symbols, and analytic methods – the community operates as a living curriculum. One of the tasks of a shared practice is to establish a baseline of common knowledge that can be assumed on the part of each full member" (p. 38). Through the data, we intended to show how some of the participants moved from the periphery of the early childhood CoP towards the center of the community that uses best practices in educating young children in the field of mathematics.

The theoretical framework that we use to discuss the professional development program is one offered by Clements (2004) and is based on work provided by Sarama & DiBiase (2004). In Sarama & DiBiase's meta-analysis, which reviewed numerous studies on professional development for early childhood educators, six major themes surfaced (Clements, 2004; Sarama & DiBiase, 2004, p.65). The themes for Successful Professional Development (SPD) are that they: 1) should be standards based, ongoing, and embedded in the workplace, 2) need to provide teachers with consistent time with colleagues to work and learn together, 3) need to provide for opportunities for participants to observe, experiment, be mentored, and reflect, 4) should be grounded in theoretical and philosophical bases that provide a systemic, structured, coherent program, 5) should respond to an individual's experiences, background, and current role, and 6) should address both mathematical content and mathematical education.

The SPD program we studied (Andrews, 2012) is titled *Math: Right from the start! Pre-K Professional Development (M:RFTS)*. This SPD is sponsored by *Heart of Illinois United Way Success by 6*. Teachers were recruited from the local area and were provided with instructional materials and coaching support with cognitively appropriate mathematical thinking strategies based on Andrews' (1995) work that emphasizes the importance of learning through play, the most developmentally appropriate approach with young children. The following table contains an alignment from *M:RFTS* to the themes established by Clements (2004).

Table 1: Math: Right from the Start encompassing themes for SPD

Clements' Six Themes for SPD (2004)	*Math: Right from the Start (M:RFTS)*
SPD should be standards based, ongoing, and embedded in the workplace.	*M:RFTS* was based on early numeracy as defined by the *Learning Framework in Number* (Wright, Martland, & Stafford, 2006). It also provided teachers with new assessments and strategies that are implemented in their classrooms.
SPD needs to provide teachers with consistent time with colleagues to work and learn together.	*M:RFTS* consisted of three face-to-face sessions (over a two-three month period) with online sessions between. The face-to-face sessions consisted of teachers working together to learn and discuss the assessments and strategies.

SPD needs to provide for opportunities for participants to observe, experiment, be mentored, and reflect.	*M:RFTS* provided teachers with strategies to use with their children. Online modules were available to review. Online coaching was consistently available to provide support or clarification. Teachers were expected to reflect on each of the four online required modules.
SPD should be grounded in theoretical and philosophical bases that provide a systemic, structured, coherent program.	*M:RFTS* was grounded in cognitively appropriate strategies. The focus was on the role of play in an early childhood learning environment. *M:RFTS* focused on Math Talk in the classroom.
SPD should respond to an individual's experiences, background and current role.	*M:RFTS* provided current early childhood instructors, assistants and administrators with strategies and a common mathematical language that could be shared with colleagues and parents.
SPD should address both mathematical content and mathematical education.	*M:RFTS* provided teachers with strategies to work with the mathematical content areas of: *Number Words and Numerals*, *Counting and Early Arithmetic*, *Grouping, and Subitizing*.

As can be seen in the table above, the project was facilitated through "a blended model of online and face-to-face professional development opportunities, instructional materials, and coaching support for "cohort" teams of early childhood educators and administrators" (Nugent, Antola Crowe, Wolffe, Hinnen, 2017, pp. 54-55).

Methodology

Since the inception of this SPD, multiple forms of data have been analyzed and reported to the local *United Way (*Wolffe, Nugent & Antola Crowe, 2013, 2015, 2016). Teacher responses to the SPD have been reported and scrutinized through quantitative and qualitative analyses. The data used in this article was gathered from the teachers in the 2016 cohort. The participants, the instrument for data gathering, and procedures will now be discussed.

The participants in this study were early childhood teachers, teaching assistants, administrators, and a local university professor. As in previous cohorts, participants responded to a call that was sent out to all practitioners in the local early childhood community. The cohort consisted of fourteen participants. One of the researchers took part in this cohort as a participant observer. This was a purposeful decision so that the research team could gain a more thorough understanding of the demands and experiences of a participant in a cohort. The data from the researcher was not aggregated with the rest of the cohort data to keep the data focused on early childhood educators. All participants were required to conduct a screening process (pre- and post-screening) on at least five children in their classroom. In addition, the participants were required to attend three face-to-face sessions, each one lasting an hour and a half. In the first session, participants were introduced to the instructors

and the exclusive online site where the professional development modules were housed. Participants also received materials and instructions on how to conduct the screening process.

Before the second session, participants were required to watch the first two online modules (Andrews, 2012). Note that these modules are not available to the public. These modules are titled: *The Role of Play in the Development of Mathematical Competence* and *Intervention in Number*. In addition to watching the modules, participants were required to fill out a *Math: Right from the Start Online Professional Development Module Reflections* survey (See Table 2) for each module watched (Andrews, et al., 2013). Participant responses to the questions on the survey were collected at the beginning of the session. During the second session participants discussed insights and issues related to administering the screener and materials in the first two modules. Module three: *Talking about Mathematics in Preschool* and Module four: *Grouping Numbers*, as well as the corresponding *Math Module Reflection* survey were required before the start of the third session. Participants also brought the post-screening results to the third session. This third and last face-to-face meeting was instrumental to the project implementation, as participants were able to voice any remaining concerns or questions about implementing the instructional materials. They were also able to share stories of successes and challenges related to the curriculum implementation.

The instrument used in this qualitative study was the *Math: Right from the Start Online Professional Development Module Reflections* survey (Andrews, et al., 2013). Validity of this instrument was established by comparing the purpose of survey questions identified by authors and then as verified by outside experts (Wolffe, Nugent, & Antola Crowe, 2013). In addition to demographic questions, participants were asked to reflect on topics related to the modules that were viewed. Table 2 presents the prompts given to the participants.

Table 2: Questions on Math Module Reflections Survey (Wolffe, Nugent, & Antola Crowe, 2013)

1. Please list 2-4 key ideas that were covered in this module. Include a brief description of each idea.   (Sample answer: Listen to the children and expand their thinking by using math talk.)   Note: These ideas can be related to the math content, such as Counting and Early Arithmetic; instructional ideas, such as using the Numeral Track, playing "Hello to the Floor," rote counting (starting at 1 and going as high as you can go, etc.), or ways to assess child's progress.   2. What affirmations, insights, applications, and/or new instructional learning occurred as a result of watching this module? Please give reasons for affirmations, insights, applications or new learning. (Sample answer: I will have the students put blocks away on shelves rather than tubs to encourage classification and problem solving. I will actively be a part of the centers by expanding children's thinking, exposing them to math vocabulary, and really listening to and observing their interactions.)   Note: If you do not believe you learned anything of significant value, please say so and explain why.   3. List new ideas that you will put into practice as a result of watching this module. (Sample answer: I will make a list of math vocabulary as my reference and use while interacting with children during center time.)   4. Identify any topics covered in this module that you would like to learn more

about. (Sample answer: How to share math tips with parents.)

After the instructors read through the reflections, the names and identifying information were removed from the documents before forwarding to the researchers.

Once the research team received the *Math: Right from the Start Online Professional Development Module Reflections* survey (Andrews, et al., 2013), the data were analyzed using the coding system developed in the fall 2013 (Wolffe, Nugent, & Antola Crowe, 2013). Table 3 shows an example from the spring 2016 data that demonstrates a particular code.

Table 3: Categories and Codes

Categories		Code	For example, this code was used when a participant stated:
Encouraging Thinking	Encouraging thinking	ET	Children begin to make greater strides in math when they begin to talk. Between the ages of 18 mo-2 yrs. They count and rote counting begin. They start using number words such as "I'm first", "I had it first" 25M3-4Q1
	Encouraging Thinking Communications	ETc	"Math talk" is important to mathematical thinking and if a child is not able to verbally express their mathematic thinking, a peer with those skills could be used to model that for the student 31M3Q1
	Encouraging Thinking Questioning	ETq	I also need to audit our center spaces to make sure there is enough room for them to further their exploration and thinking. 3M1Q2
Instructional Ideas	Specific	Is	Rote counting is very important 15M2Q1
	Integrated	Ii	I did not realize when you use the books with math you [have integrated] literacy 24M3Q2

Resources	Time	Rt	I will find two more times to rote count during the day. I already count several times with the situations don't allow us to count high enough. M2Q3
	Space	Rs	Count beyond the teens and count high and often while walking to and from places. 21M2Q1
	Materials	Rm	I will make a list of relatable numbers to be used by students in the reading and housekeeping centers to encourage more natural use of numbers in their environment and a resource they can pull from 10M1Q2
Teacher Role	Metacognition	Tm	I will be looking for more chances to add math to centers like art and blocks and act on those chances in more specific ways. Circulate more and teach. 10M1Q3
	Observer	To	Really looking at playtime to find math. I will be a part of center time, really observing and participating to expand children's thinking. 6M1Q2
	Parental Context and Communications	Tp	How could I parents know the importance of math during early years. 16M2Q4
Student Development	Social Emotional Physical	SD	With preschoolers, using the same patterns is helpful for them to learn subitizing. Enough exposure to those same patterns lead to the assurance of knowing what pattern tells them! 42M4Q1
Future Needs	Parents	Fp	How to address the importance of play in their child's learning 8M1Q4

	Self-development	Fs	How to encourage ways children can count on their own at school and home 11M1Q4
Additional Codes	Collegial connections	CC	The information in this module as a whole gave me fact based evidence to present to my co-teacher to encourage her to use more music and movement to instruct. I presented a brief discussion and used the book provided how it could benefit our class. She has agreed to try some ideas 31M3Q2
	Parental Connection	PC	No comments coded PC in spring 2016
	Un-assessable	Ua	All of the topics are all useful in many ways 25M3-4Q4

In scrutinizing the data, the researchers observed that the code of *Tm: Metacognition* occurred quite frequently in the participants' responses. Metacognition, the ability to think about one's thinking also includes knowing one can make a difference, flexibility in thinking, continuous improvement, consciousness, and interdependence of acknowledging and sharing relationships with others (Costa & Garmston, 2002). Due to a high percentage (ranging from 75 percent – 97 percent per cohort) (Wolffe, Nugent, & Antola Crowe, 2013, 2015, 2016) of *Tm* responses in the earlier data, researchers wanted to investigate to see if these data indicated a transition from a peripheral early childhood practitioner towards a more informed, core early childhood practitioner.

Findings

When scrutinizing the 116 *Tm* coded data from the spring 2016 cohort, researchers developed three categories that reflect the thoughts of a practitioner. The three categories consisted of: *Periphery of CoP* (a practitioner at the periphery of the CoP), *Transitioning in a CoP* (practitioner in transition from the periphery to the center of the CoP), and *Center of CoP* (a practitioner at the center of the CoP). To help code each piece of data, researchers established parameters to define and cluster the data into aforementioned groups. For example, statements that were more general, while still showing the beginning of an opening of their world were coded as *Periphery of CoP*. Statements that were coded as *Transitioning in a CoP* showed a disequilibrium or disconnect between their current practice and plans for future practice. They exhibited questioning, embracing changes or demonstrated changes in their current practice. Lastly, a statement that incorporated knowledge, attitude, and practice was considered a *Center of CoP* statement. Some other examples of *Center of CoP* statements were those that: exhibited deeper pondering, eloquence or articulation; illustrated bridges or connections among concepts;

showed a holistic effect of teaching and learning; recognized that being visible to children is essential; valued active engagement; recognized, accepted, and justified a change in practice; embraced collegiality; showed clearer intentions/intentionality; were more anchored in the practice of teaching; transferred concepts to similar environments (ie. professional and personal); and exhibited other best practices.

Of the 116 pieces of data, 35 were considered to be comments made that represented the viewpoint of a person in the periphery of the CoP, 31 were coded as comments representing a transitional point of view, and 50 were considered to be comments representing the center of the CoP viewpoint. Illustrative examples of each of the three categories are shown in Table 4.

Table 4: Illustrative Examples at Different Points in the CoP

Periphery of CoP
- My head is spinning with ideas to use the "cups" in the centers...7M1Q3   - One of the key ideas when using number line, do not use zero…actually start counting we all start at one and not zero. 13M2Q1,2   - Arithmetic skills improve when a child can subitize. 69M3Q2   - Ask more why, who, how, what, when, where questions 43M3Q3

Transitioning in CoP
- Instead of letting children just build block towers, let them guess how many blocks they can stack before it falls down. 2M1Q2   - I will be looking for more chances to add math to centers like art and blocks and act on those chances in more specific ways. Circulate more and teach. 10M1Q3   - So many of the ideas (grouping, subitizing, finger patterns, and temporal patterns) are important skills. Coming from the junior high world, some of these skills were new to me. I can see where the lack of foundational knowledge can hurt a child moving forward. 27M4Q1   - I will continue using chants, songs, poems and finger plays to include math language in my curriculum. I will search for more to enrich what we already do. 52M3Q2

Center of CoP
- I liked the idea of instead of telling a child "your turn is in 2 minutes for the block center. Ask him or her, "what will you do when you get your turn? This starts his or her imagination and gets them thinking and planning what he or she will work on once it's his or her turn. 54M3Q3   - Really looking at playtime to find math. I will be a part of center time, really observing and participating to expand children's thinking. 6M1Q2   - I realized I was limiting the children with our counting. The highest we counted before to thirty with the daily calendar. I realize now they need opportunities to count higher. I realize the importance of the visual

aspect of counting and number recognition and naming. For example, two dots under the two. I also realized 1:1 correspondence was not a focus and should be. 15M2Q2

- My family are avid dominoes players (almost every weekend). I will definitely bring some in to use with the children, to practice subitizing, and spatial patterning. 63M4Q3
- I have begun using math vocabulary such as greatest and least with my students. I have posted visual reminders such as "how do you know?" to encourage further thinking process…42M4Q3
- The more Math words we use with children early on (preschool and before) the better they will do in math when they get to school. Trying to fit math words into everyday conversations will increase the child's math knowledge… Say "I see you have two read cars and three blue cars". Or "I see that your red car is next to the blue one". Simple vocabulary words that help them learn math concepts… 45M3Q1
- Angela said, "The best way to teach math is through play"... For example, most recently in our pre-K classroom, the children have been interested in rocks. In most of the learning centers, activities around rocks have been set up…The children estimate how many rocks are in the jar daily and then count them. Now we are talking about a very large jar and very small rocks, but we have some children that, with the assistance of a teacher [ZPD], have counted out over 300 rocks. As they count that number out, they look at the jar and see what the comparison is, are there still a lot more? Can we keep counting? Should we use smaller jars and count 300 into each jar and then we can add how many jars of 300 we have? This is a great example of how we incorporate math and reasoning into just one area of learning. 5M1Q2

Conclusion

The work of educators, researchers (Burns, 1998), and teacher educator lore expresses a societal concern that early childhood educators exhibit math anxiety that does not benefit children in their self-efficacy beliefs and growth mindset (Dweck, 2006) as capable learners of mathematics. This study showed that successful and intentional professional development can, indeed, change the way teachers think about a variety of things. Among these issues are the learning environment, the curriculum, intentional connection making, teacher math talk, self-identity, and awareness of oneself as a professional teacher. This study found a shift in teacher thinking as marked by reflective comments made on classroom practices in the continuum of superficial to thoughtful reflection. Another continuum showed movement from disparate pieces of information and knowledge to a richer and holistic understanding of how children's lives are being influenced in everything that teachers do in their intended and experienced curriculum.

As teachers participated in the professional development, the data showed a movement from the periphery of the CoP, through a transitional phase, towards the center of a CoP in early childhood classrooms. This center was marked by an emergence of a perspective that utilized teachers' knowledge base, their practical pedagogical knowledge, their understanding and appreciation of the power of play for young learners, and an appreciation of the way they see their professional teacher identity. This identity clarification is anchored to the social-emotional

competencies, positivity of a teacher, and discovering the persevering nature of a growth mindset (Goleman, 1996, 2006; Frederickson, 2009; Dweck, 2006; Duckworth, 2016). While being an integral part of the center of a CoP, teachers report realizations, discoveries, and additional interpretations of what they can do in their classrooms to support developmentally optimal experiences for children. In Table 5 we list factors and characteristics seen in the center of a CoP.

Table 5: Factors and Characteristics at the Center of a CoP

Factors at the Center of CoP	Characteristics
Learning environment	Purposeful design of the classroom activities support learning through play, children's most natural way of learning Allow time for observation of children's play and language use Rich variety of purposeful materials supporting mathematical concepts Using all parts of the learning environment (circle and center time, outdoors, transitions, home environment etc.)
Teacher talk...math talk	Terminology "math is everywhere" Rich language used by making connections to children's prior learning Using children's experiences to reiterate mathematical concepts and language Encourage natural conversations, challenge children's thinking
Intentional Curricular integration	All subject areas are and can be connected (Math is everywhere) Children working together can utilize the ZPD (Vygotsky, 1978) Encouraging thinking while engaged in activities Integrating sensory experiences Using the arts to deepen mathematical experiences
Connections	Holistic view of children's development Observing children thoughtfully and listening to their interactions Encourage children's natural interests Connecting with other teachers to share triumphs and challenges.
Teacher identity and Professional Awareness	Social-emotional awareness and climate conducive to sharing Awareness of growth-mindset and grit in learning Metacognition matters and aids growth both in professionals and children

	Pride of integrating knowledge and pedagogy, interactions with other professionals in the center of CoP Both reflection-in-action and reflection-on-action (Schön, 1987) support transition to the center of CoP Embracing intentional change

Further investigation of this shift in teacher thinking would be interesting to future researchers. Further scrutiny of the CoP center and periphery would be useful. For example, exploration through focus groups of teachers could be designed to scrutinize what makes a significant difference in their experience as a teacher participating in the SPD. Some questions to investigate further are: 1) What would best facilitate the transition from the periphery to the center, 2) What significance is this transition in a cohort, and 3) What changes in self-efficacy/math anxiety levels occurred?

A body of research literature underlines how important it is for teachers to participate in an ongoing and meaningful professional development (Ingersoll & Strong, 2011, Loucks-Horsley et al., 2003). Since Mathematics is an area where anxiety and fear have been shown to affect the quality of teaching and the results of student achievement (Burns, 1998), the supports through CoP become imperative in creating a cadre of confident, competent, and collaborative early childhood professionals. An SPD experience includes time spent with metacognitive questions and discussions with colleagues in an engaging and non-threatening atmosphere (Clements, 2004). In this study, the ECE teachers did become more intentionally aware of their own power to effect learning in children. The process of the teachers becoming more thoughtful and deliberate, inspired them to promote pondering and reflection with children as a tool for supporting the optimal development of all children in their classrooms.

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TEACHER EDUCATION IN THE TRUMP ERA:
THE ROLE OF MULTIPLE MEASURES
UNDER DEREGULATED TEACHER EVALUATION AND ACCOUNTABILITY
by
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Abstract

Trump's education policy agenda remains largely undefined: While he has pledged to advance local control and deregulation, those promises have not been realized. This paper explores how educator preparation programs can navigate shifting expectations for in-service educators and prepare candidates for reformed and deregulated contexts. We present findings regarding the integration of reformed measures of teacher effectiveness into preservice teacher field experiences at three major universities in Colorado. Results suggest that preservice teachers were open to feedback from multiple measures, but critical of centralized rubrics and external reviewers' ability to contextualize their unique setting. Results also suggest that exposure to the multiple frameworks and external evaluation protocols prepared preservice teachers to enter the current policy climate in the state, thereby creating critical consumers of evaluation data. Preparing candidates for shifting expectations and reform is likely to become an increasingly important skill in an evolving and potentially deregulated policy context.

"We must fix our education system for our kids to Make America Great Again" (Trump, 2017)

On January 20, 2017, Donald J. Trump was inaugurated the 45th president of the United States. Both before and after the inauguration, education scholars, teachers, professional organizations, think tanks, and the popular media have speculated about the impact the new administration will have on education policy writ large and on teachers and students across the country in particular. Nevertheless, what is known about education policy in the Trump era remains limited.

In his first 100 days in office, Trump accomplished less than his previous two predecessors, who made significant progress on No Child Left Behind (NCLB) and the American Recovery and Reinvestment Act, including the multibillion-dollar Race to the Top (RtT) grant program, respectively (Ujifusa, 2017). By comparison, Donald Trump's major accomplishments seem limited and littered with controversy: He appointed a highly contested Secretary of Education, Betsy DeVos, whose confirmation to the cabinet was the first in history decided by a tie-breaking vote from the vice president (Heutteman & Alcindor, 2017). He employed the rarely invoked Congressional Review Act to overturn regulations related to accountability under the Every Student Succeeds Act (ESSA) and the effectiveness of teacher preparation programs stemming from the Higher Education Act (Ujifusa, 2017; Brown, 2017). He quashed guidance regarding safe access to bathrooms for transgender students, issued by the Department of Education under Obama's administration (Ujifusa). Via Executive Order No. 13791 (2017), he sought to investigate federal overreach within

the Department of Education by requiring DeVos to examine whether "regulations and guidance documents comply with Federal laws that prohibit the Department from exercising any direction, supervision, or control over areas subject to State and local control" (§ 2b). While he has pledged to make large changes – reducing the budget to the Department of Education by over $9 billion and increasing funds earmarked for school choice programs – those promises remain unrealized.

Even his notorious twitter feed remains relatively silent on substantive issues related to education. As of August 28, 2017, the website *Trump Twitter Archive* catalogs nearly 32,000 tweets. Of these, just 30 included the word "education" and only 20 mentioned "teacher" (Trump Twitter Archive, 2017). In contrast, he tweeted "Hillary" 818 times and mentioned "Russia" and the "wall" nearly two-hundred times a piece (200 and 193 times, respectively). The tweets that do focus on education reveal little more than things President Trump dislikes, including the Common Core State Standards and the Department of Education (Trump, 2016a; Trump, 2015). He often argues, "[w]e need to fix our broken education system" (Trump, 2016b), but he has provided little detail about how he intends to do so. With this limited information, it does seem clear that the federal education agenda under Trump will represent a departure from the past two administrations – likely with an increased emphasis on local control and choice. Beyond this limited information very little is known and poses the important question: how can education prepare for potentially profound changes in the near future?

The confluence of policy shifts—both from the last decade of education reform and the potential changes under the Trump administration—thrusts teacher education programs into a unique space, where teacher educators must prepare candidates for a largely undefined policy climate. As such, it is imperative that we consider: How can we successfully position preservice teachers for the immediate policy context while simultaneously laying a foundation for potential deregulation under the Trump administration? In this paper, we focus on one of the most significant changes to K-12 teacher policy – the rapid expansion of educator evaluation reform, linked to accountability and the measurement of student growth. We present results from a pilot study across three teacher education programs in Colorado that exposed preservice teachers to multiple measures of evaluation data, aligned to the current policy climate in the state. We conclude with a discussion of the importance of preparing candidates who view themselves as critical consumers of education policy in general and evaluation data in particular, especially in an evolving and potentially deregulated policy context.

Education Policy Leading into the Trump Administration

Evidence from the last 50 years suggests that the policies and educational philosophy of the federal government do have very real consequences for educators and schools and districts. Prior to Trump's inauguration, education policy reform was largely characterized by a steady progression of increased testing, centralization of curriculum, and punitive accountability measures. This shift can be traced to the Johnson administration's 1965 landmark Elementary and Secondary Education Act (ESEA), which included a requirement for annual assessments for all schools receiving Title I funds (Haertel & Herman, 2005). George W. Bush's reauthorization of ESEA (NCLB) intensified a focus on assessment for accountability by requiring increased testing and higher-stakes accountability measures to monitor school and district performance, assign designations to schools failing to meet Annual Yearly Progress (AYP), and leverage an increasing series of sanctions to "failing" school (Fritzberg, 2004; Haertel & Herman, 2005). The inclusion of sanctions for school

performance failure was unprecedented in prior versions of ESEA and other federal education policy.

Obama's education agenda did little to change the arc of the trajectory, particularly his flagship initiative, the $4.35 billion RtT grant competition, that incentivized states to adopt four reform agendas including (a) Common Core standards and assessments, (b) data systems, (c) school-turnaround efforts, and (d) teacher and principal evaluation linked to student performance (U.S. Department of Education, 2009). Together with ESSA, Obama's policies increased the rate of adoption of the Common Core curriculum and associated tests—PARCC and Smarter Balanced—and triggered the passage of new educator evaluation laws across the country. States passed educator effectiveness laws at an unparalleled pace: By 2015, 45 states had adopted policies that required student academic growth as part of teacher evaluations and radically altered K-12 teacher evaluation practices and protocols (Doherty & Jacobs, 2015; Rowan & Raudenbush, 2016).

Framework

This research is informed by two scholarly traditions: (a) Research and theory regarding the role and function of teacher education, including the growing need for direct connections to the policy climate in K-12 education, and (b) research regarding the evaluation of teachers and the impact of evaluation data on practice. The Role of Teacher Education

Teacher education programs have come a long way since the days of the Normal School. As early as 1839, elements of teaching methods, subject area content, and education foundations were embedded in programs, and remained consistently in place through today (Helton, 2008). The introductions of Pedagogical Content Knowledge (Shulman, 1987) and later Technological and Pedagogical Content Knowledge (Mishra & Koehler, 2006) into teacher education programs have helped shape philosophies and conceptual frameworks of the programs by shifting away from teaching about the importance of content to the importance of teaching about how that content is taught.

New initiatives and other outside influences continue to alter the work of teacher preparation programs to meet evolving definitions of high-quality teachers. The standards and accountability movement, the decline in teacher education program enrollment and completers, the K-12 reform agenda of both the left and right, and the teacher effectiveness movement all have significant implications on the direction of teacher preparation. In particular, there has been a dramatic and rapid national decline of teacher education program completers since 2011: Between 2011 and 2014, the number of newly trained teachers fell by almost 20 percent with nearly 50,000 fewer educators completing a program (241,401 in 2011 to 192,519 in 2014) (www.title2.ed.gov). This decline in enrollment and completion may be linked to the public discourse around teaching, particularly given the high-profile discussion of depressed morale and increased workload expectations (American Federation of Teachers, 2015; Carroll & Foster, 2010).

Despite these changes, there is limited research on intentional efforts to connect the education policy reforms of the last 50 years to teacher education – in part because teacher preparation systems often function distinctly from K-12 teacher reforms. While most institutions of higher education are not yet required to use the same measures of effectiveness for teacher candidates that are used in K-12 schools, most teacher education programs and faculty recognize that preservice teachers will enter a field with increasingly complex evaluation systems utilizing multiple measures. Therefore, pressure is mounting for programs to teach in this climate of educator effectiveness reform; districts are pressuring teacher education

to prepare candidates that will understand the systems in place for in-service teachers and they want access to data that will help them identify and recruit preservice teachers who are likely to have a positive impact on student outcomes. But, there is limited research on preparing teachers to teach in and negotiate these policy contexts. This research is necessary, however, to prepare teacher candidates that stay in the profession, advocate for research-based reform, and can adapt swiftly to the changing climate.

Teacher Effectiveness and Evaluation

Implicit in much of the educator effectiveness research is the rarely tested hypothesis that measuring preservice teacher effectiveness with a larger, more robust collection of measures can ultimately improve instructional practice and positively affect student outcomes (Papay, 2012; Hill & Grossman, 2013; Kane, McCaffrey, Miller, & Staiger, 2013; Herlihy et al., 2014). Education policy researchers have only recently begun to explore those questions. Figure 1 presents the hypothesized relationships between teacher observation, data access, feedback, and improved practice that motivated this research. This framework incorporates the multiple measures that are required in most localities, a nearly ubiquitous feature of evaluation reform across the country.
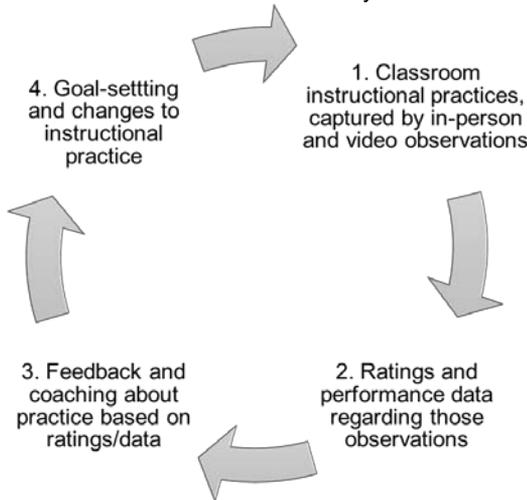
Figure 1. Pilot project theory of action

Although the direct relationship between the use of preservice educator effectiveness measures and improved teacher practice and student outcomes is under-examined, there are compelling reasons to believe that they may be related. The clear link between teacher practice and student outcomes suggests that if an intervention can improve teacher practice, it is also likely to improve student outcomes. Despite criticisms that the educator effectiveness literature is overly dependent on results from student standardized tests, researchers have found substantial differences in the impact of teachers on outcomes not captured by tests, including college attendance, classroom behavior, and future earnings (Chetty, Friedman, & Rockoff, 2011; Jackson, 2012). Therefore, if coaching on more robust measures of educator effectiveness can affect teacher practice, there is some precedent to expect that improved teacher practice can positively affect student outcomes.

Methods

In this research, we explore this connection between education policy and preservice teacher education in the context of evaluation reform. Given the unknowns that preservice teachers face in terms of evaluation metrics in the foreseeable future, we chose to explore the feasibility of a series of external measures that, coupled with coaching in how to use this feedback, could improve the quality of graduates and prepare them to function in a multifaceted evaluation environment. Through a collaborative pilot project across three institutions of higher education, entitled the Student Teaching Effectiveness Project (STEP), we sought to address this issue in two phases. First, participating preservice teachers piloted a series of external measures and participated in coaching regarding the utility and meaning that could be derived from that data to ultimately improve practice. Second, while not the subject of this paper, we conducted a series of quantitative and qualitative analyses of these measures as part of a suite of multiple measures that could better predict preservice and early career success. What follows is our logic model, description of measures, implementation, and early results from the pilot study.

Colorado Policy Context

The state of Colorado in many important ways represents a microcosm of the national policy landscape. Three characteristics are particularly salient to this research. First, Colorado has received negative national press because of the "Colorado paradox," where the state enjoys one of the highest overall rates of postsecondary degree holders, yet ranks near the bottom nationally for sending high school graduates to college (Deruy, 2016). Positive indicators in the state include near full levels of employment (Rusch, 2017) and increasing home values (Svaldi, 2017), both of which should indicate increased revenue for school districts and competition for top teacher candidates.

Second, similar to the national landscape, teacher education programs in Colorado are producing less completers annually (see Figure 2) with 24 percent fewer graduates between the years 2011- 2016 (Student Success and Academic Affairs Division, 2016). The shortages for teachers remain particularly acute in rural districts away from the fast-growth communities of the state, including Denver and other front range metropolitan areas (Mitchell & O'Neil, 2016).
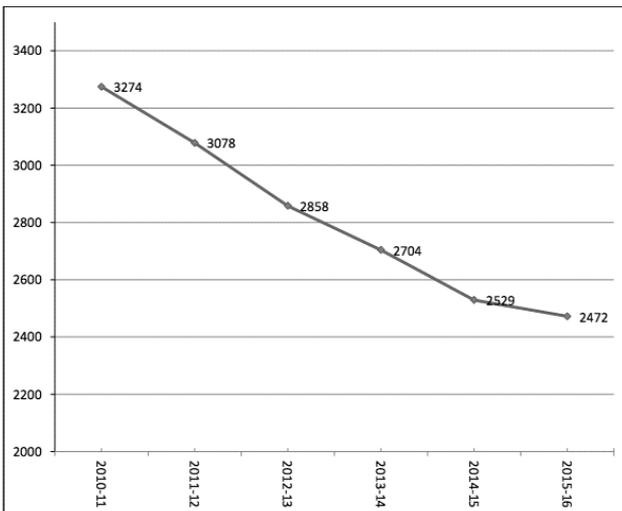
Figure 2. Colorado Teacher Education Completers 2010-2016

Finally, thanks in part to RtT, Colorado was an early adopter of educator evaluation reform, passing the Great Teachers and Leaders Act (Senate Bill 10-191) in 2010, which radically altered teacher evaluation in the state (Colorado Department of Education, 2014). Under the parameters of Senate Bill 10-191, the Colorado Department of Education (CDE) developed a state model system that integrates teacher effectiveness standards and the use of multiple measures of student outcomes under the umbrella of a common observation framework (Colorado Department of Education, 2014). Under the reformed evaluation system, all teachers are evaluated annually, and student academic growth data comprises at least 50 percent of each evaluation. Consistent with the national field, limited work has been done in Colorado to link teacher evaluation reform efforts to institutes of higher education or teacher education. In fact, teacher education programs in Colorado have historically used different standards to assess teacher performance than those used by local districts. Like most states, institutes of higher education and their accrediting bodies in Colorado operate distinctly from the state department of education, and not surprisingly, both entities created unique, disconnected evaluation systems based on locally determined standards.

Pilot Project Description

The ultimate goal for the STEP pilot was to explore how teacher education could integrate different indictors of educator effectiveness linked to the current policy climate in the state into preservice teachers' development. We focused on providing the teacher candidates with access to observational data about instruction, collected via video observation, associated external ratings, and student surveys. There was little desire on the part of faculty to concentrate on test-based metrics for evaluation, as the K-12 districts seemed over-reliant on benchmarking and alignment to PARCC. Furthermore, the well-documented technical and logistical challenges of attributing student growth to in-service teachers (Rowan & Raudenbush, 2016) are exacerbated for preservice teachers, particularly regarding appropriate attribution of students. Instead, we selected each data source in the pilot for its practical significance, prevalence in the field with in-service teachers, or demonstrated ability to improve practice and increase student achievement. In addition to examining the measures distinctly, we sought to explore how early and intentional exposure to the multiple measures approach mandated by the state could situate the work of teacher education and their graduates in policy changes around them, and how it could influence preservice teachers' readiness to enter the K-12 policy climate.

Project Sites

The three universities in this project – the University of Colorado at Boulder (CU-Boulder), the University Colorado Colorado Springs (UCCS), and the University of Colorado at Denver (UCD) – share many similarities in their approach to teacher education. They all offer rigorous course work, ample opportunities for field experience prior to the student teaching semester, and excellent support while in the field from experts in teacher preparation.

Still, these universities differ in numerous ways that allow for interesting comparisons. CU-Boulder is Colorado's flagship university, and as such, emphasizes research, preparing only 8 percent of the total teacher education completers (Mitchell & O'Neil, 2016). It serves a predominately-white population and most of its preservice teachers' field experience and student teaching opportunities reside in suburban communities. UCCS is a relatively new yet fast-growing four-year research institution, whose student population is largely comprised of undergraduates or individuals seeking professional licensures. UCCS's campus just north of downtown

Colorado Springs has expanded and developed quickly, mirroring the rapid growth in the city. Further, Colorado Springs is known for its large military population moving in and out of the region. Preservice teachers from UCCS have an array of opportunities for their fieldwork depending on school location, ranging from rural to urban. Finally, UCD – the largest of the three programs – is located in downtown Denver at the Auraria Campus, where it shares facilities and its campus with two other schools of higher education. Similar to CU-Boulder and UCCS, UCD is a research institution, but it also emphasizes opportunities that cater to individuals seeking alternative licensure. UCD's School of Education services a diverse student body, and most of its students' field experience and student teaching take place in urban schools in several of Colorado's largest school districts located in the Denver Metropolitan region.

Student teacher participants. In total, 57 preservice teachers participated in the STEP pilot distributed across the CU system schools. STEP participants were selected for maximum variability (see Table 1), particularly regarding school context. Students were placed in rural, suburban, and urban schools, serving varied student populations regarding socioeconomic status and percent minority. Preservice teachers represented all grades, but were mostly concentrated in grades 3-12. In total, there were 31 STEP preservice teachers working at the elementary level and 26 in secondary. They taught across content areas, including mathematics, English, social studies, and science; several of them also taught outside of the academic core, including foreign language and special education.

Table 1. STEP participant summary, by project site

University	Preservice Teachers *N*	University Supervisors *N*	Description of School Placements
CU-Boulder	19	4	Located in two predominantly-white suburban districts; one with significant ELL population
UCCS	21	5	Located in three districts with heterogeneous schools ranging from very rural to urban
UCD	17	5	Located in two of the largest districts; predominantly high-poverty and large percentages of students of color

Preservice teachers received data about their practice from several sources beyond the traditional methods used by the three participating teacher education programs. These included: (a) video recordings of instructional practice that were debriefed with university supervisors; (b) external ratings and feedback on those recorded videos using two rubrics – the nationally normed CLASS rubric and the rubric developed as part of the Colorado State Model Evaluation System for Teachers, and (c) surveys of instructional effectiveness from preservice teachers' students. Below, we describe each data source in detail, including a brief description of the policy relevance both nationally and within Colorado.

In addition to traditional in-person observations, preservice teachers in the STEP pilot conducted video observations by utilizing innovative technology that captures video from both the educator and the students. STEP preservice teachers recorded at least four video observations, spread throughout the student teaching semester. STEP teachers then debriefed those videos with their university supervisors in two ways: a traditional debrief similar to what occurs following an in-person observation, and an interactive real-time coaching session where participants

watched portions of the video together with their coach. This practice allowed them to see their teaching techniques in action and share their teaching with experts.

The STEP research team shared videos with trained external reviewers who evaluated the videos using two observational protocols: The nationally normed Classroom Assessment Scoring System (CLASS) rubric and Colorado's model evaluation rubric, the Rubric for Evaluating Colorado Teachers. Data from these observation systems were then shared back with both the preservice teachers and their university supervisors, as well as the STEP evaluation team and university project leads.

To assess instructional and classroom quality, students were rated by certified external raters using the nationally normed CLASS rubric. We selected this instrument both for its validity with in-service teachers (Hafen, et al., 2014; Pianta, Karen, Paro, & Hamre, 2008) and its easily understood domains: Emotional Support, Classroom Organization, and Instructional Support (Pianta, Karen, Paro, & Hamre, 2008). Furthermore, this instrument was a central component of the Measures of Effective Teaching (MET) study commissioned by the Bill and Melinda Gates Foundation – research that was of particular importance in Colorado because Denver was one of the original MET research sites and because of significant investments in the state from the Bill & Melinda Gates Foundation.

STEP teachers also received data from CDE's master raters based on the state teacher evaluation rubric for licensed teachers. The Rubric for Evaluating Colorado Teachers – developed by the Department of Education as an optional tool to support reformed Colorado evaluation systems under S.B. 191 – is currently in use to evaluate licensed teachers in 172 of the 178 districts in Colorado (Colorado Department of Education, 2016). The state rubric was used to evaluate how well preservice teachers used strategies that have been identified as critically important by Colorado's educational leaders and are currently used in Colorado in-service teacher evaluation. Because CDE developed the rubric for use in in-service teacher evaluation, it is under-explored with preservice teachers in Colorado. Nevertheless, the practical importance of the rubric once student teachers are working as certified teachers in a K–12 education setting cannot be overstated: Even if STEP graduates do not end up teaching in one of the 172 districts that use the state rubric, all district systems must be aligned to the standards that define its content.

Finally, all STEP preservice teachers were provided feedback from their students via Colorado's Student Perception Survey, a tool that is currently in use in schools across the state (Colorado Education Initiative, 2013). Colorado's Student Perception Survey provides data in four domains: Student Learning, Classroom Community, Student-Centered Environment, and Classroom Management (Colorado Education Initiative, 2013). Prior research has demonstrated a positive relationship between student ratings of teacher performance and student performance on content assessments in math, language arts, and reading (Colorado Education Initiative, 2013; Bill & Melinda Gates Foundation, 2010, 2012; Wilkerson, Manatt, Rogers, & Maughan, 2000).

For the STEP pilot, Colorado's SPS was administered in late spring, near the completion of the student teaching experience and after candidates completed the transition to full-time teaching. Surveys were administered by students' cooperating teacher or university faculty to ensure students felt safe responding about their experiences. Data were analyzed by an external vendor and reports were sent directly to preservice teachers at the end of the teaching experience.

To evaluate the piloted measures, we administered participant surveys to both preservice teachers and their respective university supervisors. These surveys were designed collaboratively by the research team and university partners and were

administered online using the Qualtrics survey platform. The instruments collected data about both the frequency with which participants used project components throughout the semester and the participants' experiences and impressions of the various components of the project.

The survey asked participants about the perceived utility and impact of various program elements, as well as the most and least helpful aspects of the STEP pilot. It also asked participants to share examples of innovative ways they used the STEP technology beyond the original intent of the project. Because we administered the survey following the completion of the student teaching experience and after the end of the semester, response rates are slightly lower than anticipated: 49 percent of student teachers and 79 percent of supervisors (see Table 2).

Table 2. Participant survey response rates

Participant Type	*N* Sent	*N* Received	Response Rate
Student teachers	57	28	49%
University supervisors	14	11	79%
Total	71	39	55%

Results

Figure 3 displays overall survey results. Promisingly for a pilot study, preservice teachers found debriefing video observations to be similarly useful as traditional in-class observations: One-hundred percent of STEP teachers found both methods at least somewhat useful, and 80 percent considered video observations very useful or useful, compared to 89 percent for traditional in-class observations. In contrast, preservice teachers did not find external ratings—from either the CLASS or State Model Evaluation System—to be highly useful or impactful on practice (only 33 percent considered CLASS and 27 percent considered the state rubric very useful or useful). This could reflect the fact that both instruments were new to them during this pilot. As states look to multiple measures of teacher practice and standardized rubrics, it seems advisable to begin teaching the rubrics as early as possible to increase buy-in on the constructs they measure and arrive at shared visions of quality teaching (Danielson & McGreal, 2000). Furthermore, our respondents were particularly dissatisfied with the receipt of ratings from the external reviewers. Together with the finding regarding the CLASS and state rubric, this may suggest that in order to prepare teachers for the evolving policy climate, the data and experiences may be most useful when teacher education programs embed them into existing experiences and encourage preservice teachers to explore them with trusted coaches.

|	Very Useful	Useful	Somewhat Useful	Not Very Useful
Traditional Observation Debrief	56%	33%	11%	
Video Observation Debrief	44%	36%	20%	
Student Survey Data	33%	39%	22%	6%
CLASS Rubric Data		29%	42%	25%
State Rubric Data		27%	46%	27%
Ratings from External Reviewers		15%	37%	44%
External Ratings Debrief	12%	15%	19%	54%
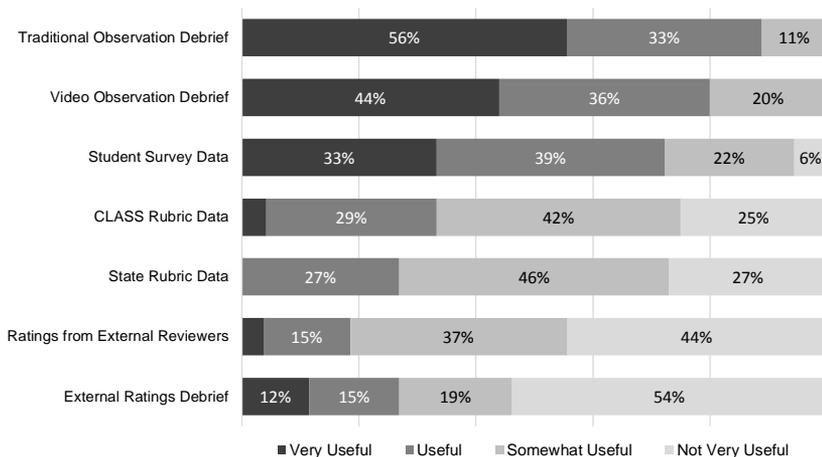
Figure 3. *Utility of project components, as reported by preservice teachers*

While the preservice teachers found little utility in either rubric, they seemed to value intuitively the input of their students: Ninety-four percent of respondents rated data from student surveys as very useful or useful – one of the most highly rated elements overall. While the use of student surveys has garnered some controversy with in-service teachers (Cavanagh, 2014; Cordoza, 2016), preservice teachers seem to find the data valuable. This suggests that early exposure to new paradigms of evaluation (e.g., the perspective of students versus school administrators) may shift the tenor of teachers' responses to that data. While our data is not robust enough currently to advance a causal relationship here, future research should explore how exposure to reformed systems in a teacher education program may affect overall perceptions of education policy and reform.

One additional finding emerges from the data regarding the perceived utility of the STEP components. Good coaching appears to drive perceptions overall: Preservice teachers' ratings of their in-class observations and debriefs with their supervisors are strongly and significantly related to their perceptions of the overall utility of video observations and the impact of video observations on practice. It would seem that good coaching is just good coaching, and may be hard to disentangle from the coach themselves, regardless of delivery. This is promising for the ability of video observation to potentially replace some traditional in-person observations. It also reinforces our suggestion above that these data are best integrated in teacher education programs when they are facilitated through trusted, high-quality coaches. Preparing teachers for real world variation in coaching and observation quality is likely an equally important skill as working with trusted mentors. Although STEP made use of trained observers and coaches, the ability of principals to differentiate along the quality spectrum is limited (Jacob & Lefgren, 2005) and Colorado leaves training on observation rubrics to the local districts. There is therefore a need for new teachers to engage in sense-making around potentially incongruent feedback and mixed-quality mentorship.

Analyses of survey results also confirm that preservice teachers used the technology in innovative ways beyond the scope of the project. When asked how they used their video recordings and/or the platform beyond the official project, students shared a multitude of innovative approaches, including (a) to allow themselves to watch and reflect on own practice, including some students who used it to specifically monitor classroom management; (b) to share and solicit additional

feedback from the cooperating teacher, school director/principal, or peers; (c) to share with K-12 students in order to demonstrate their progress and growth; (d) to share with a formal pedagogy class to solicit feedback on lesson planning.

Finally, we asked STEP preservice teachers to identify the most and least helpful components of the project. Table 3 presents the most cited elements for each. Again, these results reinforce the importance of good coaching from a trusted individual that understands context.

Table 3. Most and Least Helpful Program Elements Identified by Preservice Teachers

Most helpful elements	Least helpful elements
Debriefs with university supervisor or cooperating teacher	Wait time between video upload and receipt of video ratings
Debriefs with peers or trusted source to sense make ratings	Inconsistent quality of video comments from different raters
Self-reflection upon watching oneself teach	External reviews that did not know or understand teaching context

STEP participants began to position themselves as critical consumers of evaluation data in their critique of external ratings. For example, one student explained that their external reviewer critiqued their teaching based on a lack of differentiation for English Language Learners (ELLs) in the classroom. However, in this particular setting, there were no ELLs – only native English-speaking Latino/a students. This is certainly an extreme example – and it is also possible that there were students who required differentiation in the classroom – but it highlights the disconnect between external evaluations of teaching practice and the realities in many buildings. Promising for the pilot study however is the fact that rather than simply accepting the recommendations or analyses put forth by external raters, STEP participants were able to differentiate from helpful and unhelpful feedback, particularly with support from their university supervisors. While this warrants further research, developing this skill early in a teacher's professional experience could be extraordinarily helpful for new teachers entering a policy climate that remains largely undefined.

Discussion and Implications for Teacher Education

As noted above, there is a gap in the extant literature regarding how to prepare teacher candidates for the realities of the reform-oriented climate in K-12 schools (Stumbo & McWalters, 2011). This gap is intensified by the looming questions about reform under the Trump administration. We seek to provide our readers a chance to grapple with policy-relevant questions regarding the connection between the teacher labor market and the training of educators, and spark a meaningful conversation about the realities of teacher education today, particularly as it relates teacher quality, accountability, measurement, and the role of the state and national governments.

The process-product approach to teacher learning focuses on teachers pedagogical *actions* while the situative/sociocultural perspective focuses on learning only as it occurs within a larger historical, social, cultural, and political *system* (Russ, Sherin, & Sherin, 2016). Although one may perceive video observations and external ratings as simply further examples of the process-product approach – something that also infringes on teacher independence – our findings suggest that STEP

participants perceived the video recordings and observation data as a tool that sparked conversation between themselves and their supervisors. Ultimately, our findings suggest that their continued use will result in stronger preparation for preservice teachers and may better prepare candidates to enter the broader policy context surrounding K-12 teaching.

While there is much we don't know about education policy in general or teacher evaluation reform under the Trump administration, this framework may help prepare teachers for whatever the future holds. If the first hundred days of Trump's leadership are any indication, we are only beginning to see changes in education. Policy shifts in the Environmental Protection Agency and public lands seem to indicate a movement toward deregulation and local control (Eilperin, 2017; Superville & Colvin, 2017). In education, these shifts would be consistent with his limited presidential actions, the values he has shared via twitter, and his promises to minimize the Department of Education's reach and do away with the Common Core. If these trends extend similarly to educator evaluation, it is quite possible to see a step away from traditional metrics of success on common evaluation mechanisms and largescale testing aligned to the Common Core. In this case, it is incumbent on teacher preparation to provide skills for graduates to incorporate a variety of feedback forms to improve practice and, ultimately, student achievement. Should the status quo prevail, teachers must be able to use a combination of traditional and novel data sources to demonstrate success and alignment to expectations. This is especially important when traditional test-based metrics, such as VAM, are under scrutiny (Goldhaber, Goldscmidt, Tseng, 2013) and classroom scores are subjected to non-random failure to participate—opting-out (Bennett, 2016; Clayton, Winters, & Ecks, 2016)—but states require half of a teacher's evaluation to come from student learning (CDE,2014).

If we are to help teachers to continue to improve, systems such as STEP – where teachers receive feedback from students, coaching on reform-aligned data from trusted mentors, and in turn develop into critical consumers of feedback and evaluation metrics – could well be part of the path forward. As participants noted, debriefing with peers or other trusted sources in order to make sense out of ratings was one of the most important tools in improving practice. Clearly, this is an issue repeatedly addressed in prior research (Danielson & McGreal, 2000; Marzano, 2012), but often overlooked in the rush toward test-based accountability measures of NCLB and RtT.

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INVESTIGATING SOURCES OF LANGUAGE FEATURE COMPLEXITY IN INFORMATIONAL TEXTS ABOUT SCIENCE
by
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Abstract
Common Core State Standards called upon educators to expose learners to textbooks of varying complexity. Educators and educational systems responded, and now text complexity instruction is a centerpiece for U.S. school reform efforts. From content area literacy initiatives to new teacher licensure examinations, the Common Core model for judging text complexity predominates school and professional curricula in 40 of the 50 United States (Pearson & Hiebert, 2013; Carter & Lochte, 2017). Yet this model has raised concerns among functional linguists (Allington, MCCuiston, & Billen, 2015), and some of these concerns have fostered alternative criteria for judging complex language features in school textbooks (Fang, 2016b). This synthesis investigation supplemented Common Core evaluation profiles of four middle grade science texts with Fang and Pace's (2013) five alternative sets of criteria for language feature complexity. This alignment improved and specified Common Core language feature judgements.

The Common Core State Standards in English Language Arts and Literacy call for students to read complex texts to build content area knowledge. This way of learning is associated with close reading methods that direct students to pay attention to sources of complexity such as individual words, syntax, and layers of meaning that prompt readers to refer back to what is read. This kind of reading "...stresses critical-thinking, problem-solving, and analytical skills that are required for success in college, career, and life" (Common Core State Standards, 2017c, p. 1). Unfortunately, this is problematic for many students who want to achieve Common Core literacy goals. Two-thirds of U.S. adolescents struggle with textbooks, and economically disadvantaged students and English language learners are disproportionately represented in this population (National Center for Education Statistics, 2013).

Research has confirmed that close reading of text complexity has a positive effect on adolescents' ability to recall, confirm, apply, and evaluate information from content area textbooks (Shannahan, Fischer, & Frey, 2012). One recent study demonstrated that close reading has improved adolescent readers' perceived and assessed comprehension while generating five-fold increases in criterion-based content area test scores (Fisher & Frey, 2014). Such findings are robust and prevalent, but they do not fully explain the sources of text complexity that prompt reading comprehension. This knowledge gap has made close reading difficult for teachers and students who transact meaning with complex textbooks (Fang, 2016b). This synthesis paper investigated how this difficulty may be addressed.

Text Complexity and Literacy Transactions
Transactional literacy theory, more commonly known as reader response theory, argues that student encounters with complex texts are influenced by life experiences and prior knowledge (Bransford, Brown, & Cocking, 2000). Students' multimodal ways of knowing seek "transactions" with text complexity and teacher expectations (Kress, Jewitt, Ogborn, & Tsatsarelis, 2014). And so transactional

methods of teaching emphasize the importance of an emotional or "aesthetic" connection between reader, text, and task as essential to the meaning extracted from any reading experience (Barone & Eisner, 2011; Rosenblatt, 1978).

Instructional strategies informed by transactional literacy theory have yielded remarkable results. Decades of what are now known as reciprocal teaching studies have begun with reader-teacher dialogues among small groups of students. These dialogues generated questions, clarifications, summaries, and predictions that fostered relationships between the students' textbooks, prior knowledge, life experiences, and learning purposes. Instructional responsibilities were then gradually released to students who continued to prompt one another's critical reading. This transactional reading instruction has consistently increased struggling readers' comprehension and content area achievement by a grade level equivalent (Kucan & Palincsar, 2013; Ockzus, 2011; Rosenshine & Meister, 1994). For example, Shin and Krashen (2008) created transactional literacy opportunities each day for struggling sixth graders that included 25 minutes of library time, 80 minutes of self-selected reading, 45 minutes of content area instruction, 45 minutes of content area projects, and 25 minutes of teacher read-alouds. These students demonstrated greater content area literacy achievement than control groups, and the effect size for this achievement was equivalent to an additional year of learning.

At the turn of the twenty-first century, most school reform efforts focused on increasing reading achievement by examining reciprocal literacy transactions between readers and their teachers. More recent efforts, such as those associated with the Common Core State Standards, have focused on reader-teacher relationships with the third purveyor of literacy transactions—the author's text complexity (Hiebert, 2016).

The National Governors Association and Chief Council of Chief State School Officers (2010) reviewed research that calls for explicit instruction in language features that make texts inherently complex. Their findings have placed a premium on curricula that address these features (Hiebert, 2016). Right now educators in forty-two Common Core states are evaluating complex language features along with other areas of text complexity for text selection and literacy instruction (Allington, McCuiston, & Billen, 2015). This same influence is also establishing new requirements for initial teacher certification. edTPA licensure examinations in forty states now require teacher candidates to identify discourse and language feature demands as part of this performance assessment (Carter & Lochte, 2017).

Determinates of Language Feature Complexity

An author's use of language features within a text's words, phrases, clauses, and sentences is a crucial qualitative determinate of text complexity. For this reason, the Common Core State Standards in English and Literacy advocated a three-part model for determining text complexity that includes qualitative language feature criteria (Common Core State Standards, 2017b).

The first component of the Common Core model describes text complexity in terms of four qualitative attributes: 1) levels of meaning or purpose, 2) text structure, 3) knowledge demands; and 4) language conventionality and clarity. Language conventionality and clarity was later labeled as *Language Features* within the Common Core's Qualitative Measures Rubric for Text Complexity (Common Core State Standards, 2017a). In this way, language feature criteria became a substantial part of the Common Core model's qualitative dimension of text complexity.

Coupled with its qualitative dimension of text complexity assessment, the Common Core model also includes two more elements. A quantitative dimension of text complexity focuses on measurements of word length, word frequency, and sentence length to determine text complexity. ATOS, Reading Power, Flesch-Kincaid, Lexile, Reading Maturity, and SourceRater are six featured computer programs that quantify these measurements into readability scores. Finally the third part of the Common Core model includes reader and text considerations distinct to each reading experience. These text leveling criteria heavily rely on teacher judgments about phenomena associated with readers' knowledge, motivation, and tasks.

Limits of the Common Core's tripartite model for assessing textbook complexity have been readily acknowledged by its authors (Common Core State Standards, 2017b), as well as other text complexity researchers (Hiebert, 2016). These limitations begin with the Common Core's heavy reliance on teacher judgements for text leveling according to reader and task considerations. This reliance has rendered necessarily vague criteria for this third measurement construct since "…no one has conducted a direct validation of any of these leveling systems" (Pearson & Hiebert, 2013). Further limitations are associated with the unreliability of quantitative measures to identify text complexity within certain types of texts such as poetry, K-1 grade primer texts, and certain pieces of narrative fiction such as Steinbeck's *Grapes of Wrath*.

Various researchers have explained why quantitative measurements of text complexity are frequently problematic for teachers and students in many content areas (Allington, McCuiston, & Billen,, 2015; Fang, 2016b; Pearson & Hiebert, 2013). Readability scores only indicate text complexity. They cannot explain its *sources.* This knowledge gap between indicators and sources of text complexity makes it difficult for teachers and students to generate plans for improving content area literacy (Fry, 2004). However, qualitative examinations of language features can reveal significant sources of textbook complexity that can be learned and understood (Fang & Schleppegrell, 2010). Fang and Pace (2013) reviewed studies of textbook complexity and close reading to identify qualitative language features that are sources of text complexity. These researchers determined five categorical criteria for judging these sources (Fang & Pace, 2013, pp. 105-106): vocabulary, lexical density, grammatical intricacy, grammatical metaphor, and cohesion.

Fang and Pace's (2013) categorical criteria for language feature complexity can be identified, evaluated, taught, and learned. For example, Snow, Lawrence, and White (2009) taught high utility academic vocabulary within dense high school textbooks for 22 weeks, rendering comprehension and content knowledge gains equivalent to two years of incidental vocabulary instruction. Linking an author's grammar, sentence cohesion and meaning has also improved adolescents' comprehension of literature (Achugar, Schleppegrell, & Oteiza, 2007), quantitative disciplines (Bahls, 2012), and social science (Myhill, 2013). Fang (2016a, p. 334) demonstrated how authors' process descriptions (verbs), participant descriptions (nouns), and contextual knowledge (adverbs or prepositions) can help readers generate main ideas

The Common Core has identified only three categorical criteria for language feature complexity: vocabulary, conventionality, and sentence structure while Fang and Pace (2013) offer an alternate five category model. A summary of these two models is depicted in Table 1. Could an understanding of Fang and Pace's (2013) model for text complexity help teachers and students make better qualitative judgments with the Common Core's three categorical criteria for language feature

complexity? Does Fang and Pace's (2013) criteria help those using the Common Core identify other sources of text complexity that are concrete and reliable?

Table 1. Two Models for Sources of Language Feature Text Complexity

Sources of Language Feature Complexity Common Core Qualitative Measures Rubric *Criteria for Exceedingly Complex Text*	Sources of Language Feature Complexity Fang and Pace (2013) *Criteria Germane to Complex Texts*
Vocabulary: Exceedingly complex vocabulary within sentences is generally unfamiliar, archaic, subject-specific, or overly academic language that may be ambiguous or purposefully misleading.	Vocabulary: Complex vocabulary is marked by: • Specialized words and phrases that encapsulate key disciplinary concepts (p. 105). • High-frequency vocabulary with multiple meanings that acquire specialized meanings in a particular discipline or context (p. 105).
Conventionality: Exceedingly complex conventionality occurs when sentences are dense and complex, containing abstract, ironic, and/or figurative language.	Grammatical Metaphor: Complex grammatical metaphor occurs when atypical linguistic choices: • Present verbs as nouns or adjectives, as in *fail* to *failure* (p. 105). • Present nouns as verbs or adverbs, as in *sold in panic* to *panic- sell* or *panic selling* (p. 105).
Sentence Structure: Exceedingly complex sentence structure occurs when sentences are mainly complex with several subordinate phrases or clauses and transition words that often contain multiple concepts.	Cohesion: Complex sentence cohesion occurs when: • Personal pronouns (*she*, *they*, *it*) and relative pronouns (*this*, *that*) present numerous possibilities for subject referents (p. 105). • Pronouns are distanced from their subject referents by multiple clauses (p. 105).
	Lexical Density: Complex density is marked by: • Packing a lot of vocabulary with specialized meanings into individual clauses (p. 106).
	Grammatical Intricacy: Complex sentence grammar is marked by: • Long intricate sentences strung together with multiple subordinate clauses (p. 106).

Reviews of research about close reading and text complexity have found that qualitative criteria for language feature complexity, such as those provided within the Common Core model, can begin to address the need for reliable, concrete ways for evaluating text complexity (Fang 2016a; Shanahan, Fisher, & Frey, 2012),

especially for content area science texts (Halliday, 2004; Fang & Schleppegrell, 2010). This synthesis paper investigated possible alignments between what appear to be two different constructs for language feature complexity. Table 1 shows that the Common Core presents three categorical criteria for sources of language feature complexity while Fang and Pace (2013) present five. Similarly, the Common Core offers holistic, general criteria while Fang and Pace's (2013) criteria are anchored to more specific indicators. To determine the right relationship between these two measurement constructs, both were used to examine complex language features in texts about science.

Methods for Investigating Language Feature Complexity

The two researchers who conducted this investigation were a science educator and a literacy educator. Both had decades of experience in guiding middle school science and literacy instruction. They began the investigation by independently coding a 400-500 word passage from *Scar Tissue* (Kedis & Sloman, 1994) with Fang and Pace's (2013) five categorical criteria for language feature complexity. Then they came together to establish consensus. The researchers chose the *Scar Tissue* passage about a drug addicted rock star to deautomate their knowledge of English syntax. This method helped them achieve a meaningful consensus about their application of the Fang and Pace (2013) criteria, since neither educator had the prior knowledge needed to decode the text's drug culture vernacular (Lincoln & Denzin, 2012; vanDijk & Kintsch, 1983).

Next the researchers examined the Common Core's lone 500-600 word annotated informational 9-10 grade exemplar text, "A Most Terrible Sea." Using the Common Core's Qualitative Measures Rubric for Text Complexity, the educators coded this text's language features independently before establishing a consensus. The exceeding complexity of this text once again deautomated the educators' prior knowledge of English syntax, enabling them to establish consensus with the rubric's three categorical criteria for language feature complexity.

After this familiarization process, Common Core and Fang and Pace (2013) measurement constructs for identifying text complexity were tested. Would the categorical criteria provided by Fang and Pace (2013) render improved and specific information to the Common Core's qualitative judgements of language feature complexity? To investigate this possibility, four Common Core exemplar texts about middle grade science concepts were analyzed and profiled with both measurement constructs.

Analyzing and Profiling Grade 6-8 Informational Texts About Science

The four grade 6-8 science exemplars represented four different genres:

- the descriptive essay *Cathedral: The Story of Its Construction*;
- the historical narrative "The Evolution of the Grocery Bag";
- the encyclopedia entry "Geology";
- and the science report *Invasive Plant Inventory*.

These 300-400 word texts were located in Supplement B of the Common Core State Standards: English Language Arts and Literacy (Common Core State Standards, 2017d, pp. 96-99).

Each of the four exemplar texts was coded according to the Core's three categorical criteria for language feature complexity: vocabulary, conventionality, and sentence structure. Then the texts were coded according to Fang and Pace's (2013) five categorical criteria. The educators completed ten percent of their coding together. Then they completed another ten percent separately and compared results to confirm accuracy (Lincoln & Denzin, 2012; Petersen-Segrado, 2016). This qualitative analysis was then used to write two different language feature complexity profiles for each of

the four exemplar texts. Both types of profiles evaluated language feature complexity and were modeled after those provided in Appendix A of the Common Core (Common Core State Standards, 2017b, pp. 12-16). The resulting eight profiles were then compared to see if there were substantive differences between them.

Results

This investigation questioned the alignment between Fang and Pace's (2013) categorical criteria and those of the Common Core. It also questioned whether information from Fang and Pace (2013) could improve Common Core judgements. Then it questioned whether Fang and Pace's (2013) information would bring greater specificity to Common Core judgements. These questions were addressed by analyzing four different texts about science, rendering the eight language feature complexity profiles found in Table 2. Four of profiles followed the standard Common Core model. Four supplemented the Common Core with information from Fang and Pace's (2013) criteria, and this supplemental information is bolded in Table 2.

Three findings emerged from profile comparisons:
1) Fang and Pace's (2013) five categorical criteria for language feature complexity appear to align with the Common Core in ways that could improve or specify its judgements of language feature complexity.
2) Fang and Pace's (2013) distinct categorical criteria for grammatical metaphor and cohesion improved Common Core judgements about one of the four exemplar texts—the historical narrative text about science.
3) Fang and Pace's (2013) categorical criteria that equated with those of the Common Core rendered specific information that pinpointed sources of text complexity.

Table 2. Standard and Supplemented Common Core Language Feature Complexity Profiles

Standard Common Core Profiles Language Feature Complexity Qualitative Measures Rubric *Categorical Criteria for Language Features*	Supplemented Common Core Profiles Language Feature Complexity [Fang and Pace (2013)] *Categorical Criteria Germane to Complex Texts*
Historical Narrative Exemplar: "The Evolution of the Grocery Bag" (Petroski, 2003)	

Language conventionality is exceedingly complex, containing figurative, ironic and archaic language that is dense within each sentence. Vocabulary is very complex as the author uses overly academic language to describe paper grocery bags. The sentence structure is exceedingly complex with compound structures in each sentence, as well as more than two subordinate clauses in almost half of the sentences, to describe multiple concepts.	Language conventionality is exceedingly complex, including dense subject specific vocabulary that is repeated throughout the passage, and there are also atypical word choices in about half of the sentences that make the meaning of words grammatically abstract or figurative. Vocabulary is very complex with subject specific paper bag invention vocabulary, but the vocabulary is sequentially repeated at times in the passage to clarify its meaning. Sentence structure is also exceedingly complex with compound structures and an average of three subordinate clauses per sentence. The author also uses clauses and compound structures to define multiple concepts within each sentence encompassing nineteenth century history, paper bag construction, and scientific invention. The complexity of this text's sentence structure is also compounded by pronouns that are distant from their referents in four of the thirteen sentences.
Descriptive Essay Exemplar: Cathedral: The Story of Its Construction (Macauley, 1973)	
Language conventionality is very complex, including subject specific language in most sentences that is not figurative, abstract, or ironic. Vocabulary is very complex with subject specific medieval architecture vocabulary defining the elements and construction sequence of a cathedral. The sentence structure is also very complex with compound structures and several subordinate clauses within some sentences that typically do not contain multiple concepts.	Language conventionality is very complex, including dense subject specific vocabulary that is repeated throughout the passage and no atypical word choices that make word meanings grammatically abstract or figurative. Vocabulary is very complex with subject specific medieval architecture vocabulary, but the vocabulary is repeated throughout the passage to clarify its meaning. Sentence structure is also very complex with compound structures and an average of two subordinate clauses per sentence. However, the subordinate clauses and compound structures define singular concepts introduced in each sentence, and the few pronouns used in the passage are close to their referents.

Table 2 (continued)

Encyclopedia Entry Exemplar: Geology	
Language conventionality is very complex, containing subject specific vocabulary in most sentences that is abstract at times. Vocabulary is very complex with subject specific geology vocabulary that defines this field of study. The sentence structure is moderately complex with compound structures in each sentence but no more than two subordinate clauses within some sentences. Each sentence deals with only one concept.	Language conventionality is very complex, including subject specific vocabulary that is repeated throughout the passage and two atypical word choices that make word meanings grammatically abstract or figurative. Vocabulary is very complex with subject specific Geology vocabulary, but the vocabulary is repeated throughout the passage to clarify its meaning. Sentence structure is also moderately complex with compound structures and that typically occur in an independent clause with no subordinate clauses. The independent clauses and compound structures also define singular concepts introduced in each sentence, and all pronouns used in this passage are close to their referents.

Science Report Exemplar: Invasive Plant Inventory	
Language conventionality is very complex, containing a great deal of abstract, subject-specific language, with no figurative language, in almost all sentences. Vocabulary is very complex with a great deal of subject specific ecology vocabulary (but no ambiguous, figurative or archaic language) defining High, Moderate, or Limited categories of plant invasiveness. Sentence structure is also very complex with compound structures and at least two subordinate clauses within each sentence, but sentences are typically limited to one concept.	Language conventionality is very complex, including dense subject specific vocabulary that is repeated throughout the passage with only one atypical word choice that make a word's meaning grammatically abstract or figurative. Vocabulary is very complex with subject specific ecology vocabulary, but the vocabulary is sequentially repeated at times in the passage to clarify its meaning. Sentence structure is also very complex with compound structures and an average of two subordinate clauses per sentence. However, the clauses and compound structures define concepts introduced in each sentence instead of adding to them, and pronouns used in sentences are close to their referents.

Fang (2016b) reported that Common Core and functional linguistic constructs for measuring language feature text complexity appeared to be problematic. Yet this synthesis investigation found that Fang and Pace's (2013) categorical criteria can align with the Common Core in ways that can be seen in Table 3.

The alignment depicted in Table 3 indicates how Fang and Pace's (2013) categorical criteria for language feature complexity can improve or specify Common Core judgements. These improvements and specifications Categorical criteria that can specify additional information for Common Core judgements are bolded and placed next to their related Common Core criteria.

Table 3. Alignment of Two Models for Sources of Language Feature Text Complexity

Sources of Language Feature Complexity Common Core Qualitative Measures Rubric *Criteria for Exceedingly Complex Text*	Sources of Language Feature Complexity Fang and Pace (2013) *Criteria Germane to Complex Texts*
Vocabulary: Exceedingly complex vocabulary within sentences is generally unfamiliar, archaic, subject-specific, or overly academic language that may be ambiguous or purposefully misleading.	Vocabulary: Complex vocabulary is marked by: • Specialized words and phrases that encapsulate key disciplinary concepts (p. 105). • High-frequency vocabulary with multiple meanings that acquire specialized meanings in a particular discipline or context (p. 105).
Conventionality: Exceedingly complex conventionality occurs when sentences are dense and complex, containing abstract, ironic, and/or figurative language.	Lexical Density: Complex density is marked by: Packing a lot of vocabulary with specialized meanings into individual clauses (p. 106). **Grammatical Metaphor: Complex grammatical metaphor occurs when atypical linguistic choices:** • **Present verbs as nouns or adjectives, as in *fail* to *failure*(p. 105).** • **Present nouns as verbs or adverbs, as in *sold in panic* to *panic- sell* or *panic selling* (p. 105).**

	Grammatical Intricacy: Complex sentence grammar is marked by: Long intricate sentences strung together with multiple subordinate clauses (p. 106). **Cohesion: Complex sentence cohesion occurs when:** • **Personal pronouns (*she*, *they*, *it*) and relative pronouns (*this*, *that*) present numerous possibilities for subject referents (p. 105).** • **Pronouns are distanced from their subject referents by multiple clauses (p. 105).**
Sentence Structure: Exceedingly complex sentence structure occurs when sentences are mainly complex with several subordinate phrases or clauses and transition words that often contain multiple concepts.	

The bold print in Table 3 identifies how Fang and Pace's (2013) criteria can be distinct from, yet related to, Common core judgements of language feature complexity. For example, grammatical metaphor criteria are related to the Common Core's judgement about "overly abstract" or "figurative" language feature conventionality, yet these same criteria also provide distinct insights into how text complexity occurs when words are grammatically altered to create new meanings. Similarly, Fang and Pace's (2013) cohesion criteria is related to Common Core's judgements about complex sentence structure, but these same criteria also examine how text complexity is affected when authors use pronouns to unify concepts within a sentence.

Table 2 shows how Fang and Pace's (2013) criteria for language feature complexity improved the standard Common Core evaluation profile of the 6-8 grade historical narrative text about science. Within this Common Core exemplar text titled "The Evolution of the Grocery Bag" (Common Core State Standards, 2017d, p. 98), language features became more complex as the author used grammatical metaphor and cohesive complexity to describe multiple concepts within sentences. Grammatical metaphors that increased what the Common Core calls *conventionality* complexity occurred in half of the historical narrative's sentences. Similarly, the distance between pronouns and their referents added to what the Common Core calls *sentence structure* complexity in about a third of this exemplar's sentences.

The author of the historical narrative exemplar, "The Evolution of the Grocery Bag", chose to present things as verbs or adverbs, or processes as nouns, in half of the text's sentences (Fang and Pace, 2013, p. 105). This atypical way of constructing words occurred when the noun *bottom* was verbalized into the word *square-bottomed* to describe grocery bag construction in the text's third sentence (Common Core State Standards, 2017d, p. 98). Similarly, the verb *to operate* is nominalized into the noun *operation* in the eighth sentence of the text. Grammatically nominalizing verbal scientific processes like *operating* enable these processes to be modified as if they are nouns, thus the author's description of "…the machine's *operation*" (p. 98). This kind of analysis generated a supplemented profile that demonstrated how the categorical criteria Fang and Pace (2013) call *grammatical metaphor* improved upon the Common Core's standard evaluation profile for this text.

Another categorical criteria Fang and Pace (2013) call *cohesion* was also not present in the Common Core's standard language features evaluation profile. Cohesion unifies identical subjects with personal pronouns (i.e. *he, she, it*) and relative pronouns (i.e. *this*, *that*) to make a text hang together. Cohesive complexity increases with the number of pronouns an author uses, as well as the distance an author creates between pronouns and their referents (Fang and Pace, 2013, p. 105). The underlined and bolded pronoun their in the eighth sentence of the Common

Core's historical narrative exemplar, "The Evolution of the Grocery Bag", illustrates this problem of referential distance in its description of grocery bag construction. The clauses in this sentence are identified with backslashes:

> According to Wolle's own description of the machine's operation, "pieces of paper of suitable length are given out from a roll of the required width, / cut off from the roll/ and otherwise suitably cut to the required shape,/ folded, their edges pasted and lapped,/ and formed into complete and perfect bags. (Common Core State Standards, 2017d, p. 98).

The grammatical referent for the pronoun *their*—"pieces of paper"—does not appear until a reader looks back over three clauses that each communicate different concepts. This *referential distance* demonstrates a lack of cohesion between the multiple ideas within this complex sentence. In this way, Fang and Pace's (2013) distinct measurement construct of *cohesion* improved the Common Core evaluation profile of sentence structure complexity for this historical narrative text.

The improved information grammatical metaphor and cohesion criteria provided to the Common Core's standard evaluation profile of "The Evolution of the Grocery Bag" exemplar text would be important to both teachers and students. Knowing that many sentences within this text contain words that are complex because their grammatical structure, rather than their specialized meaning, would direct readers and teachers to reference grammar texts rather than dictionaries to comprehend grammatical metaphors. Similarly, knowledge of cohesive referential distance can alert readers and teachers to control reading rates and utilize "check back" strategies for reading fluency (Pressley & Allington, 2015, p. 219).

Table 2 shows how Fang and Pace's (2013) equivalent criteria for language feature complexity specified standard Common Core judgement profiles for the remaining three 6-8 grade exemplar texts about science. Fang and Pace's (2013) categorical criteria for vocabulary, lexical density, and grammatical intricacy were remarkably similar to Common Core criteria. Yet the Fang and Pace (2013) criteria pinpointed potential challenges to comprehension that do not appear in the standard Common Core judgement profiles. For example, Fang and Pace (2013) limit their criteria for complex vocabulary to subject specific or general academic words with multiple meanings. These constructs specify the meaning of Common Core criteria about "generally unfamiliar," "archaic," or "overly academic" words. Similarly, Fang and Pace's (2013) criteria for grammatical intricacy—the categorical construct equivalent to what the Common Core calls sentence structure—closely examines clauses within sentences. Fang and Pace's (2013) criteria even calculate grammatical intricacy by dividing the number of clauses over the number of sentences in a text. This ratio specifically indicated the number of ideas Common Core exemplar text authors conveyed in each sentence. This method of averaging a complex language feature occurrence to pinpoint text complexity is also used to calculate lexical density as the average amount of complex vocabulary per sentence. These averages gave greater specificity to standard Common Core judgements about the complex conventionality of the remaining three exemplar texts about science.

Fang and Pace's (2013) categorical criteria that measure the complexity of vocabulary, grammatical intricacy, and lexical density language features equate with the Common Core criteria. Yet the specific information they add to Common Core evaluation profiles can be helpful for teachers and students. Knowing a text's average number of complex vocabulary or clauses per sentence helps readers and teachers develop accurate pictures of the language feature complexity they must

navigate together. This kind of text imaging pinpoints and prioritizes comprehension instruction needs (Pressley & Allington, 2015, p. 314).

For example, the Fang and Pace (2013) profile presented in Table 3 reports that Nagel's (2007) encyclopedia definition of "Geology" (Common Core State Standards, 2017d, p. 98) has an average of only two subordinate clauses per sentence. Because its complex vocabulary is repeated throughout the text, the Fang and Pace (2013) criteria can also calculate an average lexical density that suggests the Common Core's judgement of this text's conventionality as "very complex" may actually border on moderate complexity. This specific information can help the teachers and students who read texts like "Geology" pinpoint complex language features that will be prioritized for analysis and comprehension instruction. In this case, teachers and students would choose to examine the text's discrete Geology vocabulary before considering its complex sentence structure or conventionality.

Conclusions and Discussion

While Common Core and functional linguistic criteria for language feature complexity have demonstrable differences (Fang, 2016b), their alignment can also be useful teachers and students. Both Fang and Pace (2013) and Common Core's categorical criteria for vocabulary complexity were remarkably similar, and this particular alignment is important. Vocabulary is the greatest determinant of a text's inherent complexity (Beck, McKeown, & Kucan, 2013), and vocabulary criteria for both two models reinforce one another. Such findings should be reassuring to content area teachers and students even as efforts towards greater alignment between functional linguistics research and Common Core assessment of textbook complexity proceed.

The ability of Fang and Pace's (2013) five categorical criteria for language feature complexity to supplement and provide additional information for Common Core judgements is also important. Descriptions of language feature complexity by the Common Core, as well as other models of text complexity assessment, can often seem too general and vague to help teachers and students select appropriate texts and plan content area literacy instruction (Pearson & Hiebert, 2013; Fang, 2016b). However, the supplemental information provided by Fang and Pace's (2013) criteria for grammatical metaphor and cohesion improved the Common Core's judgements of the historical narrative exemplar text about science, "The Evolution of the Grocery Bag" by Nagel (2007). Comparison of standard and supplemental complexity profiles across the remaining three Common Core exemplar texts about science demonstrated how even the Fang and Pace (2013) categorical criteria that equated with standard Common Core judgements provided additional insights that can be helpful for teachers and students. Averages of complex vocabulary and clauses per sentence, as well as specific definitions of complex vocabulary, made sense of Common Core judgements about the language feature complexity within these texts.

This investigation's findings illustrated how functional linguistic measurement constructs can help teachers and students use the Common Core's Qualitative Measurement Rubric to make improved and specific judgements about language feature complexity. As all four of the Common Core's categorical criteria for text complexity become supplemented and equated with systemic functional linguistic research (Fang, 2016b; Halliday, 2004), the practice of assessing text complexity can become less arbitrary and more meaningful for content area teachers and students.

An interesting area of investigation beyond the findings of this study relates to what was not found in the four selected exemplar informational texts about science. Halliday's (2004) original research into the language features of science

writing found that scientists seek precise definitions of multiple interactive phenomena and processes they observe in the natural world. To reduce this experience into written text, science authors often include grammatical metaphors to present complex processes as nouns that can be modified. They also use grammatical metaphors to present dynamic phenomena as verbs that explain interactions. Complex cohesion that distances pronouns from referents to unify multiple concepts is also a typical feature of written science.

The language features of grammatical metaphor and complex cohesion were not present in three of the four Common Core informational exemplar texts about science chosen for middle grade readers. This raises questions about the difference between language features in science writing verses language features found in writing about science. To what extent are students being exposed to the type of text complexity associated with the writing of scientists and other professionals in the STEM career fields? Certainly a robust science curriculum would include exposing students to text complexity beyond that which is encountered while reading science textbooks. Fang and Pace's (2013) model provides teachers of science additional insights into what language feature text complexity means for the science classroom. With Fang and Pace's (2013) categorical criteria, these teachers have an opportunity to take the lead in this dimension of science instruction by purposely selecting classroom texts that include all of the language features that mark science writing, including complex grammatical metaphor and cohesion.

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THE IMPACT OF PURPOSEFULLY PLACING ELEMENTARY TEACHING INTERNS WITH COOPERATING TEACHERS
by
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Abstract
In many educator preparation programs, interns are placed in classrooms where they gain valuable teaching practice. Determining placements for these novice teachers can be problematic. To examine such issues, this exploratory study investigated the impact of purposeful placement procedures on elementary interns during their year-long placements. A purposeful sample of eleven participants comprised the qualitative study, as these interns were intentionally placed using given criteria. The data tool consisted of an eight-item, open-ended interview. Data analysis revealed good placements reflected similar mentor/mentee personality and teaching style characteristics and a co-teaching experience framed by the mentor's strong content and pedagogical knowledge, as well as his/her abilities to mentor and provide emotional support. Implications from the study point to considerable time needed by University Supervisors to gather knowledge of teacher candidates and practicing teachers. Future research includes a need for studying mentors' perspectives relative to purposeful placements and more diverse sample populations.

As elementary teacher educators, we have wondered, just as Beck and Kosnik (2002) did several years ago, "What makes a good practicum placement?" (p. 84). How do positive learning experiences for pre-service teachers and/or interns (student teachers) and their cooperating teachers occur? How do University Faculty foster collaborative learning matches between mentors-mentees like these reflected below?

> Cooperating teacher*: I feel we became not only equals, but lifelong friends... Developing a relationship with her is not much different than what teachers do every day with our students… I was committed to our relationship and knew I could not walk away, even if things got tough… She needed to not be afraid to offer suggestions and I needed to know when to tighten or loosen the reins. I was willing… to trust her to do her best… I had to let her fail to learn that mistakes are okay. I believed she would learn from them and become the best teacher she could be!*

> Intern: *My cooperating teacher worked with me to fine-tune my lessons and find ways to enhance them. She also provided resources to inspire me. My CT allowed me to… feel like a true colleague. I was able to attend the weekly professional development meetings… The overall experience was great. There were times of joy when students grasped a concept, or I had a funny moment with fellow teachers. But there were also times of frustration when a student would misbehave, or a parent would disagree with a teaching technique or consequence. During all those times, my CT, the principal, and fellow teachers were there to provide advice and support…* (Written reflections of intern and cooperating teacher, May, 2017)

Clearly, such reflections from the mentor (cooperating teacher) and the mentee (intern/student teacher) depict the mutual goodness of their shared experience as identified by a climate of trust in their relationship, the quality of the mentoring, the emotional support of school/faculty, and the overall value of the placement. While the positivity of this particular relationship is important, we wanted more—like how to go about duplicating "good placements" for *all* our elementary teacher candidates and interns. Searching for answers revealed limited research that might guide us in "how" to go about designing and ensuring good practicum placements of collaborative learning. In fact, criticism indicated few elementary teacher educator programs even make an effort to match teacher candidates with strong cooperating teachers (National Council for Teacher Quality, 2016). Thus, our questions as well as concerns regarding haphazard field experiences that may or may not ensure candidates' develop effective teaching skills (Franklin Torrez & Krebs, 2012) or mentor teachers who feel forced to take on teacher candidates (Clemson, 1987) or cooperating teachers who regard providing clinical experiences as favors to the university (Goddard, 2000; Mewborn & Stanulis, 2000) led us to initiate purposeful, placement processes for our teacher education candidates/interns and cooperating teachers. This report is our initial attempt or piloting of such procedures, as we asked, "What is the impact of purposeful placement procedures on the overall quality of the practicum?"

Background of the Study

To provide background of the piloted study, our College of Education utilizes a professional development school (PDS) model. This model is characterized by school-university partnerships with a clinical-based approach in which future teachers engage in pedagogical learning within the context of practice (Damore & Kapusta, 2011). In a PDS, leaders frequently advocate for co-teaching strategies (Heck & Bacharach, 2016). For us, this is an additional partner "layer" our College of Education embraces, as we provide foundational information regarding co-teaching practices to both mentors and mentees. The co-teaching model is framed by principles of equitable contributions from each partner to the instructional setting, co-teachers' voices being respected, and frequently occurring dialogues between partners about appropriate planning and techniques regarding the delivery of content (Hedin & Conderman, 2015). It is what we consider the foundation of a "good placement."

Our co-teaching practices also align with the National Council for the Accreditation of Educator Preparation standards (2015). Such standards emphasize a placement process in which higher education faculty and partnership schools form mutually-beneficial arrangements which share in the clinical preparation of teacher candidates. A quality teaching environment is one in which the partners not only co-select high-quality clinical educators, but also consider how the interplay of teacher candidates and mentor teachers' characteristics foster a positive learning environment for students (Franklin Torrez & Krebs, 2012). Because mentor-mentee matching principles are at work within co-teaching relationships and can impact how well both teacher candidates and mentor teachers thrive (Clemson, 1987; Potthoff & Alley, 1996), "recognition of the complexity of human relationships" (Potthoff & Alley, 1996, p. 88) and a focus on the overall context of a placement (Franklin Torrez & Krebs, 2012) are important.

The complexity of a relationship between a cooperating teacher and teacher candidate/intern is added to by the existence of positive, relational bonds between university faculty and school participants. University Supervisors and

administrators must work together to seek out ways to support co-teaching pairs to most effectively combine their skills for instruction (Connor & Killmer, 200; Hedin & Conderman, 2015). As others have asserted (Beck & Kosnik, 2002), we concur that University Supervisors must work closely with both mentor teachers and teacher candidates and visit school sites often. Doing so helps with figuring out compatible partner matches—bringing to fruition the underlying belief that a good practicum occurs because of the cooperating teacher and teacher candidate/intern relationship (Beck & Kosnik, 2002).

Delving into what this relationship looks/feels like, Franklin Torrez and Krebs (2012) and others (Beck & Kosnik, 2001) have investigated the characteristics of teacher candidates and mentor teachers in clinical practica. They concluded that both mentor teachers and teacher candidates identified similar aspects of a positive placement setting. To explain, both student teachers' and teacher candidates' interviews indicated a mentor teacher's emotional support or value placed on the emotional components of the arrangement is critical. This type of effective mentor teacher is not only characterized as being "accepting, comfortable, and welcoming," but also as providing opportunities for "the real work of teaching" (Franklin Torres & Krebs, 2012, p. 489) to occur. Data collected from mentor teachers' interviews for eliciting quality placement experiences indicated a similar emphasis on teacher candidates' dispositions in terms of their motivation, work ethic, and an eagerness to jump in as necessary. Just as in the previously- presented vignette, other characteristics such as the mutual benefits of collaborative learning are evident in the literature (Glenn, 2006). However, the importance of the emotional environment appears to be most critical for successfulness of the cooperating teacher/teacher candidate (or intern) relationship—and hence, a good practicum placement (Beck & Kosnik, 2002: Clemson, 1987; Franklin Torrez & Krebs, 2011). Ultimately, and what is key to teacher educators (like us) is that compatible mentor-mentee relationships lead to conducive teacher growth (Roth, Masciotra, & Boyd, 1999; LaBoskey & Richert, 2002).

To explain our investigating of purposeful placements, a (1) description of our elementary education program as well as the (2) roles and relationships of university faculty to both cooperating teachers and teacher candidates are presented. To begin, our elementary program of study is comprised of four clinical field experiences. Briefly, the Core I field is the initial experience whereby teacher candidates participate in approximately 45 hours of on-campus methods and field experiences. Partner/buddy candidates assist a cooperating teacher in daily classroom activities and engage in focused observations of contextual factors, classroom features like curriculum materials and classroom procedures, and gain awareness of the needs of students with exceptionalities. The second clinical field experience or pre-teaching internship (Core 2A) emphasizes elementary students' contextual information, fundamentals of lesson planning, effective instructional delivery, and standards of the teaching profession. Individually, candidates are required to complete13 days or approximately 100+ hours of fieldwork and become aware of co-teaching practices as they teach social studies and literacy lessons. In the third or Core IIB pre-teaching internship, teacher candidates begin a year-long placement. In the first semester of this year-long placement, they complete 14 days or 110+ hours of field work. Working individually with a co-teacher, they plan, prepare adaptations needed to meet the diverse needs of learners, and apply reading strategies, technology, and community resources across the curricular areas of literacy, science, and math. To foster building/district awareness, teacher candidates engage in professional learning events and family/community/school events. The second semester of this placement involves interns being in the

classroom five days a week for 15 weeks, co-teaching with their mentor teachers. Teaching evaluations are administered by both University Supervisors and mentor teachers

University faculty members are defined as adjunct instructors, liaisons, clinical instructors, and tenure-track professors. Each member is highly invested in the PDS and works diligently to build strong relationships with practicing teachers and building administrators as well as teacher candidates. In methods coursework, modeling of the value of community and relationship building are exhibited. Likewise, faculty persons strive to be in their schools weekly—at times, multiple consecutive days/visits occur —communicating with principals, assistant principals, and cooperating teachers in order to achieve the same goal of building community. Frequent communications among faculty are accomplished through monthly meetings, emails/texts, and personal conversations. In short, university faculty are the "links" between higher education and schools; our roles offer us opportunities to gain much knowledge of both mentors and mentees' characteristics—knowledge we consider in matching cooperating teachers and teacher candidates/interns for "good" clinical practicum placements. University Supervisors gain knowledge of a building's climate and administrative support which are useful elements in determining placements. Our study into these procedures emerged, as we investigated: "What is the impact of purposeful placement procedures on the overall quality of the practicum?"

Methodology of the Study

The study took place during the spring and fall semesters of 2017 at a mid-sized, Midwestern university. Because the study was *exploratory* in nature, a qualitative design was used (Creswell, 1998). Such qualitative methodology was selected because the purpose was to gather descriptions of the participants' reflectivity comparing placements in their program of study. In studying these participants' descriptions of their placements, teacher educators in the University's preparatory program hoped to gain understandings of how to increase the quality of placements for *all* elementary education candidates. An institutional review board approved the investigation.

Participants

Participants for the study emerged because of close relationships among university faculty, practicing teachers, and building administrators, as well as because of University Supervisors' background knowledge of and personal relationships with elementary teacher candidates. Such relationships and gathered knowledge led to specific candidates being purposefully placed by University Supervisors in classrooms/buildings with particular cooperating teachers. Criteria for these intentional participant placements included a: (1) Mentee's previous grade level placements so as to ensure a diversity of primary and intermediate experiences; (2) Unique relations of mentee's family/children/relatives in a given building; (3) Consideration of mentee's travel in terms of daycare needs or an unusual family situation or personal need; (4) University Supervisor's observation of a mentee (teacher candidate) teaching performances in an earlier pre-teaching internship, (5) University Supervisor decision-making process based on a combination or meshing of any of the following aspects: (individually) mentee and mentor's personalities, teaching styles, level of perceived expressive and receptive emotional support, observation of co-teaching skills (strengths and weaknesses), as well as a (6) Year-long placement (Core 2B and Core 3) of the mentee in the same building/classroom of the mentor.

Mentees' participation in the study was solicited at the beginning of the fall semester. After a personal contact from the researchers, they were assured their participation in the study was entirely voluntary, and their participation or lack of participation in the study would not influence final internship grades or teaching evaluations. Of the fourteen mentees (interns) purposefully placed by University Supervisors, eleven mentees (ten females and one male) chose to participate in the study. Specific ethnic and socio-economic demographic data were not collected; however, most of the study participants were known to be of a traditional-age.

All participants were completing their final teaching internship (15-weeks) in a kindergarten to fifth grade setting within the PDS, the largest, urban school district in the state (Kansas Department of Education, 2015-16). District demographics of these particular settings indicate student populations reflective of 65% White, 19% Hispanic, 7% African American, and 9% other ethnicities. Approximately 50 percent of the school populations are economically disadvantaged. Building populations averaged approximately 450 to 950 students.

Procedures

At the onset of the spring 2017 semester, a (given) University Supervisor placed a mentee (participant) in a given classroom with a given mentor (cooperating teacher) by adhering to the above criteria. The University Supervisor consulted both the practicing teacher and building administrator in the consideration of a placement prior to a final determination. Four University Supervisors engaged in purposeful placements. As an example of this decision-making process, one University Supervisor relied upon knowledge of the mentee and mentor's personalities, their way of expressing or needing emotional support, and their observed teaching skills (both strengths and weaknesses). She had observed the mentee as showing low self-competence in terms of planning content lessons, but appeared to reflect a potential of strong teaching skills. Knowledge of the mentor as someone with proven, effective teaching skills and strong interpersonal skills of offering positive, emotional support, the University Supervisor intentionally considered the mentee and mentor together. In the deciding process, she further considered that the mentee and mentor's personalities as compatible (e.g., enjoyed playful or humorous situations, shared positive outlooks on life, were easy to talk to, and shared a commitment to teaching and children). All mentors should have three years of experience teaching, although a principal will sometimes suggest a teacher with two years of experience because the teacher is believed to be a very strong teacher and ready to be a mentor. The experience of the mentor, then, is also a consideration. Conversations among the University Supervisor, building administrator, as well as both the mentor and mentee helped solidify the final steps of the process. Ultimately, in recommending the placement, the University Supervisor considered that through the mentor's positive support, the candidate's self-confidence in her teaching skills or level of teaching competence would increase, and children's achievement would be positively impacted.

Following this placement procedure, we began the work of designing a tool to collect the mentees' responses relative to such purposeful placements. Guided by the literature review of past studies, an eight item survey was developed and approved by the Institutional Review Board. Then, at the onset of the fall semester, contacts with the participants were made. Written interviews of the participants were conducted electronically (e.g. Tell me about your 2A mentor teacher. How did you two get along? Did your personalities mesh well? What were the strengths of that placement? Were there weaknesses? Explain how co-teaching worked in your classroom with your mentor teacher.). Specifically, the participants responded to items addressing how they reflected upon comparisons of Core 2A pre-teaching

internships with their year-long (purposeful) placements. [To clarify, candidate placements in Core 2A only considered criteria relative to grade level, special needs (like a family member teaching in a school or a needed school location due to personal reasons), and availability of mentor teachers in a given building. Core 2B and Core 3 year-long placements involved more criteria in the placement process.] On the survey, participants were asked to describe relationships and personality "matches" with their mentors, strengths and weaknesses of each placement, co-teaching experiences, as well as any personal comments. Prompts were open-ended so that the participants could offer individual perceptions of the overall experiences.

In completing the electronic interviews, none of the participants asked for further explanation or clarification. Eleven of the surveys were returned within a week. After two additional email attempts, we agreed to utilize the eleven already obtained.

Data results from the eight-item survey examined three key topics: personality matching, strengths and weakness of the match, and co-teaching arrangements. To begin the analysis of these data, we (individually) read and reread the participants' responses. Then collaboratively, we reread the responses and determined key words, phrases, and patterns reflective of how the participants viewed purposeful placements. Together we determined initial codes and then began to aggregate instances of common attributes or relationships among categories. We did this by examining the participants' similarities and differences in responding to the key topics, as well as unique or confusing responses. Details of these categories emerged as descriptions of what the mentees considered of value in quality elementary education placements. Credibility, through peer scrutiny (Shenton, 2004) occurred as an additional colleague challenged assumptions in the data analysis process and offered critical feedback.

Results and Discussion of the Study

In this exploratory study of the impact of purposeful placement procedures on the overall quality of the practicum, the following trends or patterns emerged in the data analysis of the participants' (mentees) responses: (1) Personality and teaching style similarities and (2) Co-teaching: Mentor content knowledge/experience and mentee feedback. Descriptions of these patterns are presented below through the voices of the participants.

Personality and teaching style similarities

Glenn (2006) noted good mentor/mentee relationships, "revealed the easy give and take" (p. 91) while more troublesome relationships appeared to lack such a personal, even-tempered, and agreeable relationship. Data collected in this study supports such an observation. To explain, in the eleven participants' responses, personal relationships, particularly in terms of similar mentor/mentee personalities, was important to a good placement. All participants noted "good personality matches" at some point in their placement process (either in the early pre-teaching internship or during the year-long placement). Eight believed they had a good or "okay" match in both placements, while three believed their initial placements were less-than-ideal, but their current placements were a good mesh of personalities. Only one participant in the year-long placement reported her placement was "detrimental."

Participants who felt like they had a good relationship with their mentors used phrases like, "*We are so similar*," "*We even like the same movies*," "*We are both organized*," and "*Our personalities complimented one another*." The majority of the participants who felt their personalities meshed well noted the friendliness they observed (e.g., *"She was very kind and helpful,"* or, *"We trusted each other and*

understood each other," or *"She is very easy to get along with and easy going")*, how they communicated with one another *(e.g., "We also communicate with each other consistently through email and text.")*, and several noted a shared friendship on Facebook.

Three indicated that while their personalities were different, their teaching styles were similar, so they worked together well. Conversely, another two noted that while their personalities were similar, they had differences in teaching style, specifically in terms of organization and classroom management (e.g., *"Our differences in organization and planning was a struggle for me at first… even though it was a struggle at first, I think it has helped me overall."*). These two participants still believed the placement was "good" because of other similarities. One of the participants explained that although they had "*different personalities and teaching styles. . . . very similar especially in behavior management."*

In examining the responses of participants who less positive experiences, three of the four used the words "*no connection*" to describe the relationship with their cooperating teachers (either in the pre-teaching or year-long internship). One participant was purposefully placed according to primary criteria of skill-needs/strengths; she responded that her year-long placement was "*not a good fit.*" She wrote, "*She is aggressive, impatient, and lacks the level of compassion I had gotten used to from my prior teacher. She has bragged about not being an emotional, huggy sort of person.*" This participant added, "*I think its (sic) evident that our personalities are too different to mesh well. I understand learning from someone not like you, but I am envious of my peers who say they are friends with their mentor teacher. We have very little in common.*"

Beck and Kosnik (2002) concluded that interns want cooperative teachers who are friendly and supportive, mentors who provide emotional support. This study would support that conclusion. The data analysis revealed that placements where the mentee and mentor had similar personalities were viewed more positively or as "good" matches. Those with opposing personalities to their mentor indicated there was a lack of connection and support, and this can hinder professional development (Beck & Kosnik).

Co-teaching Experience: Mentor Content Knowledge/Experiences and Feedback

The co-teaching model is framed by principles of equitable contributions from each partner to the instructional setting, co-teachers' voices being respected, and frequently occurring dialogues between partners about appropriate planning and techniques regarding the delivery of content (Hedin & Conderman, 2015). How co-teaching is implemented in a classroom depends greatly upon the mentor's content knowledge, prior teaching experiences, and ability to communicate feedback.

In analyzing the data with regards to their initial placements which were not purposeful, co-teaching was only noted once in the analysis of the surveys. Most interns in their early pre-teaching placement were used as a classroom aide. Interns were often told to sit with specific kids or walk around the room and monitor children's attention to a task. The one incident in the data where the participant characterized her role as a co-teacher was an intern whose mentor was a recent graduate from the same institution (three years prior). Her opportunity to co-teach may have been because of the mentor's knowledge of the goals of this particular institution.

When describing their year-long purposeful placements, all but one of the participants stated that co-teaching occurred. Some noted, "*I know her teaching style very well and know how to make our classroom routines and lesson flow easily!*" "*We co-teach nearly every lesson,*" and "*When I teach, she can jump in, and I can jump in when she teaches.*" The participants described how they "*bounced ideas off each*

other" and were able to *"step in on classroom management…* [and] *add my ideas to the lessons."* Some indicated they both taught at the same time in small groups, while others were "one-teaching, one assisting" in sharing the delivery of content.

Hedin and Conderman (2015) commented that novice teachers who are given the option to co-teach have more satisfaction with their teaching than those who do not. Similarly, this study revealed less mentee satisfaction when the opportunity to co-teach was not offered. The one participant who revealed no co-teaching occurred in her placement wrote, *"She requires me to pace or circulate while she teaches. I make copies for her."*

Co-teaching experiences may also have been influenced by the experience of the teacher. In the data analysis, the participants with a positive view their placement expressed appreciation for experienced teachers. Although "experience" was not defined in the interview, the participants used that term to describe teachers who had taught for several years: "*She has been doing this for a while, so she knows her stuff"* or "*She has so much experience, and is always sharing tips and tricks with me"* or "*My CT is in her thirteenth year of teaching which is very helpful for me."* For many of the participants, the importance of mentor teachers who knew their content was reflected in a quality or "good" placement. Conversely, two participants who identified their cooperating teachers in their pre-teaching internships as very young wondered if they would have learned more from someone who was more confident and had more experience (e.g., "*I felt like I could have learned more from an experienced teacher; she was still making mistakes and apologizing to me at the same time.*") These two participants also did not have any co-teaching in those placements. Mentors must meets the PDS requirement of having taught 2-3 years, but interns may struggle with cooperating teachers who are young or appear to be lacking adequate experience. Similar mentor/mentee ages can pose other problems. The male intern wrote the following about his initial placement:

> *The only weakness that I saw on my 2A placement was the fact that she was a beautiful young teacher about my same age. Of course we were nothing but professional with each other. . . I don't think this hindered me in learning to become a teacher, but I was confused on why I did not get a man or more experienced woman to be my mentor. . . I think it could have been more comfortable for her if her student teacher was not a man that was a year older than her.*

Communication is vital for good co-teaching, and each of the participants who believed they had a good placement mentioned feedback, an important piece in mentor/mentee communication. Beck and Kosnik (2002) maintain that feedback should be carefully chosen, presented with the right spirit and tone. In this study interns with a positive view of their mentor/mentee relationship believed they were receiving that type of feedback. "*She pushes me out of my comfort zone, and encourages me to try new things"* and *"I can always reflect with her after I teach and she always makes me feel good about my teaching, even when there are things I need to get stronger at or fix."* These participants also noted the importance of feedback and were grateful to receive both positive and constructive feedback, with the latter mentioned several times. Several participants' revealed they were allowed to struggle so they could learn from it and reflect later. One participant observed, "*She doesn't sugar-coat anything for me. She shows me what it is truly like and what it will be like when I get my own classroom and I respect and appreciate her for that."* They liked when their cooperating teachers were positive, but they appreciated when their teachers were very "*real about teaching… and [told] it like it is…"*

This study revealed there are many nuances to consider when placing a teaching intern with a cooperating teacher. While many of the placements were

successful, much was learned from those that were not. Successful placements revealed the mentees and mentors had similar personalities and/or teaching styles. These similarities lent themselves well to co-teaching. Because co-teaching is an evolving process it requires strong verbal communication, with feedback provided by the mentor and accepted by the mentee. This feedback loop is improved when the mentee believes the mentor knows the profession and is experienced enough to provide the necessary support. This all begins, however, with a mentor and mentee who enjoy their working relationship. In this study, teachers who appeared resistant to forming a personal relationship with an intern or teacher candidate also appeared to resist co-teaching. When purposeful placements regarded *only* skill development criteria, rather than a combination of personality and teaching styles criteria, the overall impact of the placement was viewed less favorably. Beck and Kosnik (2002) indicated the number one component of a good practicum placement is the emotional support from the cooperating teacher—an observation that is supported by the findings in this study.

Limitations of the study

Limitations to the study include a lack of mentor voices in describing the quality of the placement, a small sample of participants, and the self-reported voices of the participants on the interview. Because most of the participants were female and assumed to be of traditional age, a lack of results relative to other populations of teacher candidates and interns is noted. Finally, the use of only survey/interview data in the analysis limited the study.

Implications of the Study

This study, although exploratory in nature, provides several implications relative to the impact of purposeful placements for elementary teaching candidates. First, we discerned from our discussion of the results that "good" or successful placements mostly occurred when we considered personality matches, or perhaps more specifically, emotional support between mentors (cooperating teachers) and mentees (interns) as primary criteria. For similar purposeful placements to occur using that same criteria, University Supervisors must devote time to gaining knowledge about the personalities of teacher candidates/interns and cooperating teachers in the PDS. This can be challenging because some of the prospective mentees are only known in the university setting. In other words, teaching performances and interactions with others are limited to simulations and not "real" classroom situations. Once students are spending more time in the K-12 environment, University Supervisors must diligently check-in, monitor, and communicate with the pre-teaching interns to understand each one's personality and how they function in the classroom. This face-to-face interaction requires extensive time—time many University Supervisors may not have due to a high caseload of teaching candidates and interns.

Similarly, University Supervisors must spend adequate time getting to know the cooperating teachers (mentors) both inside and outside of the classroom. Brief observations of the cooperating teacher in the classroom do not always provide a complete picture of what the teacher is like delivering instruction in small groups, differentiating for certain students, and interacting with colleagues, administration, and other pre-teaching interns. Building trust between the cooperating teachers and the University Supervisors is important for the success of purposeful placements (Damore & Kapustka, 2011), and that only comes with time. The process of getting to know the cooperating teachers and building that trust can take months. Universities will need to determine if the process of gaining trust and building relationships between the University Supervisors and school personnel is important enough to allocate the necessary time and money.

Future research should include a quantitative study to measure the level of significance purposeful placements have compared to traditional placements. This exploratory study could also be replicated with a more diverse sample of interns, comparing the impact of placements relative to differing populations of elementary education candidates/interns.

Conclusion

Every semester, teaching interns enter their final semester with excitement and apprehension. Between learning the curriculum, adapting it to the students, and acquiring the skills necessary to effectively engage and manage the class, among other obligations, the learning curve can be steep. It is a stressful semester, and the relationship between the intern and the cooperating teacher can determine the success of the placement. Universities need to determine how to make year-long placements the most beneficial for the intern; our exploratory study indicates that is more likely to occur through thoughtful placements of teaching interns.

In this study, we asked, "What is the impact of purposeful placement procedures on the overall quality of the practicum?" The discovered the impact of a good placement can be far-reading. It is felt throughout the day, as an intern works carefully and thoughtfully with the cooperating teacher planning for the day, as the intern attempts a new teaching strategy and receives a friendly nod from the mentor to keep going. The impact is felt the next day, as the intern reflects on the feedback thoughtfully provided by a knowledgeable and experienced mentor, and alters lesson plans. The impact of a good placement is felt over and over, throughout the semester, positively effecting students who benefit from co-teaching, and future students who will be impacted by the learning acquired through this purposeful placement. Although more research is required to determine the best criteria for successfully matching teaching interns with cooperating teachers, this study indicated that purposeful placements can positively impact the quality of the practicum.

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DEVELOPING GROWTH MINDSET IN PRESERVICE TEACHERS
by
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Abstract
The successful 21st century teacher must possess a diverse skill set that allows her to work with every student's strengths and challenges. A teaching and learning philosophy that includes a growth mindset is an essential part of this skill set. In the last decade, there has been significant discussion about the impact of promoting a growth mindset in students. Learners who develop a growth mindset demonstrate an ability to persist in their learning as challenges arise, which leads to academic progress. Educators who approach their own learning and teaching with a growth mindset are more likely to establish a classroom culture rooted in growth and development instead of achievement and performance. Teachers with a growth focus help students develop academic tenacity, which is the ability to work hard and smart for long term goals (Dweck, Walton, & Cohen, 2014). Teachers with a growth mindset also personalize learning for individual students and encourage them to take diverse paths in progressing toward academic and social emotional learning goals. This paper focuses on developing a growth mindset in preservice teachers through their teacher preparation programs.

The 21st century classroom requires educators who can build student engagement and persistence in the learning process. Educators who approach their own learning and teaching with a growth mindset are more likely to establish a classroom culture rooted in growth and development instead of achievement and performance. Teachers with a growth focus help students develop academic tenacity, which is the ability to work hard and smart for long term goals (Dweck, Walton, & Cohen, 2014). Teachers with a growth mindset also personalize learning for individual students and encourage them to take diverse paths in progressing toward academic and social emotional learning goals. This paper focuses on developing a growth mindset in preservice teachers through their teacher preparation programs.

Teachers have daily opportunities to influence non-cognitive factors that directly affect the academic progress and social emotional development of students. Among these non-cognitive factors, a growth mindset toward intelligence is a key determinant in students' success in school (Dweck, Walton, & Cohen, 2014; Johnson, 2012). Teachers that approach teaching and learning with a growth mindset help shape students' sense of self-efficacy in positive ways. Zacarian, Alvarez-Ortiz, and Haynes (2017) suggest that engaging in dialogue about growth mindset can be especially impactful for students living with trauma, violence, and chronic stress. Students that have high self-efficacy are empowered learners because they believe in their ability to influence their own learning. Empowered learners have the ability to persist in their learning despite challenges and believe they can enhance their own intelligence through effort and application of appropriate learning strategies. Teachers with a growth mindset personalize learning for individual students and create learning communities that foster each student's sense of belonging, which encourages all students to take unique paths in progressing toward academic and social emotional learning goals.

Teacher preparation programs should be intentional in the development of a growth mindset in preservice teachers. Curriculum, learning outcomes, and assessments should be aligned to ensure the teaching and development of a growth mindset. Preservice teachers should be required to review and analyze examples of a growth mindset in their field experiences, clinical placements, and student teaching. Throughout these experiences, preservice teachers also need multiple opportunities to deliberately reflect on their own mindset toward learning. Faculty members should also model a growth mindset in their own teaching and establish a growth mindset in their learning communities.

This paper discusses how a teacher's mindset about learning directly affects how students come to view themselves as learners. The paper also discusses how teachers can create a learning community that fosters a growth mindset in all students. It also discusses the development and understanding of a growth mindset in preservice teachers as they advance through a teacher preparation program.

Literature Review

In the late 1970s, Bandura introduced the term self-efficacy, an individual's belief in her own abilities, into the field of educational psychology. Bandura (1994) found that students' beliefs in their own abilities to learn and perform well in school have tremendous impact on their actual performance. Bandura (1997) also suggests that a students' self-efficacy more accurately predicts their level of academic performance than their measured ability level and prior performance combined. Good, Aronson, and Inzlich (2003) found that 7th grade students who experienced an intervention designed to increase students' beliefs in their math abilities demonstrated significant gains in both math and reading achievement as compared to a control group. Most notably, the researchers found that females and students from minority and low-income backgrounds earned significantly higher achievement scores than their counterparts in the control condition. Good, Aronson, and Inzlich's study demonstrates that interventions designed to increase self-efficacy, while positive for all students, may particularly benefit student populations who face adversity and often struggle academically.

Boaler (2013) suggests that countries that educate their students most successfully, including many Asian countries, have educational systems based upon a foundational idea that learning is a process. Educators in these countries foster students' beliefs that the expenditure of their own effort is the determining factor in the learning process. Students in these countries do not perceive their talents and abilities as rigid and set but as able to be developed. Boaler suggests that antiquated notions of fixed ability, or the idea that the talent that one is born with is all that that individual will have for her lifetime, still prevail in many American schools. This notion plays out in messages that educators give to students such as, "that's okay, not everyone is good at math." These beliefs lead teachers to perpetuate ability-based practices (i.e., ability grouping) and communicate ability-based messages to students based on false notions of fixed ability. Even in schools in which these ability-based practices have been abandoned, cultural beliefs about ability and "smartness" often remain deeply ingrained in educators' psyches and are communicated to students in subtle, but damaging, ways.

Over the last decade, psychologists and neuroscientists studying how the brain learns have demonstrated the brain's extraordinary plasticity, which enables individuals to develop new synapses and pathways in their brains throughout their lifespan. This means that through challenge, effort, and practice individuals have infinite capacity to increase their intelligence and develop their abilities (Boaler,

2013; Dweck, 2009). Talent and intelligence are not innate or fixed as traditionally thought. How students perceive learning and their own capacity to learn is critical to their success in school and life. Bandura (1997) suggests that once an individual develops a mindset about their self-efficacy in a particular context (e.g., math, sports, writing) she will act according to her established belief. Students' beliefs about learning and themselves as learners are largely shaped by their experiences in K-12 education, so it is imperative that 21st century teachers deeply understand the implications of research about brain growth, mindsets toward learning, and academic success.

Ensuring that preservice teachers gain this understanding during their teacher preparation experiences is one way to change deeply held cultural beliefs about learning. In this way, preservice teachers can contribute to the profession in two profound ways. First, they can begin their teaching careers believing in their own capacity for professional growth, which sets them up to model the learning process for their students. Second, pre-service teachers will be prepared to build students' self-efficacy related to their own learning. Of course, this can be a daunting task for teachers because students' self-efficacy can be quite tenuous as they develop and encounter inevitable learning challenges for the first time. Discoveries made about self-efficacy and mindset over the last thirty years can provide preservice teachers the theoretical and practical information necessary to help students persevere through these challenges.

Bandura (1994) defines self-efficacy as individuals' beliefs about their capabilities to perform in ways that influence events in their lives. Individuals' self-perceptions shape how they feel, think, behave, and motivate themselves in difficult situations. A person with a strong sense of self-efficacy approaches difficult tasks with gusto, viewing them as challenges to be conquered rather than threats to be feared. Self-efficacious people are able to set challenging goals for themselves and persevere in their pursuit of them. These individuals bounce back quickly and resiliently after set backs or failures. They view these "failures" as learning opportunities that propel them forward.

In contrast, people with low self-efficacy doubt their capabilities and feel threatened by challenging tasks. They often perseverate on their own perceived deficiencies and become overwhelmed at the obstacles they might encounter at the outset of a potentially challenging situation. This overwhelm leads individuals with low self-efficacy to hyper-focus on potential failure or negative outcomes ultimately inhibiting their own ability to plan and problem-solve about how to navigate the challenge successfully. In fact, they often quit before even beginning the task. These individuals often exhibit a great deal of stress and depression in their lives (Bandura, 1994).

Dweck and Legget (1988) suggest that a primary factor in ensuring that students develop resilient self-efficacy is their mindset about intelligence. Mindset is one's own beliefs about herself as a learner and learning in general. Dweck and Legget identify two mindsets that individuals can hold about their own intelligence: a growth mindset and a fixed mindset. An individual who holds a growth mindset believes that intelligence is malleable and able to be further developed. In contrast, an individual who holds a fixed mindset believes that intelligence is primarily established at birth and is very difficult to change (Johnson, 2012). While often seen as two different beliefs, these mindsets might be thought of as opposite ends on a continuum (Aditomo, 2015). An individual might possess weaker or stronger beliefs about the malleability of intelligence and move along this continuum depending on several factors.

Dweck (2016) has emphasized that the same individual may hold both a growth and fixed mindset at different times in their lives or with respect to different content areas. For example, a high school student may believe in her ability to learn and improve at tennis through diligent practice and instruction from her coach (growth mindset), but simultaneously believe that she is not good at math and will remain at her current proficiency level no matter what she does to try to improve (fixed mindset). Dweck maintains that it is natural for each individual to be a mixture of these two mindsets. Each learner moves along a mindset continuum depending on the content or situation. While fluidity along the continuum is to be expected, children who hold a fixed mindset in singularity focus on avoiding failure instead of learning in most areas of their lives. A hyper-focus on avoiding failure can lead students to engage in self-defeating behaviors, which can lead to decreased motivation and poor academic progress.

Individuals that hold a fixed mindset toward intelligence focus on proving their abilities because they believe that intelligence is limited. They perceive that their talents are innate gifts that do not change (Dweck, 2016). These individuals are more likely to shrink away from learning challenges because they are fixated on their performance. In fact, they often perceive learning as a series of performances instead of a process for improvement. Students with a fixed mindset often have destructive thoughts about their own abilities because they do not believe they are capable of performing. Students' negative self-talk is defeating and often inhibits their ability to set and maintain progress toward learning goals (Johnson, 2012).

Students with a fixed mindset will likely exhibit anxiety toward high-stakes performance situations in classrooms, and they may employ many tactics to avoid failure. Dweck, Walton, and Cohen (2014) suggest that students may play video games as a way to procrastinate on assignments or attend a party instead of study for a test. If they fail, these behaviors provide students an external source to blame rather than themselves. Adults may interpret these behaviors as students not caring or being rebellious when they are truly the manifestation of the anxiety they feel about their potential failure.

Individuals with a growth mindset focus on improving their abilities because they believe that intelligence can always be increased. They understand that with their own effort, a toolbox of learning strategies, and constructive feedback from others, they can develop their talent and ability (Dweck, 2016). These individuals are more likely to embrace challenges as learning opportunities and view themselves as having the resources necessary to reach mastery (Johnson, 2012). Students with a growth mindset typically have constructive thoughts about their own abilities. Their self-talk is positive, which helps them commit and remain motivated as they persist toward their own learning goals.

Many factors influence how children develop either a fixed or growth mindset. However, the most influential factor that shapes students' mindsets is the message they receive from adults (Dweck, Walton, & Cohen, 2014). The adult's focus determines the child's focus. Teachers who overly attend to achievement and performance and use language that praises students' talent and intelligence (e.g., "you are so smart," "not everyone is talented at math") encourage students to develop fixed mindsets. Praise that suggests talent or intelligence is innate may also encourage students to view learning as a series of performances in which they must continue to prove they are smart or talented (Johnson, 2012). Even more detrimental, this type of praise can discourage students' motivation. If a student perceives that she is not inherently "good" at math and her effort will not make a difference, there is no need to continue putting forth effort in this area. Thus, a self-fulfilling prophecy is created in the student's mind.

On the other hand, teachers who focus on growth and process and use language that connect students' efforts to their learning (e.g., "what strategies helped you finish that problem," "working through that problem again helped your brain grow," "mistakes are proof of learning") encourage students to develop a growth mindset (Dweck, Walton, & Cohen, 2014). Dweck (2016) warns that this language is not the same as merely praising effort (e.g., "way to go; you tried your best"). Praising effort can be equally detrimental to praising intelligence and talent. Teachers who praise effort in singularity do not help students understand their learning process, which is the ultimate focus of a growth mindset. Fostering the connection between effort, strategies, and results is what helps students view learning as a process instead of a series of performances. When teachers help students make connections between their efforts and strategies to their results, teachers equip students with a variety of approaches that students can use when they encounter a challenging situation (Johnson, 2012). Thus, the result is empowering learners to realize the influence they have over their own learning and progress. This realization is the catalyst that causes students to persist in future learning challenges.

Dweck (2016) suggests that teachers must facilitate reflection that helps students connect effort, strategies, and results regardless of whether they met the learning goal or not. The reflection is the same for both results except that students who did not meet the outcomes may need assistance from the teacher in developing learning strategies or finding others that work best for them. Teachers who reflect with students in this manner may be able to identify students who are struggling early, help them find their own unique learning path, and prevent frustration and anxiety as well as the need for more serious intervention in the future.

This reflection process also presents the teacher with an opportunity to teach students that challenges are an essential part of the learning process. Neuroscience has demonstrated that brain activity increases when an individual is trying to figure out how to correct a mistake. Thus, students engaged in critical thinking about their mistakes create new synapses and neural pathways in their brains (Boaler, 2013). The result of this thinking and reflection process is that students realize that challenges and mistakes are learning opportunities instead of proof that their ability level is low; this realization motivates students to persevere in the learning process. When future challenges arise, students will act on their beliefs that effort can influence their progress toward learning goals and will be better equipped to apply appropriate learning strategies.

The metacognitive, reflective experience is essential for students' development of a growth mindset. Students who are praised for effort and make the connection between effort and results also develop an understanding that learning is a process rather than a series of performances. This in turn helps them see the process of learning as an opportunity for improvement, which lessens potential anxiety even when asked to perform on an end of unit test or project. If the student has been able to engage in learning without feeling pressure to perform, they will have a greater chance of being able to think deeply and critically about the information. Thus, the student experiences an internalization of learning. When asked to demonstrate their learning, they will be able to do so without an undue fear of failing.

Methodology

Classrooms that build a growth mindset culture help develop positive self efficacy in learners, and teachers who hold a growth mindset are more likely to help students develop a deeper understanding of their content (Dweck, Walton, & Cohen,

2014). This study focuses on the understanding and development of growth mindset in pre-service teachers. The preservice teachers in this study are enrolled in a teacher education course. The course, EDUC 101 Introduction to Education, has 42 students. This is the first course students take if they are interested in becoming licensed pre k - 12th grade teachers. It is a taught in a hybrid format in which students meet face to face and online in alternate weeks. There are two sections of this course, and one of the course is also taught in a distance learning format. The course is broadcast to multiple extension centers through a web camera and microphone.

The data collection process began with a survey on student attitudes and understanding about the growth mindset. The survey was completed through the PERTS website (Claro, Paunesku, & Dweck, 2016). The survey determined if the students had a growth, intermediate, or fixed mindset. The data from the survey was collected electronically, organized into graphics, and shown to the students. The students saw the results before completing the anticipatory set or completing any additional information on the growth mindset. The students then completed an anticipatory set on their view of the growth mindset. The anticipatory set included a set of ten questions that required a response of agree/disagree.

The students engaged in different instructional strategies that exposed them to the idea of a growth mindset. The instructional strategies included direct instruction on growth and fixed mindset, video clips on growth mindset, and comparing and contrasting fixed and growth mindsets through pair/share activities. Students also evaluated instructional activities and strategies to determine if the activities and strategies fell under growth or fixed mindset. The students also completed a reading assignment and answered follow up questions about growth mindset and the ability to change the brain's pathways. After completing the growth mindset activities, the students completed follow up checklist to the anticipatory set.

The data from this study falls into three areas. They include the PERTS survey, the anticipatory set questions, and the response questions. Forty two students took the PERTS survey The PERTS survey indicated that 44% of the students held a growth mindset and 56% of the students held an intermediate growth mindset.

The anticipatory guide was used before and after the students engaged in the growth mindset activities. Twenty five students completed the reading response questions.

Table 1. Anticipatory Guide Responses

	Before		After	
Question	Disagree	Agree	Disagree	Agree
1	0	24	0	24
2	24	0	24	0
3	24	0	24	0
4	21	3	24	0
5	23	1	23	1
6	24	0	23	1
7	24	0	24	0
8	4	20	5	19
9	24	0	24	0
10	5	19	5	19

Table 2. Responses to Reading Response Questions

Question 1	Question 2
• The central purpose of the article was to inform the reader about how the brain can grow, and just because you are born with a certain intelligence does not mean you cannot change. • In my opinion, this article is showing people that it really isn't that hard for people to learn new things. It is actually easier than you think. • The main purpose of this article is to inform people that they are not born with a certain intelligence level. Many people believe that they are simply not good at math or not goodat science and they tend to think that it won't change. However, while your math or science skills may not be the best, it's not permanent. With practice and help, you can improve your skills in	• Personally I have always struggled with MATH! I always had math anxiety, I never really had any great math teachers. In my junior year of high school I was in Algebra 2 and when I was a freshman and I took Algebra 1 I almost failed. So, I hated Algebra! But when I was a junior I had a AMAZING teacher who helped me and I was able to pass with a B! For me that was great, I put in time and tons of effort and really challenged myself and I saw a big improvement. I was able to improve my brain and make myself smarter. • I have always been really good at math. My mom had me doing multiplication and division a 2 years before we actually started in school. I started doing square roots off the top of my head in the 4th grade. Math just came to me. Where as Science was a completely different story. I would do good if I passed science every year with a B-. In turn, my 8th grade year I was

anything you want. • For the longest time humans thought that some people were just math people or English people but through a study on animals brains they found that brains can actual grow and develop when challenged. That there is no "set" intelligence people can develop there brains and learn new things at any age. There are special methods that help humans develop there neurons and make brain connections. We also need to put in effort to learn even if it extremely challenging. Also help from others on learning new things can be very helpful. This article is informing us that as humans we can always learn new things, there is never a limit to what you can learn.	tired of doing so bad and therefore asked my best friends mom who was a biology teacher at a high school for help. All in all, at the end of the year, I received the educational excellence in not only math but also Science. I graduated with the highest science score in my class. • like when i started school i wasn't very good at math but i never gave up and kept. learning and growing my brain and now i am starting to really good in math.

Question 3	Question 4
• I would try to start learning spanish again. I took spanish for three years in high schooland became quite fluent in the language, but I hardly ever practice it now. If what these researchers say is true, I could lose all my knowledge if I do not practice it. I would recommend to Broward college to keep researching this topic to make sure it is accurate. • I used to not be good at doing math but now that i have worked at math	• I think that student would try harder. The majority of people think they are either an english person or a math person, including myself. I always loved math and put all my time and effort into it and kind of put english to the side. Now knowing that my brain could grow I would have definitely tried harder in english growing up. • I think if students really started to believe that they are not just born stupid but could actually improve there skills through them selfs we would see kids who really struggle put in more effort.

alot and that i have put my mind to it i can now do it and i overcame the challenge just because i worked at it with my brain and it got stronger. • I would really love to learn a new language. Also I would really love to improve my math skills!	I think kids from a young age can start to believe because they understand things slower they are stupid so they don't put in as much effort and time as they could and they don't reach there full potential. • I think if students believed this, they could really improve their skills in so many different • things, whether it be school-related or not. I also think they would feel better about themselves, especially academically, since I know that I, for one, struggle with myacademics in terms of being confident in myself and not breaking down over the smallestthings when it comes to school and how smart I think I am. I think if more students knew this, they would feel better about school and other things as well.

Discussion and Further Research

Teachers who model and develop a growth mindset learning environment create learners who show increased persistence and positive self efficacy in their own learning process (Bandura, 1994; Dweck, Walton, & Cohen, 2014). The ability to create a growth mindset learning environment requires that preservice teachers are given opportunities to develop and practice a growth mindset in their own teaching practice. Teacher training programs must begin early in the teacher training process to expose and develop the growth mindset in teacher education candidates.

The data collected in this study indicated students did not have a consistent understanding of the growth mindset. The data from the PERTS survey indicated the students in this study held either the intermediate or growth mindset. The anticipatory guide responses before learning about growth mindset indicated students held a fixed mindset of student learning, and the belief that teachers did not have the capacity to influence positive student self efficacy. The students' responses to the same anticipatory guide questions after learning about the growth mindset showed a fixed mindset. A review of the reading response questions indicated students believe that a growth mindset and teachers can influence positive self-efficacy in their learners. For example, one student commented, "In my opinion, this article is showing people that it really isn't that hard for people to learn new things. It is actually easier than you think. Another student commented, "I used to not be good at doing math but now that i have worked at math a lot and that i have put my mind to it i can now do it and i overcame the challenge just because i worked at it with my brain and it got stronger."

The inconsistent understanding of the growth mindset in this study has multiple factors. Students were exposed to the growth mindset for the first time and did not receive lengthy time to reflect and analyze the information. Students do not have prior knowledge or experience as teachers, limiting their ability to apply the

growth mindset to the classroom. The activities and information about the growth mindset may need additional refinement to scaffold students' understanding of the growth mindset, and students may need additional information on the growth mindset to build their understanding.

Teacher training programs need to engage in intentional and reflective practice focused on developing the growth mindset. Students need time to develop a growth mindset, requiring early and consistent exposure to the growth mindset in teacher training courses. Students need to be provided the time to reflect on how to develop a growth mindset in their classrooms, and they need time to analyze what the growth mindset looks like in the classroom. By beginning early in the teacher preparation process, pre service teachers gain the much needed development of a growth mindset in their own teaching practice.

Conclusion

Teaching in the 21st century requires that teachers attend to the psychological and social emotional factors that affect academic progress. Teachers who approach learning and teaching with a growth mindset are more likely to increase students' self-efficacy related to learning. Teachers can develop a growth mindset in students by using language that prompts students to reflect on their effort, strategies, and results. Teacher preparation programs must create curriculum and instruction that asks preservice teachers to examine different mindsets toward learning, reflect on their own mindsets, and be prepared to teach students how to believe in their own capacity for learning.

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THE NARROW PATH TO MASTER LICENSURE IN ILLINOIS: AN INVESTIGATION OF THE NEWLY RESTRUCTURED NBPTS COMPONENT 4 EFFECTIVE AND REFLECTIVE PRACTITIONER
by
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Abstract
The only path to receiving Master Licensure in the state of Illinois is to complete the National Board for Professional Teaching Standards (NBPTS) process. Completion of this process in any of the licensure areas requires successfully completing the tasks for all four Components regardless of the content area and developmental level being sought. Yet, many teachers in the state do not appear to be aware of this requirement. This manuscript explains details regarding the NBPTS process with a greater focus on the newly revised Component 4 Effective and Reflective Practitioner.

The National Board for Professional Teaching Standards (NBPTS) is an organization created by teachers for teachers with the purpose of improving the quality of teaching and learning. Currently NBPTS is one of the most respected professional licensure institutions available in K-12 education as well as the only way that teachers in the state of Illinois can receive Master Licensure (NBPTS, 2017). In order for candidates to postulate themselves towards a Master Licensure, they must first prove their eligibility for the candidacy. That means showing that they have worked for at least three years in the same state-supported school district, have held at least a bachelor's degree during their employment at their school, and hold a valid state teaching license (NBPTS, 2017). There are additional forms that may be completed to prove eligibility in special cases. After that, the completion of the Master Licensure in any of the licensure areas requires performing a series of tasks based on five core propositions for accomplished teachers. These tasks are compiled into four main components which are designed to collect standard-based evidence of accomplished practice. Currently, NBPTS offers 25 licensure areas that candidates may choose from in accordance with their interests and areas of specialty. Completion of the Master Licensure in any of the licensure areas requires successfully finishing the tasks for all four Components regardless of the content area and developmental level that teachers may choose. This is the only path to receiving Master Licensure in the state of Illinois (NBPTS, 2017).

The Four Components
Since 2014, the NBPTS licensure process for in-service teachers has been undergoing a process of restructuring in terms of revisiting the four Components for licensure. These four Components are key areas that comprise accomplished practice and allow for the collection of standards-

based evidence that indicates whether candidates for Master Licensure have reached the level of accomplished practice (NBPTS, 2017). Teachers also have the opportunity to choose among developmental levels within each licensure area. There are up to four student developmental levels. Altogether, there are 25 licensure areas which address 16 different subjects.

The first Component is Content Knowledge. Within this Component, candidates for Master Licensure are required to provide evidence of their mastery of pedagogical knowledge within their content area and to demonstrate their knowledge of developmentally appropriate content by producing evidence of the suitability of their instruction for the ages and learning/cognitive levels of their students (NBPTS, 2017). Assessment of candidates for this Component includes completing a test comprised of three-constructed response and 45 selected-response items. For the three constructed-response items candidates have up to 90 minutes, whereas for the 45 selected-response items the allotted time varies depending on the specific licensure area with a minimum of 60 minutes allocated.

Differentiation in Instruction is Component 2 of the national board licensure process. In order to complete this Component, candidates need to create a portfolio evidencing their classroom practice and showcasing their ability to implement appropriate differentiated instruction. To explain their use of differentiated instruction, candidates are expected to base their rationales on an analysis of their students' strengths and needs. Component 2 also requires that candidates understand how to modify teaching materials based on formative assessments. Each specific licensure area has its own particular set of requirements for the portfolio. Most of the areas of specialization require a written commentary containing up to 14 written pages of content explaining the candidate's use of assessments as well as one unit plan they have used in class highlighting their teaching strategies (NBPTS, 2017). Samples of student assessments indicating achievement at different stages of learning are also required as evidence of how candidates have evolved in their use of assessments.

Teaching Practice and Learning Environment is Component 3 of the national board licensure process. To complete this Component, candidates create a classroom-based portfolio including two videos and written commentaries which provide details of their planning and practice as well as reflection on their teaching as illustrated in their video recordings (NBPTS, 2017). Emphasis should be placed on how candidates use their instruction to engage students in the learning environment and how they impacted learning. Specific details about Component 3 portfolios are unique for each licensure area, however, some commonalities include: an entry describing the instructional content, two video recordings along with the instructional and planning materials corresponding to the videos, a written commentary about the instruction, and a written reflection after the lesson was completed.

The newly structured Component 4 is titled Effective and Reflective Practitioner and was the most recent to be made available to the public (Murray, 2016). According to NBPTS (2017), Component 4 allows

candidates seeking Master Licensure to show evidence of their teaching effectiveness in certain areas. The first area is knowing their students, which demands that teachers are able to gather data about their students from a variety of sources. The second area is demonstrating the use of assessments to effectively and positively impact students' learning and inform instruction. The third area is being able to effectively participate in collaboration with educational stakeholders and other colleagues in order to improve student learning.

To complete Component 4, candidates must compile a portfolio that highlights several effective and reflective skills. These include: showing knowledge of their students, using the knowledge of their students to improve student learning, being able to make well-informed instructional decisions, evidencing effective use of assessment practices and principles, and participating in learning communities as reflective professionals (NBPTS, 2017). In the portfolio, candidates need to include, among other requirements specific to each licensure area, a group profile of their students with information about the candidate's teaching context, a description of student characteristics, samples of student completed formative, summative, and self-assessments, samples of professional learning needs as discussed in a learning community, and a reflective commentary detailing how data collected was used to positively impact student learning.

The 4 Components presented and described above are in alignment with the five core propositions of the NBPTS. These core propositions describe specific details about what teachers need to know and be able to do to be accomplished teachers (NBPTS, 2017). The main focus of this paper is an investigation of Component 4 including an analysis of requirements and implications of effective practitioners as presented from the perspective of these five core propositions. This encompasses what the existing literature tells us about being an effective and reflective practitioner, knowing our students, and using assessments to inform instruction. The main areas addressed in this paper are key to providing evidence of what might be considered mastery teaching as related Component 4.

Effective and Reflective Practitioner

Although the newly restructured Component 4 heavily emphasizes using assessments to impact student learning, the existing literature on reflective and effective practitioner is bombarded with characteristics and implications that describe the profiles of such professionals. According to Lupinski, Jenkins, Beard, and Jones (2012), being an effective and reflective practitioner requires teachers to be aware of students' needs at both the individual and group levels, as well as having a deep understanding of the processes of teaching and learning. Lupinski et al. (2012), proceed to describe that reflective practitioners are continuously looking for information that helps them address problems encountered in the classroom, persistent in their consideration of in-depth educational issues, and able to create respectful and welcoming learning environments.

Engaging in reflection demands that teachers have a solid understanding of their own teaching rationales, their mechanism or approaches to instruction, and their range of solutions to possible adverse scenarios that may arise in the arena of teaching (Lupinski et al., 2012). Forrest (2008) makes reference to two main types of reflection: reflection in action, which is the type of reflection that occurs while an activity is taking place, and reflection on action, which occurs after an event or activity has taken place. Of these two, Forrest (2008) explains that reflection on action is the most needed in education because it allows practitioners to get insights not only from personal expertise and experience, but also from others before addressing changes to instruction. According to Lupinski et al. (2012), reflection is beneficial for educators because it allows them to learn from past experiences in education and to expand their teacher repertoire to address current situations in an informed manner.

However, the characteristics and implications attached to effective and reflective practitioners are not always consistent or agreed upon among the experts in the educational arena. For instance, Fox, Campbell, and Hargrove (2011), in their study about reflection for in-service and pre-service teachers, concluded that both groups use different methods for reflection. Pre-service teachers in teacher education programs tended to use more written reflection, while in-service teachers used more internal dialogue techniques. However, both groups responded that they believed talking with other colleagues was the most effective method of reflection.

Component 4 is all about providing evidence of having the various skill sets and attitudes that accomplished teachers use in order to make a positive impact on student learning. Anderson's 2012 study highlights four important considerations that effective teachers should be able to understand if they are to make a positive impact on students' learning: teaching is not the same as presenting content, learning involves knowledge and cognitive processes, teaching is better when combined with context, and teaching is more effective when students use metacognitive processes to make decisions about their own learning. Similarly, NBPTS (2015) refers to five core propositions that accomplished teachers should understand in order to work effectively. These core propositions are: commitment to student learning, knowing the students and how to teach them, managing and monitoring student learning, being able to reflect about their own professional practice, and participation in learning communities.

These five core propositions are in direct connection with the four Components that candidates for Master Licensure must complete. Thus, the knowledge-base and skills that candidates need to demonstrate are highly comprehensive and demanding. That is why in the literature we also find quicker methods that have been used to measure teacher effectiveness such as the Rapid Assessments of Teachers Effectiveness (RATE). Gargani and Strong (2014) presented this shorter method, RATE, which is based on six items of teaching practice to identify teacher effectiveness. These items on which teachers are evaluated are: teaching methodology, questioning skills, presentation of objectives and explanation, management of time on

tasks, effectiveness on introducing new topics, and understanding students' learning processes. Although the authors admit that there are more characteristics than in previously presented methods that are attached to good teaching, their RATE method has been validated and appears to be highly useful for its designed purpose (Gargani & Strong, 2014). To foster the implementation of reflection it is necessary, then, that those who are willing to engage in reflection are extremely well aware of all of these aspects of their teaching practice and can use benchmarks to help reflect. This is why these several factors and characteristics of reflection presented previously are worthy of consideration in the process of completing Component 4.

Importance of Knowing our Students: Effective and Reflective Practice

Given that the sole presence of more than one student in our classroom is already indicative of diverse learning needs and student diversity, it is important to reflect on how to provide focused learning that will meet the learning needs of the students (Dixon, Yssel, McConnell, & Hardin, 2014). For effective teachers it is important to know their students as much as possible because that is one essential method for understanding their needs and finding appropriate ways to help them improve in the learning process (NBPTS, 2015). Teachers may nurture teacher-student relationships based on respect and fairness because effective teaching requires having well-connected and rounded information systems in which students' characteristics and their learning environments are centric (NBPTS, 2015). However, when it comes to knowing students, there are multiple steps and implications that effective and reflective practitioners need to keep in mind. One of these important implications is that teachers should be well aware of each of their student's specific personal characteristics and attitudes (NBPTS, 2015).

Pursuing this further, teachers should be well informed of various types of information about their students. As an example, if a student has problems understanding the English language, a candidate seeking national board licensure would need to be well aware of this problem. Component 4 will assess how well the candidate responds to this situation, as well as how accurately instruction was personalized to meet the student's needs (NBPTS, 2017). The more information that candidates seeking national board licensure can obtain regarding their students (their families, hobbies, likes, dislikes, etc.) the better, because these data are central pieces on which their process of reflection can be focused. This is one reason that having knowledge about students is useful. Weber's 2015 study highlights that effective teachers are proactive and successful in establishing relationships with their students: they listen to their students and study them in order to establish communication, they understand that learning is not improved by using a one size fits all approach, and they differentiate their instruction with a wide range of techniques. Teachers who know their students do not guess blindly on how to inform their teaching decisions; rather they incorporate their knowledge about their students in the

implementation of learning activities to meet their learning needs (NBPTS, 2015).

Weber (2015) states that even knowing the personalities of the students is a factor of importance for effective instructors. Teachers who take into account information about the personality of their students are better equipped when it comes to using different kinds of teaching, being better able to use fair testing, and establishing pleasant learning environments.

Dixon et al. (2014) contribute to this conversation by stating that in order to make the process of differentiated instruction most successful, it is necessary that teachers themselves believe that they are effective teachers. Dixon et al. (2014) also mention that some of the skills that effective teachers must have in order to meet students' needs include: using a variety of assessment types, being able to provide clear and alternative explanations to confusing ideas, adjusting lesson plans, determining students' comprehension levels, and providing appropriate learning challenges for students. All of these skills are important because, as Dixon et al. (2014) state, one of the best ways to attend to the diverse range of students' learning needs is to be able to implement differentiated instruction. Additionally, Component 4 requires candidates to know and understand their students and use that knowledge to make a positive impact for student learning (NBPTS, 2015). That is why candidates may find the information shared in this section important for the completion of Component 4 and how they may use knowledge of their students to engage in reflection.

Using Assessments to Positively Impact Learning

Another important part of the newly restructured NBPTS Component 4 is to be able to show evidence of how candidates are able to impact student learning through assessment. According to NBPTS (2015), assessments can play the role of a monitoring system of student learning and can function as an indicator of the students' engagement in the process of learning. There is a wide range of information that can be accessible to teachers via assessments. This information is useful for teachers in their decision-making processes in several aspects of their practice. Conderman and Hedin (2012) explain that through assessments teachers can obtain valuable information on students' current level of knowledge, preferred learning modalities, and, as far as instruction is concerned, areas and skills that need to be revisited. This notion makes the purpose of assessments move well beyond that of grading and/or determining if a student achieved mastery of learning (Datnow & Hubbard, 2015). Teachers can make use of assessments to provide them with data about weaknesses and strengths of students. This information is useful to help determine what skills should be re-taught and how to go about re-teaching a skill or concept (NBPTS, 2015). In other words, assessments can help teachers make well informed-teaching decisions for a better impact on students' learning.

Continuing the discussion of using assessments to positively impact student learning and how to provide evidence of effectively using

assessments for the sake of Component 4, one type of assessment that candidates seeking national board licensure need to have a good understanding of is formative assessment. According to Pinchok and Brandt (2009), "Formative assessment is a process in which teachers use various tools and strategies to determine what students know, identify gaps in understanding, and plan future instruction to improve learning" (p. 2). Formative assessment works as a comprehensive set of tools with the specific task to provide a descriptive image of the students' current level of understanding of skills and knowledge (Cauley & McMillan, 2010). Formative assessments allow teachers to collect useful data to inform teacher instruction at the appropriate time in the process of learning.

Formative assessment, instead of providing scores representative of students' learning, depicts ongoing levels of achievement early on in the learning process allowing teachers to reflect on how their instruction is going and make modifications if necessary (Phillips & Wong, 2010; Noyce & Hickey, 2011). Another important advantage of formative assessments as explained by Chappuis (2005) and Pinchok (2009) is that they foster the sharing of feedback that students can use to self-evaluate their learning level and get a sense of the necessary steps to follow to successfully get from where they are to where they need to be. Formative assessments also promote collaborative environments and provide opportunities for the students to improve their weaknesses (Guskey, 2003; Nidus & Sadder, 2009).

Candidates seeking national board licensure, in their process of completing Component 4, need to demonstrate their understanding of assessments, both summative and formative, and how to use them to impact student learning (NBPTS, 2017). That is why teachers need to keep in mind when using formative assessment that the students need to be at the center of this process (Pinchok, 2009). Pinchok explains that when students are able to see what they need to do to succeed and receive feedback on how to do it, improvement in learning is more likely to take place.

As discussed above, formative assessments are closely associated with providing on-going feedback (Guskey, 2003). Guskey advocates the use of feedback which describes aspects in which students performed well, as well as instances when they did not perform as expected. This encourages students to self-assess and take steps to achieve their learning goals. Teacher feedback, being used in an efficient manner, is in direct alignment with using formative assessment (Bitchener, 2008), and contributes to enhancing student performance (Hattie & Timperley, 2007). In fact, it has been found that written corrective feedback, indeed, can be regarded as one of the key elements to impact student learning (Hattie & Timperley, 2007; Ferris, Liu, Sinha, & Senna, 2013).

Importantly, the use of feedback on areas such as language learning has been found to be most effective when given immediately after students have performed the tasks (Bitchener, 2008; Hattie & Timperley, 2007). Regarding the process of feedback sharing, there are several ways

for providing feedback. Teachers can utilize reflective questionnaires aimed at self-regulation (Hattie & Timperley, 2007), implement error correction (Ferris et al., 2013), and share tips to reach the goals to be achieved (Voerman, Korthagen, Meijer, & Simons, 2014). Focused error correction, such as circling errors, is found to be valuable in terms of usefulness for the students to understand where they need to improve in their performance (Ferris et al., 2013). However, Voerman et al. (2014) goes on to recommend to not only focus on corrective feedback but to also incorporate positive comments on students' successful performances and achievements.

Effective practitioners need to understand that not everything is clear and easy in terms of providing feedback to students. Some students may perceive the provided feedback in a totally different manner than intended by teachers. Thus the way in which students react to feedback may not be what was expected (Treglia, 2008). For example, while some students may appreciate positive written feedback, others may perceive it as useless. Ferris et al. (2013), explains that in the process of providing feedback, part of the goal is for students to retain the content of the written suggestions provided. However, it is important to follow up written feedback with discussions and verbal explanation.

Ferris et al.'s (2013) study revealed that teachers' one-on-one discussions with students about their errors and retrospective interviews with students helped students reflect on their knowledge about errors and strategies for self-editing. Treglia (2008) highlights study results indicating that feedback which acknowledges students' writing, offers suggestions, and provides them different choices to address their weaknesses is more helpful and preferred by most students. Treglia also found that students appear to prefer mitigated comments or polite remarks on the student's performance that avoid hurting their feelings as opposed to unmitigated type of comments. Mitigated comments foster motivation among the students to take an active part in revision, whereas unmitigated comments discourage students from taking actions to revise their work.

Combining Summative and Formative Assessments

Candidates seeking national board licensure are called to show evidence that they have a proficient understanding of their use of assessments, both summative and formative, to make a positive impact on student learning (NBPTS, 2015). This is why candidates benefit from having a solid assessment system. An assessment system is a deliberate combination of multiple types of assessment such as summative and formative assessments in order to collect, use, and process vital information for students and teachers with regards to improving students' academic performance and achievement as well as teachers' practices (Rothman, 2016; Conley, 2013).

Conley (2013) explains that many assessment systems do not use multiple types of assessment and simplify students' work and progress to summative cut scores because their objective is to comply with the rules of accountability of the education system. Unfortunately, this kind of

information cannot be transferred to specific decision making as it is not designed following good principles of assessments. Phillips and Wong (2010) explain that assessment systems should establish performance measurements that are parallel with clear standards, allowing students to show their progress by using the skills and knowledge they have acquired. Assessment systems should be able to provide data that teachers can actually use to inform their practice (Phillips & Wong, 2010). Lewis, Madison-Harris, Munoeke, and Times (2010) point out that teachers should be constantly looking at students' work samples in order to identify the specific standards that students are struggling with.

Another important factor to consider about the creation and use of assessment systems as suggested by Lane (2012) is that assessment systems ought to be evaluated not only in terms of their effectiveness for accountability purposes but also in their validity and efficacy to provide evidence of their impact on instructional improvement and student learning. In assessment, the best systems are those that serve as information sources for teachers regarding what they need to work on and what they are doing well so that they can make well informed decisions (Guskey, 2003). Using a well defined assessment system can serve as evidence of candidates' knowledge of using assessments to positively impact student learning.

Summary

While the path to achieving Master Licensure in Illinois is narrow, there are several skills and characteristics that candidates for Master Licensure are required to evidence in their professional practice. In this context, the newly structured NBPTS Component 4 Effective and Reflective Practitioner is designed to collect standard-based evidence of accomplished practice on how well teachers know their students, how they use information about their students to impact student learning, and how both formative and summative assessments are implemented in their instruction (NBPTS, 2017). This article highlighted that candidates may take advantage of exploring the vast range of characteristics attributed to effective and reflective practitioners by the NBPTS and also characteristics shared by other experts in the field of education. Having knowledge about students' likes, dislikes, backgrounds, and personalities is found to be valuable for the design of differentiated instruction and for fair assessments (Weber, 2015).

Similarly, using assessments to impact learning in a positive manner is of utmost importance for effective and reflective practitioners. Candidates may use evidence of how well they use assessments to complete part of the requirements of Component 4. Lastly, assessments are better when combining summative and formative approaches because in this way teachers can share feedback as a mean of addressing and solving learning problems while the process of learning is ongoing (Conley, 2013). Perhaps this analysis of content, implications, and skills required to complete Component 4 will help candidates understand what they need to do in order

to be the effective and reflective practitioner of the 21st century and to achieve Master Licensure in Illinois.

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Synopsis and Reviews

**PRESENTATION SYNOPSIS OF *TEACHING STUDENTS IN POVERTY: RESEARCH BASED INSIGHTS INTO PREPARING TEACHER CANDIDATES TO BE SUCCESSFUL*
by
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Abstract

Over the past ten years the number of students in the United States living in poverty has continued to grow at an alarming rate. Research notes the impact of poverty in classrooms and schools, which is often observable as student trauma, high mobility, resource inequity, achievement gaps, truancy, health issues, and a lack of parental support. Supported students are often strengthened and respond with resilience and adaptability. Schools of Education must consider mechanisms to help prepare teachers to work successfully with impoverished students.

The definition of poverty, as we know it, continues to change in our society due to many factors. According to Census. Gov (2016), poverty is defined as "if the family's total income is less than the family's threshold, then that family and every individual in it are considered in poverty". Thus, a family of four consisting of two adults and two children with an income of less than $30,000 a year (before taxes) a year is living in poverty. The scale of poverty reaches students who live in both urban and rural areas and continues to grow each year in our society. Socioeconomic status (SES) is often used as a way to define an individual's income level, education, health, and employment (U.S. Social Security Office, 2006). Rothstein (2004) noted that student achievement and performance are influenced by assets, home ownership, savings for college, and the time the family has lived in poverty, especially if the child is younger than the age of 5.. According to a study by Murnane (2007), impoverished students tend to be concentrated in schools that are considered low performing, and teachers are not equipped to handle the many challenges of their students. He also noted that when students living in poverty leave school, they often do not have the skill set to earn a wage that will allow them to grow out of their impoverished lifestyle. Trauma is another term that is often used as a measure to describe poverty in students. Herman (1997) defined trauma as "an affliction of the powerless" in which the victim "is rendered helpless by overwhelming forces" and often results in violence. Thus, we often see acts of violence in our schools where there are high pockets of crime and bodily harm. Trauma can also be seen in the classroom where behaviors are often misinterpreted. (Sitler, 2009).

An increase in poverty continues in both the United States and our home state of Illinois. In analyzing census results, data issued in an article by Bishaw (2013) indicates that poverty increased from 2000 to 2012 from 12.2 percent to 15.9 percent. Bishaw added that in the 25 largest metropolitan areas, poverty rates ranged from 8.4 percent to 19.0 percent. This figure included an increase of 33.3 million to 48.8 million. Three states (Alaska, Vermont, and Wyoming) showed an increase in the number of people living in poverty, but the change in the percentage of people in poverty was not statistically significant. In 2000, poverty rates ranged from a low of 5.3 percent in New Hampshire to a high of 20 percent in Louisiana. A University of Michigan study (2016) noted that in the late 1950's, the poverty rate was 22.4 percent, or 39.5 million individuals. What is interesting to note is that these

numbers declined in the 1960's to a low of 11.1 percent, or 22.9 million persons. However, by 1983 the number rose to 35.3 million or 15.2 percent. Since 2012, the poverty rate has remained relatively stable. The Michigan study (2016) added that children represent a disproportionate share of the poor in our country, with them representing 23.1 percent of the total population, and 33.3 percent of the poor population. This poverty rate also varies by race and origin.

Data for Illinois for the same period shows an increase in those living in poverty from 1,334,589 to 1,850,562, or a percentage increase from 11.1 to 14.7. Diane Rado (2013) reported in 2013 the impact that funding plays when students are located in an Illinois school district. Poverty grants to local school districts have increased nearly $10 billion over the past decade. She added that there are many questions as to how poverty funding is distributed throughout the state. For 2013, the general state aid formula was calculated at $4.8 billion, which shows an increase of 12 percent from 2003. Rado (2013) also pointed out concerns over how poverty money is distributed for each school district, which means that as the number of impoverished students rise, state aid is accounting for a larger amount of the overall state aid. As one can deduce, the poverty level continues to rise each year both in the state and nationally, and schools continue to rely more on state aid.

Numerous studies have noted the impact of impoverished students related to the classroom/school.

- One study conducted by Coles (2008/2009) showed that "children of poverty are more likely to suffer from food insecurity which means slower language development as well as behavioral problems".
- A lack of medical insurance for families in high poverty results in increased childhood illnesses, which leads to more school absences which ultimately results in lower school achievement. Another concern added to this is that poor schools often lack a school nurse (Berliner, 2009).
- Impoverished children are often exposed to higher levels of air pollution, lead paint, PCB's, and smog (Martin, 2004).
- Limited access to books at home, school, and in communities for student living in poverty is a concern (Neuman and Celano, 2001). Access to books is often related higher reading achievement.
- Weak or anxious attachments formed by infants in poverty become the basis for full-blown insecurity during early childhood years, thus resulting in poor school performance and behavior on the child's part (Jensen, 2016).
- Petrilli and Wright (2016) added "states with a higher percentage of students from low-income families report lower average scores on 8th grade math on the National Assessment of Education Progress". These results show evidence of a correlation between poverty and lower test scores.
- Naparstek (2004) sees students living in poverty as having no interest in the future, showing difficulties with concentration, and exhibiting negative physical and verbal behaviors.

Educators often stereotype students, especially those from impoverished homes. However, resilience is shown to play a major factor in enabling these students to overcome adversity. In a study by Kitano and Lewis (2005), resilience and coping were reviewed as related to gifted students. "Effective coping strategies differ depending upon particular circumstances, but successful academic experiences can enhance self-efficacy, which, in turn, supports resiliency. Specific factors among different groups that affect resilience but also common positive coping strategies that might be shared across groups". Strategies that are cited to enhance resilience include working with a caring person, encouraging optimism and self-efficacy, and

sharing support for cultural strategies and heritage. Another major factor for supporting children in poverty includes the primary caregiver. Burney and Cross (2006), in their research noted that when someone from the family was supporting college-related goals, the student was most likely to attend college. Another factor that is often observed is the role of mentors that, over a long period, is critical (Burney and Cross, 2006). Schools and colleges are now providing more focused academic and social support services to help students achieve through high school, apply to a college/university, and stay in school until graduation. Hopefully, this will allow for an increase of college-bound impoverished students.

What can Schools of Education do to prepare teacher candidates at the undergraduate and graduate level? This question is often asked in our schools since there has been a considerable growth of our impoverished and diverse students in the general population. K.M Zeichner (1993) did a study which focused on integrating issues of diversity throughout field experiences, course work, and subtopics on teacher education courses/programs. Although his ideas did not specifically address poverty, they do relate to the issue in many ways. His "key elements" aimed at preparing teachers for diverse students included:

1. Admission procedures screen students based on cultural sensitivity and commitment to social justice.

2. Student's sense of their own ethnic and cultural identities is developed.

3. Students examine their attitudes toward others.

4. Students are taught the dynamics of prejudice and racism and how to deal with them in the classroom.

5. Students study the dynamics of prejudice and racism and the school's role in social reproduction.

6. Histories and contributions of various groups are integrated into the curriculum.

7. Characteristics of learning styles of various groups and individuals are incorporated, and the limitations of such information are assessed.

8. Sociocultural and language issues are infused into the curriculum.

9. Methods for gaining information about communities are studied.

10. A variety of "culturally sensitive" instructional strategies and assessment procedures are taught.

11. Success models of traditionally underserved groups are highlighted.

12. Community field experiences and/or student teaching experiences with individuals from various cultural backgrounds are a part of the practical component of the teacher education program.

13. Students experience opportunities to "live" or become immersed in communities of color.

14. Instruction is embedded in a group or cohort setting that provides intellectual challenge and social support.

Engagement for students living in poverty must have a continual focus, which includes a pedagogy that is structured to meet their specific needs. One of the first considerations should include family involvement. This includes reaching out to parents at the beginning of the school year so that they know you are supportive of them and their child. Continue to include physical education and the arts in the school curriculum since many of our low income schools have dropped these two programs, thus denying our low income students access to these important subjects. Jones (2008) noted that one must make sure to look closely at instructional materials that often show class bias. Another example to consider for impoverished students includes having them read for enjoyment, which should result in an appreciation of literature (Kellett, 2009). Moving forward, universal preschool should be considered as a means to enhance student achievement later in life. Providing access to health

clinics and farms for fresh food will result in better overall well-being (Neuman, 2009). Lastly, Gould and Gould (2003) added that schools need to increase health services, such as school nurses, which will result in fewer student health issues.

   The research related to this topic of preparing teachers for work with impoverished students continues to present many approaches and challenges that educators need to consider and be aware in today's ever changing society. No matter what their socioeconomic status, with hard work and commitment, dedicated teachers will meet the needs of all students in today's schools and classrooms.

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      REVIEW OF *REACH THE HIGHEST STANDARD IN PROFESSIONAL*

LEARNING: LEADERSHIP, Karen Seashore Louis and Valerie von Frank, 2016, Corwin and Learning Forward, paper, 120 pages.
by
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The book presents the standards that can be used to encourage, develop, and refine leadership skills in classroom teachers. Not a book about changing teachers into full-time administrators, this one has more to do with growing the skills such that teachers can do this work in addition to their teaching. The teachers can incorporate the skills and content they need to be effective and trusted leaders in their buildings.

The authors present the information on the standards of leadership in three main sections: Leadership for Professional Learning: Creating the Learning Organization; Learning Together for Leading Together; and The Case Study. In this last section, looks at some practical applications and their results.

The authors use a very conversational style (e.g., p.19) and basic vocabulary to talk about leadership and how to embrace it. They begin each chapter with the administrator making a comment to the teacher about leadership and the teacher responding with their own comment or question. The authors feel most teachers do not have a clear understanding of the different kinds of leadership styles, hints, strategies, and argot.

I disagree that leaders do not understand what natural leadership skills are, what examples of helping lead the other teachers in the building might be, and the importance of avoiding negative personalities who may thwart the new role and success of the teachers who wish to lead. I think teachers can be very intuitive about changes in their buildings and about differences in school culture. I think teachers also see and mixed-up or inconsistent leadership in their building.

I recommend those who work in administration, teaching, or professional development read this text and consider the standards discussed by these authors. The standards presented could be very helpful in schools or districts without teacher and leadership standards established locally, by the state department of education, or through the professional organizations involved. Further, it is always interesting to get another point of view when working on a project or initiative.