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AILACTE Journal Volume XV Call for Manuscripts

The AILACTE Journal is a refereed journal with national representation on its editorial review board published by The Association of Independent Liberal Arts Colleges for Teacher Education.

The AILACTE Publications Committee and the Editorial Board of the AILACTE Journal announce a themed issue for 2018: **Civil Discourse in Difficult Times: The Power of Words.**

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Quality I of AILACTE's Models of Excellence for teacher education addresses the moral and ethical dimensions of the preparation program's learning community. Exceptional AILACTE institutions view teaching as a moral activity, explained as "a way of acting in relationship to others and situations, [and] the sense of taking responsibility for one's actions as an individual in the professional environment." At the heart of this moral activity is effective communication. One cannot be in true relationship with others if clear, respectful, reciprocal communication does not exist. In this age when public discourse is becoming increasingly vitriolic, and preservice teachers see daily examples of words used to attack and tear others down and to deflect personal responsibility, it is incumbent upon teacher education programs both to model and to teach candidates how to use words to foster understanding of alternative perspectives and forge compromise. AILACTE asserts that exemplar moral institutions create "an intellectually safe environment that promotes dignity and respect for all people within the academic community." Promoting civil discourse is essential if our institutions and programs are to become and remain safe spaces where all of our teacher candidates—and their future students—both give and receive respect.

As you prepare a manuscript for this themed issue of the AILACTE Journal, you may want to consider the following questions: In what ways is your institution teaching and promoting civil discourse among your preservice teachers? How do you encourage the expression of multiple views in your classroom? How can a learning community thrive despite disagreement? How do you teach students that words matter? What structures and pedagogies support the moral dimension of your work with preservice teachers? We look forward to reading your work and learning from your experiences and ideas.

Criteria for submitting a manuscript:

Manuscripts must be postmarked by July 15, 2018, preceding the 2018 publication.

- APA style; not more than 15 pages, double-spaced
- Author's name and affiliation on the title page only
- Complete title and abstract (150-word maximum) on the first page of text
- Running head and page number on subsequent pages
- Electronic file copy of the manuscript in MS Word or compatible software for Windows XP will be needed after acceptance for publication
- Submit manuscripts to: Jackie Crawford, Journal Co-Editor; jackie.crawford@simpson.edu.

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Repositioning Family-Community Knowledge in Teacher Preparation

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Abstract

Preparing teacher candidates for the important work of engaging with family-community is a persistent challenge. Teacher educators should consider repositioning the role that family-community knowledge holds in teacher practice and in the teacher education curriculum. This shift in philosophical, professional, and curricular importance can be an important step toward improving practice in this area. Inspired by recent calls to advance a regard for community-based knowledge and expertise in the preparation and practice of teachers, the authors share details of teacher preparation efforts at one small, Northwest university and their exploration into the question, "What is learned by teacher candidates when they set out to engage with families and the community?" The qualitative analysis of nine teacher candidate family-community engagement reflections resulted in four themes: 1) Candidates can grow in familiarity with family-community; 2) Families-communities have knowledge they can share about learners; 3) Candidates can use family-community knowledge to impact the classroom; and 4) Candidates tend not to reflect upon what they learned about families and communities in light of their own life experiences.

Keywords: **family, community, engagement, teacher education, curriculum**

There is consensus in the literature that working with families and communities has a significant impact on student achievement and well-being (Beltran, 2012; Christenson & Reschly, 2010; Epstein, 2011; Harris A. & Goodall, J., 2008; Henderson & Mapp, 2002; Hiatt-Michael, 2010; Van Voorhis, et al., 2013; Weiss, Caspe, & Lopez, 2006). Yet, Zeichner, Payne and Brayko (2015) note that neither the traditional college teacher preparation programs nor the nontraditional early entry programs pay attention to the role of family and community-based knowledge in teacher preparation in spite of it being evident in teacher education standards. This lack of attention to preparedness results in research consistently reporting that teachers, both in-service and preservice, feel unprepared to do this aspect of their work (Casper, 2011; Epstein & Sanders, 2006; Hiatt-Michael, 2001; Markow & Martin, 2005; Patte, 2011; Sewell, 2012; Zeichner et al., 2016). This reality in teacher preparation is a persistent and puzzling challenge (Buchanan & Buchanan, 2016). It is time for teacher educators to explore the reasons for this challenge and to begin to think differently about this aspect of teacher practice.

In an effort to turn the tide on this persistent challenge, we contend that teacher educators should consider repositioning family-community knowledge and practice as a necessary foundation in the teacher education curriculum. This shift in philosophical and curricular importance can help programs take a first step toward addressing the lack of candidate preparedness evidenced in the literature.

Theoretical Foundations for Our Work

Preparing Teachers for a Democratic Society

Historically, teacher preparation has been rooted in the importance of education to a democratic society. Dewey wrote that "Democracy has to be born anew every generation, and education is its midwife" (2008, p.139). Banks (2005) talks about education for citizenry when he says,

> An important aim of school curriculum should be to educate students so that they will have the knowledge,

> attitudes and skills needed to help construct and to live in a public community in which all groups can and will participate (p. 195).

Preparing individuals who will teach students in ways that prepare them to be contributing members of their communities and for the greater good is important work that requires teacher candidates to understand the communities in which they are preparing students. Zeichner, Payne, & Brayko (2015) say that "In our view, the preparation of teachers for a democratic society should be based on an epistemology that in itself is democratic and includes a respect for and interaction among practitioner, academic, and non-professional educators in communities" (p. 124). We envision the preparation of teachers who will come alongside the community, as partners, in the hopes and dreams families and communities have for their children and youth. This foundation is important to our work because it situates the central goal of educating students in direct relation to communities. This democratic lens on preparation leads us to face the reality that educating all students, with their own cultural and linguistic heritage, is a major challenge and a social justice issue.

Teacher-Family-Community Engagement as a Social Justice Issue

When reviewing the literature in this area, we were stunned and challenged by a recent comment from researchers at a large, Northwest research university. Zeichner, Bowman, Guillen, and Napolitan (2016) say "It is ironic that so little of this work goes on in teacher education programs across the United States when so many of them have claimed the mantle of social justice as the basis for their work" (p. 288). This statement caused deep reflection for us because in our program social justice is more than a professional responsibility or moral imperative, but runs much deeper into our university's theological foundations.

The private university that we work with was founded on Quaker principles and commitments. These commitments are

spoken of as Quaker and/or Friends testimonies, driven by beliefs that are put into practice in the community (AFSC, 2011). "Friends hold that all people are equal in the eyes of God and have access to the "inner Light" (AFSC, 2011, p. 7). This profound sense of equality leads Friends to treat each person with respect, looking for "that of God" in everyone. In practice, listening to the voices of each member of a community and valuing their perspective is important. Our theological roots have caused us to embrace social justice as a critical element of our teacher education conceptual framework and we claim that it can be found across each element of our curriculum. Zeichner et al.'s (2016) challenging statement causes us to reposition family-community knowledge as a foundation in our curriculum, much like the other strong instructional foundations that are emphasized in our work. Each of these theoretical foundations represent a lens through which we view our work as teacher educators and scholars.

Literature Review

This brief literature review begins by summarizing a typology for teacher-family-community work. We then share the literature around engagement as it is related to teacher candidate development.

Exploring a Typology for Teacher-Family-Community Work within Teacher Education

Zeichner et al. in their 2016 article entitled *Engaging and Working in Solidarity with Local Communities in Preparing the Teachers of Their Children*, share a three-tiered typology created to organize efforts around teacher-family-community work in teacher education. Each approach is distinguished by it epistemological grounding, educational purposes, and its implementation requirements. This work can be a helpful framework as teacher educators consider how to best position and deliver family-community curriculum. The typology, briefly summarized below, includes three classifications of how teachers work with family-community: *involvement*, *engagement*, and *solidarity.*

Teacher-family-community involvement. The teacher-family-community involvement paradigm is rooted in traditional modes of *involving* families and community-based organizations; things like teacher newsletters, parent volunteer efforts, parent-teacher conferences, involvement in the PTA, curriculum nights, back to school events, and family homework assignments. Zeichner et al. (2016) say that "These involvement activities create opportunities for school staff to share their knowledge and expertise with families and community providers about school expectations, specific school curriculum, ways to support children's learning outside of the school, effective communication with teachers, and ways that families and community-based organizations (CBO) can support teachers and the school as a whole" (p. 278).

Teacher-family-community engagement. The engagement approach comes at this work from a completely different perspective. "Instead of teachers and school staff as the knowledgeable participants, this approach stresses the knowledge that families, CBO staff, and community mentors can impart to teachers" (Zeichner, et al, 2016, p. 279). This perspective has teacher candidates hungry to learn from family and community partners; the knowledge gained ultimately drives instructional decisions on behalf of student growth.

Teacher-family-community solidarity. This approach appears to hinge on sustained engagement with family and/or community members. "Underlying the *solidarity* approach is an understanding that educational inequalities (e.g., opportunity and/or achievement gaps) are part and parcel of broad, deep, and racialized structural inequalities in housing, health, employment, and intergenerational transfers of wealth (Zeichner, et al., 2016, p. 279). This approach might include families, teacher educators, in-service teachers, and community activists joining together to create some type of educational or social reform.

As we examined the type of instructional work being delivered in our program, we believe that the lion's share of content delivered and assessed is "involvement" oriented. We seek to embrace an engagement paradigm. Eventually, we hope that sustained

engagement will lead to more solidarity efforts. We now focus our attention on recent literature around teacher-family-community engagement.

Power of Parent and Community Engagement

Miller, Lines, Sullivan, & Hermanutz (2013) note that there has been a shift in the ways in which teachers and schools partner with families. "This shift involves a move from a traditional focus on parent involvement to a strategic emphasis on family partnering where educational success is viewed as a shared responsibility with families playing a critical role" (p. 150). This shift requires that families are engaged in the educative process. However, teachers must bear the responsibility for taking the lead by building relationships where collaborative work, on behalf of students, can occur (Amatea, 2009; Boethel, 2003; Calabrese Barton et al., 2004; Ferguson, 2007; Hiatt-Michael, 2007; Kearney et al., 2014). Therefore, teacher educators must prepare candidates to engage with the families and communities of their learners. This work can be incredibly complex when the teacher and family come from different socioeconomic and/or cultural perspectives. The literature focused on working with families of diverse and/or learners living in poverty offers teacher educators a window into new conceptualizations that hold potential for the preparation of teacher candidates.

The Challenge of Working with Diverse Families and Communities

The current teaching force, who serve as mentors for our teacher candidates, most often craft engagement strategies that tend to be middle class, white, and emblematic of European-American values, assumptions and experiences (Tran, 2014). Calabrese Barton et al. (2004), in their study of high-poverty urban families, contend that schools often portray the ideals and beliefs of a capitalist culture and that they view the culture of poor, minority, and linguistically diverse families as subordinate. Much of the literature in this area talks about a power differential between school and family that

impact their ability to understand one another and work together. Schools and classrooms can only be inclusive for families that live within differing systems when they are intentional about working at the intersection of the school's perspective and the family's perspective (Calabrese Barton et al, 2004; Kearney et al., 2014). Harris and Goodall state it this way: "parental engagement is going to be possible with certain groups only if major efforts are made to understand the local community, and if the relationship is perceived to be genuinely two-way" (2008, p. 286).

Preservice Teacher Development for Engagement

Preservice teacher development for engagement begins with teacher candidates gaining knowledge of the child, their family, and the community. In Evans' (2013) comprehensive review of literature on teacher educators' efforts to prepare candidates to successfully engage with families-communities, he cites direct experience with family and/or community members as the common denominator across all findings that led to positive results for candidates. Having direct contact, an authentic experience, appears to be quite different from reading in texts about families and communities. Zeichner's research team (2016) reports on teacher candidate interviews following direct contact experiences with families and community members. Researchers identified a shift in candidates' perspective on the family's role in a child's education. "We identify this learning outcome as "re-positioning families" (p. 283). Teacher educators should consider crafting curricular assignments that open the door for engagement with families where candidates come as learners in pursuit of knowledge. Home visits are one strategy that provide the teacher with a rich source of information about the child and family (Hiatt-Michael & Purrington, 2007). Ramos (2007) suggests another potential strategy, community-based literacy walks. With this approach, the teacher ventures into the community where the students live and has the opportunity to become familiar with and even engage with community resources. Zeichner et al. (2016) engaged candidates with community panel discussions and debriefs.

These authentic experiences lead to increased candidate confidence in their ability to work with families. Evans (2013) reports that the experiences working directly with families was at the heart of candidates' increased confidence in their preparedness. Blasi (2002) notes that teacher educators' efforts to come alongside candidates' direct engagement and reframe "at-risk" families, as families with positive assets, helped curb preconceived notions that candidates brought to the experience.

Engagement experiences with family-community often lead teacher candidates to use the knowledge that they have gained from that experience to improve classroom instruction. "The adaptation of pedagogy based on these encounters not only denotes the potential for improved instruction, but also indicates a fundamental shift in how new teachers perceive family and school relationships" (Evans, 2013, p. 129). Results from Zeichner and his team's research align with Evans' findings. They write that results "...indicate that some teacher candidates translated their re-positioning of families and their re-positioning of their own vision of teaching into actions in their classroom and/or in their school" (2016, p. 284). These promising results provide inspiration to create similar experiences for all teacher candidates.

The project that follows was designed to facilitate direct engagement with family and community members as an initial step to encourage teacher candidates' re-positioning of their notions of family-community engagement.

The Family-Community Engagement Project

Recently, we have become more strongly convinced that families and communities hold knowledge that teachers need to tap into if they are to support the healthy development of all learners. Though we were quite familiar with the literature in the area of family-community engagement, we had experienced what Zeichner (2016) refers to as a "re-positioning" of the role of family-community in the development of teachers. The strength of this conviction motivated us to action. We began to craft a project that would immediately and actively engage teacher candidates in the

construct that family-community knowledge is essential.

Thus, we developed a Family-Community Engagement Project to be completed by preservice teacher candidates in the Master of Arts in Teaching (MAT) program at our small Northwest university. We approached the project with several things in mind. We wanted to be able to implement a meaningful project immediately, so it needed to be simple, but significant. We wanted the project to be something that could be accomplished in both elementary and secondary clinical practice settings. We wanted the project to clearly present how one might go about tapping into family-community knowledge, but we also wanted there to be choices that would provide for varied circumstances and support candidate investment in the process. Most importantly, we wanted each teacher candidate to be engaged in the idea that families and communities hold important knowledge for the teachers of their children, and we wanted them to consider how they might use that knowledge on behalf of the learners. Recent conference presentations and the research literature revealed several informed ideas for how candidates could explore family-community knowledge. Three of these ideas were selected, adapted to fit our particular needs, and formulated into the Family-Community Engagement Project as community knowledge activities.

After developing project materials and placing them in the university online learning environment, the details of each assignment in the Family-Community Engagement Project was presented early in the spring semester, by cohort leaders, to more than fifty candidates across five cohorts in three different MAT formats. While most of these emergent teachers were in a multiple-subjects clinical practice setting, about one third of the candidates were placed in secondary, single-subject classrooms. The Family-Community Engagement Project was presented to these candidates in the form of two related assignments: the *Engagement Plan* and the *Engagement Report*. In the assignment guidelines, we shared with candidates that these two assignments were designed to develop the knowledge, skills, and dispositions needed for a relational approach to teaching and that such an approach values and utilizes

the knowledge that resides in families and communities and is essential to fully meet the needs of all learners. By the end of that spring semester the candidates had successfully completed the course-required project.

Description of the Project

The Family-Community Engagement Project involved two assignments. The first assignment, the *Engagement Plan*, required each candidate to submit a brief document (150-300 words) describing a "community knowledge activity" in which they would engage while in their clinical practice. This is an activity where the candidate obtains knowledge from families of learners or the school neighborhood that can be used to support classroom learning. The criteria for a community knowledge activity included:

- An opportunity for a teacher candidate to engage with the family and/or community of the learners in their classroom;
- An opportunity for the candidate to reflect on the knowledge gained from families and/or the community, and on how that knowledge can be used to support learning in the classroom;
- Encouragement to particularly consider aspects of the community that represents diverse, minority, and/or underprivileged populations.

Descriptions of three suggested community knowledge activities were provided.

- *Community Conversations* (Sleeter, 2017): The candidate visits with several members of the community asking recommended questions, such as, "What do you see as the main assets of this community?" and "Describe how you would like to see the community ten years from now".
- *Neighborhood Walk* (Sleeter, 2017): The candidate spends time in the neighborhood of the school observing, listening, and paying attention to things (e.g. geometric shapes in buildings, kinds of plant life/rocks, styles of music, games children/teens play) and tries to identify at least twelve things they can draw on to help learners better understand concepts taught and

learned in the classroom.

- *Family Conversations* (Amatea, 2009): The candidate arranges for conversations with parents of learners in their classroom. They listen to parents share about the specific strengths and talents they have observed in their child and ask the caregiver about other helpful things they may like to share about working with their child or their family.

Candidates were invited to adapt the above *Community Knowledge Activities*, or propose their own using the above criteria.

The second assignment, the *Engagement Report*, required candidates to submit a document (600 to 900 words) reporting and reflecting on the implementation of their Community Knowledge Activity. Each of these assignments was to be posted to the university online learning environment and they were reviewed and assessed against the criteria as "met" or "not met" by the candidate's cohort leader.

Methodology

The present investigation applied scholarly inquiry to the implementation of a new pedagogical practice with teacher candidates during one semester of clinical practice at a small, private Northwest university. This inquiry was designed as a pilot study that would allow us to explore a small subset of teacher candidates' experiences engaging with family and community. It proceeded around thoughtful questions about the development of new teachers, and also the learning of the students in their classrooms. As such, this study can be said to fall solidly into a current professional definition of the Scholarship of Teaching and Learning (Simmons & Marquis, 2017).

In the early spring of 2017, over fifty teacher candidates were asked, in newly structured but flexible assignments, to engage with the family-community of the students in their clinical practice classrooms. More specifically, they were asked to obtain and reflect upon knowledge from families of students or the school neighborhood that might be used to support classroom learning. Candidates

were provided with the suggestion of three specific activities for how this might be accomplished and asked to post both their *Engagement Plan* and their *Engagement Report Reflection* online.

This pilot study utilized a convenience sample of nine teacher candidate reflections that were selected for a thorough, qualitative inquiry. These nine candidates were all from one cohort. The initial research question was, "What is learned by teacher candidates when they set out to learn from families and the community? The reflections were initially analyzed for reoccurring constructs, recognizing also the absence of constructs one might reasonably expect, and these were grouped into initial themes.

Following a careful initial pass through each reflection, the investigators revisited the related literature in light of the initial findings. The result of this interaction with the literature was the selection of four more specific research questions to be explored:

1. Is there evidence in the reflection data from the Community and Family engagement assignment that candidates are being given an opportunity to grow in familiarity with the families and communities in which they are teaching?
2. Are candidates considering what they learn about families and communities in light of their own life experiences?
3. Is there evidence that a growth in familiarity with family-community shapes classroom practice?
4. Is there evidence in the reflection data of "re-positioning families": a shift in the candidates understanding about the role of families in the education of children (Zeichner et. al, 2016)?

These questions were used to guide several additional passes through each of the nine reflections. This analysis resulted in four themes that can be used to shape future iterations of the Family-Community Engagement Project and guide instruction on seeking knowledge from families and communities to inform the education of children.

Findings

The qualitative analysis of nine teacher candidate

family-community engagement reflections resulted in four themes: 1) Candidates can grow in familiarity with family-community; 2) Families-communities have knowledge they can share about learners; 3) Candidates can use family-community knowledge to impact the classroom; 4) Candidates tend not to reflect upon what they learned about families and communities in light of their own life experiences. Each of these themes are discussed below.

Candidates Can Grow in Familiarity with Family-Community

When assigned a family-community engagement activity, most teacher candidates grew in familiarity with the families and communities of learners in their classroom. Candidates learned varied information about the family-community, such as:

- a parent's college aspirations for their child;
- that Spanish was the language used at home;
- that there may be a new skate park coming to town;
- that both parents worked "to make ends meet" (TC Reflections, Spring 2017).

Some candidates grew in their understanding of the vision that people had for their neighborhood. For example, a teacher candidate shared this quote from an interview with a community member: "I'd like to see the price of living decrease and remodeling of the library would always be nice. Maybe a community garden in our newer park across the street for families to access and work on together (spring 2017). Another candidate documented a parent's understanding of the vision of their child's school:

> In response to the question on the vision of (this small private school) she said she thinks the vision for the school is to be able to grow the student body and, as a result, expand the curriculum that is offered to the students to take the academics to another level (spring 2017).

Parents sometimes had suggestions for the school, such as better addressing bullying behavior. In one example a candidate notes, "This guardian felt the school should discipline each child for their

own actions and not the class as a whole for the actions of a few" (spring 2017). In our analysis of reflections from candidates who were asked to engage with family-community, it is evident that most candidates grew in their familiarity with the community in which they were teaching.

Most often, however, candidates were able to gain a better understanding of the vision that parents had for their own child's education. One candidate shared this detailed account of a mother's aspirations for her daughter:

> In talking to the mom of the first student, I noticed that her biggest concern was whether or not her daughter was a good person and was helpful and kind to other students. She did not seem too concerned with academics. Although her daughter qualifies for an enrichment math group, she opted her daughter out so that she can "just be a kid". In talking to her about ways to support her student, she mentioned having time to talk about emotions and teaching skills (like dealing with anxiety, or stress, or friend conflict) that they can use in other areas of life. She was very concerned with her daughter's level of anxiety and how she deals with stressful situations. The mom was very confident in her daughter's academic ability and was not worried about middle school and beyond academically. She said "I just hope that I have raised a good kid who is kind to others and stands up for what she believes." She quickly added, "now if I see her grades start to slip I might be singing a different tune" (spring 2017).

Note that in the above account, the caregiver not only shares their hopes for their child's education, but also specific details about the child. The next finding in our analysis reports that parents share specific knowledge about their child.

Families-Communities Have Knowledge They Can Share About Learners

Almost all candidates expressed that they learned something

specific about one or more of the learners in their classroom. Some examples include:

- "She has been reading a lot more at home, by choice!"
- "He tells (his mom) more about lessons that he finds interesting, which always involve hands-on activities. In terms of discipline, she finds that a direct, authoritative tone works best. Her final comment was that anything related to basketball would be of interest to him."
- "He responded by saying that (his daughter) has a talent for memorizing, has a musical gift for singing, and is very compassionate towards other students, especially those with special needs" (spring 2017).

Many of the candidates reflected upon how they were able to use this knowledge about the learners in their classroom in their teaching, particularly in the area of learner engagement.

Candidates Can Use Family-Community Knowledge to Impact the Classroom

Over half of the reflections analyzed included specific ways that knowledge was shared by caregivers about their children and was used by teacher candidates in their teaching. We were impressed by how, in some instances, teacher candidates took a suggestion by a parent regarding their child's area of interest, and applied a substantial amount of thought, effort and creativity, as can be clearly seen in the following articulate reflection by an emergent secondary science teacher:

> I took (the mom's) advice and thought of a way to incorporate basketball into my lesson for the week. We were studying microscopes, so this took some creativity. I presented it this way to the students: How many of you like basketball? (many kids raised their hands) What kinds of things do you know about your favorite players? (students shared various answers like: rebounds, shots averaged per game, height of player, where they went to school). Then I talked about how sometimes we know a lot about a few

> star players, but we know that it is a team sport. I related this to science, saying that usually the history books mention a few key "players," but, it is the work of many scientists contributing to our advances in scientific knowledge and discovery. This was a segue into talking about the scientist credited with the first microscope, but also I talked about other lesser known scientists who added to the invention of the first microscope and how the work of scientists has continued to build on that knowledge and given us greater technology like electron microscopy. I also talked about African American scientists who used microscopes in their study, such as Charles Drew who developed the first blood banks in the U.S. What I noticed is that the focus student immediately perked up at the mention of basketball and seemed much more engaged in the dialogue about this topic. He also turned in his drawings from the microscope work done in class, which is not typical behavior for him—he usually does not complete assignments or turn them in. Through this interview and experience I learned about a passion of a student that helped me to better connect the lesson to something he would find interesting. It also reminded me to think creatively! (spring, 2017).

In these excerpts, the teacher candidate reflects specifically upon an increase in learner engagement due to their thoughtful classroom application of knowledge about a learner that was shared by a parent.

There was also one finding that resulted from an element that was missing from most of the candidate reflections: *Candidates tend not to reflect upon what they learned about families and communities in light of their own life experiences.* Only three of the nine reflections analyzed included this type of reflection. One of the early childhood candidates, for example, stated:

> If I were to answer the question, "What do I see as the main assets of the community?" it would initially be that

> they are a caring group of people. They care about the children, the families and most definitely what is going on in the school and the classrooms. A majority of the teachers comment that our particular community is lacking in parent help and support. This is only what I am hearing in a staff room (repeatedly), this could be a perspective which is true, partially true, completely incorrect or teachers being negative. I am choosing to be positive regardless (spring, 2017).

This kind of consideration of how engagement with parent-community might converge or diverge from previous experience or perspectives was not evident in most of the reflections. As discussed in the implications below, this is a finding that will cause us to make changes in future.

Implications

There is power in asking teacher candidates to engage with family-community. Each of the findings above indicates that a relatively simple project which includes direct experience (Evans, 2013) and that supports a shift in the way candidates view the place of family-community knowledge in the classroom can result in meaningful outcomes, both for the development of teacher candidates and for the learners in their classrooms. Zeicher et. al (2016) states:

> Given the demographic profile of teachers and of the students who attend public schools, the big challenge before us is to learn how to better prepare and support teachers who are committed to the families and communities of their students as they go in to teach "other people's children" in communities that are often unfamiliar to their own life experiences (p.288).

It is important that we grasp that candidates can grow in familiarity with family-community if they set out to do so. Candidate reflections expressed an understanding of the value of such

initiative. For example, one candidate reflects:

> In talking to the parents…I gained valuable insight into their lives and what they want for their children and what they value…. From this experience, I saw the great benefit of talking to parents and finding out as much information on each child as possible (spring 2017).

This aspect of engagement with family-community is particularly important to the support of a justice stance in teacher preparation.

Consistent with the literature on teacher educators' efforts to prepare candidates to successfully engage with families-communities (Evans, 2013), over half of the candidates we studied were able to use knowledge that they learned from communities to improve their teaching. This seems to be particularly evident in the way that candidates used information that they learned from parents to improve the classroom engagement of their children, both in elementary and secondary settings.

We have wrestled with why participating candidates tended not to reflect upon what they learned about families and communities in light of their own life experiences. The literature indicates that this is not always the case (Evans, 2013). For example, Baumgartner & Buchanan (2010) found that "when preservice teachers were forced to listen, rather than talk, to parents, they uncovered their own hidden assumptions, biases, and unconscious expectations about families" (p. 280). Though many have stressed the need for emergent teachers to grow in their awareness of their own preconceptions about family-community (Amatea, Cholewa, Mixon, 2012; Lea, 2004, Sleeter, 2001), the pilot group results indicate that the Family-Community Engagement Project did not lead most candidates to reflect on such aspects of their growth. One way to address this, in the next phase of this project work, will be to create scaffolding within the assignment guidelines that specifically asks candidates to document reflection upon how their engagement with families-communities may have increased their awareness of different ways of thinking, misconceptions, and

personal prejudices. We will encourage candidates to explore their own personal assumptions about the community, and the culture of families, and how engaging with families has shaped those assumptions.

Conclusion

This study demonstrates support for the re-positioning of family-community knowledge in the professional thinking and practice of teacher candidates. It documents that even a relatively small effort to facilitate candidate engagement with family-community can be powerful in both the development of teachers, and in the learning of their students. Perhaps the most important aspect of this study into the outcomes of the teacher engagement project is the shift in our thinking that made the project possible in the first place. If we, as education professors, had not found ourselves repositioning families, it would not have been possible for us to begin to facilitate that shift in emergent teachers. This is a shift of both philosophical and curricular importance. Teacher educators should consider re-positioning family-community knowledge so that it holds a foundational place in the development of teachers.

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Professional Development in Culturally and Linguistically Diverse Schools: What if We Have PD Upside Down and Backwards?

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Abstract

Too often teacher professional development (PD) is focused on mainstream K–12 learners, even as US schools become more culturally and linguistically diverse (CLD). This theoretical paper provides guidance for centering professional development on the margins. The three conclusions are distilled from robust experiences with middle and high school K–12 educators. They include making PD relational, providing ample time and patience for teachers to change underlying beliefs, and grounding PD in authentic inquiry, rather than indulging a strategy fetish.

Keywords: **professional development; culturally and linguistically diverse students; equity**

As a cursory review of the history of American schooling reveals (Kaestle, 1983), public schooling in the United States was first developed for affluent White males. Indeed, most of what we do in schools is still grounded in those historical understandings of curriculum, pedagogy and assessments as originally designed, first just for White males, later for White females, and much later, for everyone else. As census data predictions make clear (Fry, 2006) very soon, culturally and linguistically diverse (CLD) students will no longer be the minority at the margins, but they may well still be marginalized curricularly and pedagogically. What if, instead of continuing to design schools and schooling for the perceived "center" of our current population, we instead reconceptualize teaching and learning for students at the margins of our education population: CLD students? In this article we offer a vision for transformational teacher professional development (PD) that positions CLD students at its core. While firmly maintaining CLD students at the heart of our commitments, the PD we have created for CLDs has proven effective for teachers of all learners.

Transformative Professional Development

Nowhere is the need for transformative professional development (PD) more important than in the increasingly diverse U.S. schools. Between 1997 and 2011, for example, the total public school enrollment increased by only 5% (Hussar & Bailey, 2014). However, by contrast, during the same time period, the population of linguistically diverse students grew by over 55%. This recent increase in the population of CLD students, however, has not been accompanied by ethnic and linguistic diversification of the corps of teachers and school administrators. The teacher corps is still composed primarily of White, female, middle class English-monolinguals (Zumwalt & Craig, 2005). This disparate percentage of White school principals and teachers relative to the student population is important because students of color tend to receive more negative and exclusionary disciplinary consequences, higher levels of referrals to special education, and lower levels of referrals to programs for gifted and talented students than do White

students (Artiles, Kozleski, Trent, Osher, & Ortiz, 2010; Skiba, Michael, Nardo, & Peterson, 2002). While a host of factors may contribute to these disproportionate outcomes, it is likely that a lack of cultural, linguistic, and socioeconomic synchrony between school staff and students of diverse backgrounds creates conditions in which educators can continue to be unaware of their assumptions, misperceptions, and biases related to CLD students' abilities, intentions, and behaviors (Townsend, 2000).

When PD offerings and school improvement efforts ignore issues of language, race, and culture, they fail to acknowledge and address the needs of the students in their school. For example, reading initiatives in CLD schools that do not integrate oral language development, native language literacy development, and bilingual reading strategies ignore research-based predictors of English language literacy development for English learners (Genessee, Lindholm-Leary, Saunders, & Christian, 2006). Addressing the needs of CLD students cannot just be tacked on as an after-thought or added as a superficial response to fears of legal repercussions or loss of funding. Rather than simply providing random, single-shot, or silver bullet strategy sessions from a checklist of actions on a school improvement plan, school leaders should set sights much higher: purposeful attention to the needs of CLDs, including transformative PD and rich instructional design, that emerges from a shared consciousness, a shared ethic, and a shared commitment to the long-term achievement of CLD students.

Project Alianza

From 2008-2012, Adams and Brooks developed and delivered year-long, weekly professional development courses to practicing middle and high school teachers from four local school districts funded by a U.S. Department of Education Title III National Professional Development Grant through the College of Education at Butler University in Indianapolis, Indiana. These courses, known as Project Alianza, represent a year-long commitment by volunteer educators who completed graduate courses that focused on inclusive schools, basic second language acquisition, second

language literacy development for adolescents, and content-based instruction for CLD students. Participants engaged in inquiry projects that result in locally designed and implemented school change projects culminating from research conducted by participants with CLD students from the partnership schools. Approximately 255 secondary educators from four partnership school districts completed the two courses associated with Project Alianza.

Powerful Lessons

Through our Project Alianza experiences and other professional development work with teachers of CLD students, we have learned some powerful lessons:

1. There simply are no fads, no quick fixes and no silver bullets that will do the job: To be effective and sustainable, PD must be relational.
2. Changing underlying beliefs is necessary and requires time and patience.
3. For teachers to make significant, substantive changes, PD must be grounded in authentic teacher inquiry, rather than driven by a strategy fetish.

These lessons represent wisdom distilled from intensive collaboration with approximately 300 mostly White, urban secondary educators, made possible through funding from a U.S. Department of Education Title III National Professional Development grant from 2007-2012. We will next unpack each lesson, providing guidance for how each contributes to meaningful changes in teaching and learning.

No fads, no quick fixes: Professional development must be relational. As organizational leadership researcher, Margaret Wheatley, has poignantly noted,

> We put more and more effort into planning and leadership approaches that seem only to lead us ever farther away from our goals and aspirations. We have suffered from the unending fads that, like great tidal waves, crash down upon our schools, creating more destruction than growth.

> As the most recent wave recedes, we look over our schools and see debris scattered everywhere—relationships torn apart, survivors struggling to come up for air, ideas and plans tossed askew (2007, pp. 100-101).

It is destructive and counterproductive to simply demand growth and transformation from educators; genuine change requires time, patience, risk-taking, and reflection from within a supportive community of learners (Fullan, 2007). Effective PD fosters the development of authentic and meaningful relationships between educators. Merely adopting the term *professional learning community* does not result in real community if existing hierarchies are left intact and unquestioned, stifling honest communication. If we want teachers to meet CLD students where they are in their development, we must do the same for educators by providing professional learning settings that acknowledge the challenges inherent in teaching in today's diverse classrooms.

Relational community is difficult to establish where competition pits educators against one another through the posting of assessment data, for example, or where the members are fearful of one another. Relational community is also a challenge to develop in classrooms, of course. Many of the teachers with whom we worked were reluctant or even afraid to interact directly with their CLD students due to perceived language barriers and cultural difference. As Jenna (a pseudonym), a high school educator, confessed in a reflection,

> For years I have been afraid to talk with ELL [English-language learner] students and have ducked into rooms to avoid meeting them in the hallways. Now I am proud to say that I have changed. I sit with ELL students at lunch in anticipation that they will let me in on a small part of their conversation. I walk to the buses every day with two Hispanic boys and ask them to tell me one thing they learned. I have been tutoring a student since February on general things that I thought would help him be successful in school. In fact, he has taught me a great deal more.

Jenna changed her beliefs about herself and her students because her PD cohort interviewed CLD students to learn what would make the school more supportive of them. Like many of the participants in our PD initiative, one positive interaction with a CLD student boosted Jenna's confidence to get to know other CLD students. Jenna went from being afraid to becoming an advocate for CLD students, but this transformation was only possible because she trusted she was safe to be honest and vulnerable with her colleagues.

Changing underlying beliefs: Seeing yourself and the world differently takes time. Wade Davis (2008, 17:58), an anthropologist and ethnobiologist notes, "The myriad voices of humanity are not failed attempts at being us. They are unique answers to that fundamental question: what does it mean to be human and alive?" If, as we observed earlier, the majority of the U.S. teaching force is composed primarily of White females raised and educated in mostly White schools with mostly middle-class values as the norm, how can teachers prepare to teach K–12 students whose experience of the world is quite different? Substantive changes in schools require transformative PD for teachers and administrators. Sustained change in educational practices occurs only when educators first name, and then change their beliefs about CLD students. Excavating these beliefs can then lead to choosing new instructional materials and new approaches to teaching (Fullan, 2007). When educators engage in PD that is rooted in relationships with colleagues and students, we create the conditions for educators to have learning experiences that impact belief systems, assumptions, and ultimately, their interactions with students. For example, instead of spending PD time creating an elaborate new discipline plan to deal with behavior problems, why not engage in a dialogue that taps into our underlying beliefs about our CLD students and ask why students are disengaging, disrupting, or misbehaving in the first place? As Hernandez-Sheets (2009) states,

> [Our] personal K–12 classroom experiences are more influential and powerful than the information gained

> through teacher preparation courses and field experiences. The knowledge that you internalize during your process of schooling often influences what you believe about teaching and learning. This knowledge shapes what you think the subject matter should be like, how students are supposed to behave, and how they are supposed to function in schools (p. 16).

PD that is relational and encourages transformation in teachers' beliefs also serves to empower teachers to develop their identity as an advocate for CLD students and an agent for change in diverse schools.

In the schools in which we have taught as teachers and professional developers, English as a second language (ESL) teachers and bilingual paraprofessionals are typically seen as the experts for supporting the education of CLD students, whereas content area teachers and administrators often view themselves as novices (Brooks, Adams, & Morita Mullaney, 2010). Educators in CLD schools must change this false expert-novice dichotomy if deep, transformative change is to occur within in the schools. PD initiatives that help educators to delve deeply into underlying beliefs, linguistic and cultural complexities, as well as instructional approaches, facilitate this type of transformation in teacher perspectives. Inviting teachers to bring dilemmas from their work with students is one way to create the space for these conversations about underlying beliefs, and focuses on the issues that are the most meaningful and relevant to teachers' work. Teachers learn to engage in collaborative problem solving and professional support.

Professional development should be grounded in authentic inquiry, not strategies. Professional development in schools often involves an outside expert visiting a school for an afternoon or maybe even a full day to provide trainings focused on a particular strategy or intervention. While we recognize teachers appreciate fresh strategies and may even be invigorated by the expert consultant's presence, positive, long-term instructional change rarely occurs as a result of a one-time PD session (Hawley & Valli, 1999;

Knight & Wiseman, 2006). Handing out strategies like candy robs teachers of the opportunity to analyze the needs of students and to respond systematically to the needs of specific students (whether high ability kids, students with interrupted formal schooling, or students who are struggling readers). No cookie-cutter approach will work for every group of students. We must do the deep analysis work to help identify what students need. When teachers do this analysis work, they build ownership, investment, and the agency to share what they are learning with others. In their own classrooms, they will be able to develop local strategies for CLD students which are effective under local circumstances.

In our work with teachers, this inquiry-focused PD took on many forms, including scholarly text-based discussions, interviews with CLD students who were struggling academically, discussions around professional dilemmas, and school change projects. However, the one aspect that seemed to drive the other forms of inquiry was the interview with CLD students who were struggling academically. As part of the school change project, educators were required to interview a CLD student who struggled academically in order to get the student's perspective of what changes to school systems or to classroom instruction would be most likely to support them. We were startled to learn that for many educators, this was the first time they had spoken individually and directly with a linguistically diverse student; teachers were amazed by what they heard from students, much of which contradicted the teachers' *a priori* assumptions.

Next, educators from the same school met to share and to collaboratively analyze the student interview data to look for emerging themes that would inform the development of a school change project. The most effective school changes were born directly out of the CLD students' stated needs. The end results were projects that required the teachers to examine school and classroom policies, practices, and traditions through fresh eyes and with a clearer understanding of what CLD students experience on a daily basis. An added bonus was the confidence and emerging new relationships these teachers experienced through deliberately getting to

know a CLD student—someone most admitted they might have otherwise completely overlooked.

We are frequently approached by school leaders with requests for lists of sure-fire strategies that will show immediate achievement results. While we understand the reasons for this request, we are quick to discourage any notion of quick fixes, whether for teachers or for students. Disseminating lists of strategies suggests that all the teacher needs is the "right" teaching steps, the "perfect" organizer, or a "guaranteed" script, and if one follows the directions with fidelity, then all the students will achieve at high levels. What we know is that skillful, artful teaching requires a sophisticated understanding and nimble juggling of cognition, prior knowledge, assessment, varied approaches, behavior, learning preferences, motivation, and values, just to name a few components. PD initiatives that settle for handing teachers a clever collection of strategies end up inadvertently disempowering teachers because strategies do not create opportunities for teachers to understand who their students are and what each student needs. Staying curious about student learning, delving into the mysteries of authentic student engagement, being willing to examine our own practice with a critical eye, and making thoughtful changes in design and delivery of instruction result in substantive, sustainable transformation in the classroom and in the school as a whole.

Conclusion

Schools face tremendous pressure to meet the needs of students and raise test scores—all with scant funding. Nowhere is this pressure more intense than in schools with large numbers of CLD students. It is tempting to respond to this pressure with quick fix, top-down reforms in which an outside expert trains teachers to use a collection of champion strategies, a scripted curriculum, or a standardized intervention.

We suggest educators look within their own school communities to engage in meaningful PD that emerges from relationships, excavates deeply held beliefs about CLD students, and empowers educators to transform their classrooms into rich learning

communities. This will require time and patience for practices to take root and bear fruit. We have found teachers respond positively to university partners who join teachers for the long haul, not just the afternoon, and who collaborate in the inquiry, rather than ride in with solutions. If we want educators to create vibrant, engaging, and meaningful learning conditions for all students, but especially for CLD students, we must first create those same conditions by nurturing authentic learning focused on building relationships, transforming our assumptions, and embracing teacher inquiry.

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Beyond the Acronym: Preparing Preservice Teachers for Integrated STEM Education

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Abstract

Integrated STEM education seeks to build deep connections between science, technology, engineering, and math. Contextualized lessons give students greater access to these content areas and can heighten engagement. Great parallels can be drawn between liberal arts philosophies and integrated STEM education. This paper explores how one teacher team developed curriculum and enacted lessons using an integrated STEM approach. This study found that teachers viewed integrated STEM instruction as rewarding. The teachers also mentioned the need for constant communication to fully implement the model. Students perceived this model positively and enjoyed participation. Outcomes of this study have the potential to inform teacher preparation programs by making more transparent how implementation of integrated STEM models can be achieved.

Keywords: **integrated STEM, co-teaching, planning**

In traditional school settings, content knowledge takes precedence over contextualized, conceptual understanding (Davidson, Miller, & Metheny, 1995). The broader application of subject area content is often ignored as pressure mounts to cover extensive topics. Socially constructed subject boundaries create the impression that knowledge building is conducted in isolation. In reality, expertise from many subject areas is often required to solve complex societal issues. Scientists readily move between disciplines such as molecular biology, biogeochemistry, and chemical physics in both academia and industry (Wolfson, Hall, & Allen, 1998). Multi-faceted perspectives allow for a more nuanced understanding of phenomena. With societal issues such as climate change and energy consumption looming over future decades, it is vital that we expose students early on in their academic careers to these real-world problems. Students are better equipped to confront and solve complex personal, social, and global dilemmas when they can draw from differing disciplinary outlooks during formal classroom instruction (Beane, 1991; Bybee, 2010).

Integrated STEM models have the ability to build student capacity to transfer concepts and apply new knowledge to novel contexts. Creating learning opportunities that build connections between interrelated subject areas can support deep conceptual understanding resulting in increased student achievement. By clearly demonstrating integrated STEM practices of science at the K–12 level, students are provided with a more viable representation of actual science-related work. Making the transition from novice to expert scientist requires opportunities to connect knowledge from an area of study and apply it to new situations. Students who are provided with integrated STEM models of instruction are afforded entry points to transfer knowledge (Bransford, Brown & Cocking, 2000). Students are equipped to tackle complex problems early on in their science education, thus eliminating the mystique associated with advanced STEM coursework. By instilling greater feelings of self-efficacy early in a child's academic career, students are more apt to envision a future as science practitioners and gain confidence in their skills and knowledge.

National standard reforms such as the Common Core State Standards (CCSS) and the Next Generation State Science Standards (NGSS) offer clear support for the adoption of integrated instructional methods. The CCSS developed series of standards specifically for literacy in science, social studies, and technical subjects (National Governors Association, 2010). The NGSS identifies practices of both science and engineering as well as seven thematic areas or cross-cutting concepts that act as compelling themes woven throughout subject area or grade level (NRC, 2012). Integrated STEM models are now in a period of rapid evolution to meet the latest demands outlined by educational standards and workforce needs. This integrated renaissance has created opportunities to re-evaluate habitual practices and redefine teaching and learning parameters. With the recent expansion of integrated STEM models has come new waves of acronyms such as: STEAM, STREAM, and so forth.

What is Integrated STEM?

The National Research Council (NRC, 2014) broadly defines integrated STEM as a way to build connections between and within subject areas related to science, technology, engineering, and mathematics. For the purposes of this paper, I define integrated STEM models as team teaching efforts that center on interconnecting content in order to build engagement and relevance through overlapping learning explorations that feature hands-on components.

I contend that the interdisciplinary culture of liberal arts institutions positions them to prepare teacher candidates to engage in meaningful integrated collaboration with colleagues from different disciplines. There is a general lack of consistent terminology used to describe integrated STEM education. Terms such as "multidisciplinary," "thematic," or "transdisciplinary" are often applied haphazardly and without clarifying parameters. Since integrated instruction spans grade levels and contexts, quantifying it becomes even more problematic. Mansilla (2005) defines "integrated understanding" as:

> The capacity to integrate knowledge and modes of thinking drawn from two or more disciplines to produce a cognitive advancement, for example, explaining phenomenon, solving a problem, creating a product, or raising a new question in ways that would have been unlikely through single disciplinary means (p. 16).

Beane (1995) elucidates the humanistic nature of integrated instruction in the following sentiment: "the central focus of integrated curriculum is the search for self and social meaning" (p. 616). Interpretation of integrated STEM education is often left to the district and its teachers.

Benefits of Integrated STEM

With societal issues such as climate change and non-renewable energy consumption looming over future decades, it is vital that we expose students early on in their academic careers to real-world problems. Multi-faceted perspectives allow for a more nuanced understanding of phenomena. Students are better equipped to confront and solve complex personal, social, and global dilemmas when they can draw from differing disciplinary outlooks during formal classroom instruction (Beane, 1991; Bybee, 2010).

When properly supported, integrated STEM instruction has the potential to improve the teaching of science concepts. Levy (2013) investigated student understanding of water flow rates based on height of pipe, diameter of the pipe, and resistance. Fifteen children of kindergarten age were selected to participate in this study through hands-on construction of a water system. The researcher sought to determine whether the design task improved understanding of the topic, ability to find interrelatedness between the three variables, and capability to transfer knowledge to real-world scenarios. Students assigned to the treatment group had significant gains in understanding general rules associated with water flow rates. Furthermore, "different from the control group, the builders all showed a budding ability to coordinate two rules in predicting and explaining water system behaviors in the post-test" (p. 556).

Integrated STEM teaching has the potential to inform the self, support individual growth, and provide one small way to dismantle structural oppressions that play out in our schools. Integrated STEM education expands the notions of curricula beyond the borders of the traditional subject silo. Integrated STEM offers a broadened view of science teaching and learning that values a wider array of "lifeworld," or the experiences that make up a person's being experiences (Cooney, 2012). Rather than presenting a narrow bundle of content, students are exposed to content that is embedded as part of a problem that requires a solution. As a result, the role of teacher shifts from ultimate knower to facilitator. As part of integrated STEM instruction, teachers "model problem solving and encourage reflection, communication skills, autonomy, and self-monitoring. They teach students to see problems as opportunities and model the notion that interaction among colleagues is important for creative problem solving" (Madden, Baxter, Beauchamp, Bouchard, Habermas, Huff, Ladd, Pearon, & Plague, 2013, p. 542).

Subject area teaching "requires knowledge of teaching strategies, methodological issues, the curriculum and how to bring the topic alive for students" (Hobbs, 2012, p. 282). Within integrated STEM models, teachers collaborate to build a collective sense of competence and confidence. Like students, each teacher possesses a unique lifeworld that shapes the content and pedagogical approaches that he or she implements. They can enhance their practice by sharing classroom experiences as well as personal histories that also inform them as individuals. Through these professional interactions, students are also exposed to authentic collaborative interactions. A community of learning can emerge as a result, which offers opportunities to connect content more broadly. Since scientific discoveries often involve the interaction and collaboration of many investigators, actual scientific work is further illuminated through integrated STEM educational models (Grinnell, 2011). Thus, integrated STEM education serves as one way to present a more unified view of science and life-worlds.

Study Context

The integrated STEM team central to this study gained a reputation for exemplary STEM education. Hundreds of educators visited the district to learn more about how this particular model of STEM integration functioned. This integrated STEM team frequently partnered with a variety of organizations, including the National Aeronautics and Space Administration (NASA), and invited community members to be part of the learning experience. Engineers, architects, and scientists interacted with the students and often evaluated final projects. This integrated STEM model existed for a period of over five years. The teaching team created the model using mainly locally sourced resources and with minimal oversight from the district. This district is a suburban public school located in the Northeast United States with an overall enrollment of more than 3,000 students.

This study focused on a single eighth grade team that consisted of one science, one math, one social studies, one special education, and two ELA teachers, as well as one teaching assistant. All of the teachers' significant years of teaching experience ranged from 7–22 years. During the year this study was conducted, the district assigned 101 students to this integrated STEM team, referred to as the "orange team."

Methodological Approach

I selected phenomenology as a theoretical frame and methodology because of its focus on the experience of participation in one such model. Creswell and Clarke (2007) explained that an inquiry is appropriate for phenomenological study if "it is important to understand several individuals' common or shared experiences of a phenomenon. It would be important to understand these common experiences in order to develop practices or policies, or to develop a deeper understanding about the features of the phenomenon" (p. 60).

I observed and recorded a number of lessons and also conducted semi-structured interviews with teachers and students after the implementation of these lessons. I completed fieldwork in the spring of 2016. I recorded over of 1,300 minutes of instruction as

well observations of planning and lunchtime, and one professional development session that featured the participants. To generate themes, I segmented my data into moment units that showcased a particular experience. I also gathered a sense of the model from observing and interviewing participants and debriefing after lessons. This data was coalesced to gather a sense of both the individual experience and overall function of the model. My understanding of this integrated STEM model guided my interactions with participants and framed the way in which I read my data. The information obtained from interviews and observations then, in turn, contributed to my overall understanding of the model.

Results

The Orange Team Integrated STEM Model

This particular model of integrated STEM combined a myriad of pedagogical approaches. Hands-on projects that included all team teachers were a regular occurrence. In Figure 1 below, students constructed an insulating box using a limited number of materials. Students then tested their boxes by adding ice and leaving them in direct sun for several hours. To assess their effectiveness students calculated the percentage of ice melt. Students were expected to work in small groups to accomplish nearly all of their academic tasks. The teachers gathered all the students together on a weekly basis to build a sense of community and modeled positive interactions. Each student was provided with a laptop computer for use during class time.

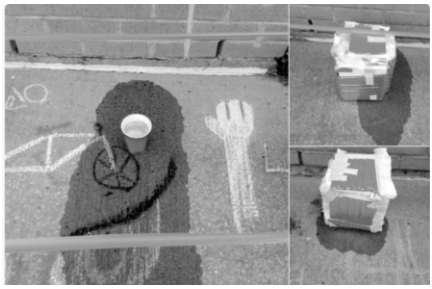

Figure 1: Insulated boxes during test phase of the Keep It Cool project

Overall, students felt that the integrated STEM model presented content with sufficient levels of cognitive challenge. One student believed that the content covered seemed easier because of the amount of teacher supports in place. Another student also identified caring attitudes of teachers as contributing to his success. The students considered topics like nanotechnology to be of high interest. Students frequently referred to this model as "hands-on" and enjoyed participation in projects that created some form of final product, such as an insulated icebox or rubber band powered car. As one student stated in an interview: "We'll be learning about something that will connect to life, you know, outside of school."

Teacher Collaboration

Co-teaching practices. To better understand how the team created co-teaching experiences, I recorded and analyzed over 1,300 minutes of footage. I found that whole group instruction with all students and teachers present comprised 30% of the lessons. Single subject area instruction took place in a total of 35% of the lessons recorded as part of this study. Notably, there were only 14 minutes of observed instruction completed with only the science instruction. The remaining time was divided among an array of teacher groupings.

Table 1: Co-teaching Combinations and Time Dedicated for Instruction

Co-teaching Combinations	Number of Times the Combination Appeared	Number of Intructional Minutes
Science, TA	91	483
Science, TA, Math	10	83
ELA, Special Education	6	20
Social Studies, TA	8	28
Social Studies, TA, Science	13	63
Science	4	14
Science, ELA	31	144
Science, ELA, Math	20	45
Science, Math	1	83
Science, Math, Social Studies, TA, ELA, Special Education	69	420

Based on observations, this integrated STEM approach balanced content area instruction with integration of other disciplines. The team incorporated significant opportunities to engage with one another. Whole group instruction was a normal practice carried out on a consistent basis. After years of collaboration, science teacher, Jeremy, mentioned how he struggled to separate content because it has been "intermingled for so long" (Interview, 4/5/16). The team relied on each other's content-area knowledge and understanding of pedagogical practice.

Constant planning. Teaching assistant, Deb, recalled "Our plans, our team works, twenty-four seven" (Interview, 6/15/16). The team communicated not only in person but also through email and text messages outside of school. The teacher team dedicated one block of planning time each morning to the development of this model. They also used a common lunchtime to negotiate instructional decisions. The participants identified lunchtime discussion as the most fruitful time for developing future vision. Only twenty minutes in length, the team used the morning plan period to finalize plans for that day. Sam, the special education teacher, explained, "It's very much on-going. Like, this morning, for example, we thought we had a plan. And then it sort of got morphed but everybody was there. So, you know, it's just the constant communication" (Interview, 4/8/16).

The interactions that took place during lunch helped to illuminate how decisions were made that directly impacted instruction. The degree to which each teacher contributed to the conversation varied. Deb, the team teaching assistant, usually worked on a task that was organizational in nature. For instance, she counted money, or called about grade-level shirts; those kinds of tasks kept her attention most days. She also used her phone quite a bit and it rang several times during the lunch period. Sam deferred to the other team members before offering his contribution. He credited Calvin, the social studies teacher, with building in accountability aspects of the planning process: "Calvin Mitchell has been, sort of, our guiding light, he's been like, everyday twelve after til eight thirty-five, we are talking about team stuff, and we do" (Interview,

4/8/16). Sam may have felt less a part of the collective considering his position on the team had only been full-time for two years. Jeremy and Terri, an ELA teacher, tended to make the most logistical decisions like the allocation of time for activities or scheduling events. Calvin's commentary during planning time centered on approaches to reimagine traditional formats. Noel, the other ELA teacher, seemed agreeable to most decisions. Annie, the math teacher, did not have a common lunch period and therefore was unable to contribute during this time.

Each planning session generated a distinctively different feel. Not every moment of team planning was productive and positive. Outside constraints such as state testing requirements, grading, and other administrative tasks took away time typically spent to organize future lessons. There were many occasions where outside factors limited, interrupted, or refocused conversations.

When faced with the challenges associated with integrated curriculum development, many teachers revert to pre-existing structures due to familiarity and ease. The science teacher, Jeremy, expressed this tendency in the following passage:

> Here's what I find, personally, when push comes to shove and I start to get nervous about something. I refer back to something I have done in the past. That's something that I think we've all done. We start getting uncomfortable, we retreat back to, "Well I've been doing this for twenty years, so" (Interview, 5/6/16).

The teachers found this integrated STEM model reinvigorating. They expanded their repertoire of skills and practice.

> Annie (math teacher): I was pretty stuck in my ways (smiles)…I think it's a struggle for all of us to go to somebody else's room and to see what they're doing and see that somebody might be changing a little what you're doing and the way that you do it…it's a good struggle 'cuz it's creating growth in all of us (Interview, 5/19/16).

Many of the participants expressed that it took some time to feel

comfortable with the integrated STEM experience. Despite differences in ideologies associated with practice, the team leveraged individual strengths. The group remained committed to refining curriculum and adjusted lessons every year in order to best meet the needs of their current student group.

Discussion

Lencioni (2006) described five team dysfunctions that can staunch collaborative efforts. The team dysfunction that can be most detrimental is the lack of trusting relationships. Lack of trust can undermine group efforts by creating an environment where individuals are risk adverse. Individuals in the group are fearful to display behaviors that may be perceived as weaknesses. With vulnerabilities stifled the team cannot productively move forward. There is an overall inability to anticipate potential pitfalls and generate appropriate responses. The second team dysfunction that can create barriers to productive team outcomes is the inability to participate in healthy conflict. While often viewed with a negative connotation, conflict can actually assist teams find multi-faceted solutions. The absence of a strong commitment to the team is another team dysfunction that can also result in limited productivity. Lack of accountability and inattention to outcomes are also considered team dysfunctions. The orange team was able to circumvent these dysfunctions through the development of trusting bonds over several years of interaction and an intense commitment to integrated STEM education. Teachers emphasized the need to communicate with each other throughout the school day as well as during time at home. Choreographing integrated STEM lessons with all team members required multiple forms of communication ranging from in-person conversations to text messaging interactions.

Woolley, Chabris, Pentland, Hasmi, and Malone's (2010) large scale, quantitative study of team effectiveness resonates with the outcomes of this study. The researchers developed a statistical model to understand how individual contributions impact the overall team outcome. Woolley et al. found that if groups were

successful at a single task then the group tended to perform well on all other future tasks. Woolley et al. argued that a "collective intelligence" emerged that could not be quantified as simply the sum of all individual intelligences. Highest levels of "collective intelligence" were found in teams where all members had equal opportunity to speak. Teams where one or two voices dominated conversations resulted in declines in collective intelligence. Social sensitivity, or the ability to empathize with others based on their gestures and tone of voice, was also considered an important element of "collective intelligence". Those teams with elevated social sensitivity performed at a statistically significant higher level on collaborative tasks.

The act of teaching is an intensely social endeavor that requires a balance of both content area knowledge and human interaction. Teachers must interpret the signals from both peers and students in order to successfully engage in the learning process. The findings from this study confirm the results from Woolley et al.'s work on collective intelligence factors. The orange team group planned together on a daily basis and created a space for all teachers to communicate their content area needs. During integrated STEM units, co-teaching patterns suggest an equal balance between delivery of content by the individual and delivery of content in a contextualized manner that involved all parties. Each teacher was critical in both the development and enactment of integrated STEM units. The orange team purposefully balanced single content and integrated content co-teaching episodes as part of this model. In this way students were able to engage with concepts in different ways. Generally, students were introduced to a concept by a single content area teacher and then applied their understanding during integrated learning tasks.

Integrated curriculum is most effective when applied to concepts with natural intersections (Fensham, 2009). Pedagogies associated with different disciplines can vary significantly. Integrated STEM teaching requires an openness to further one's understanding of unfamiliar disciplines in order to implement curriculum with accuracy. The implementation of integrated STEM

models requires the acknowledgement that disciplines exist within a greater social context. Cultural, ethical, economic, and environmental considerations should be woven in as part of STEM related curricula, thus affording greater accessibility to students with diverse backgrounds.

Lessons for Teacher Preparation

Co-teaching must be considered when transitioning from traditional schooling to an integrated STEM model of instruction. The co-teaching approach carried out by this team has important implications on teacher training programs. The orange team members viewed each other as assets that allowed them to professionally grow. Co-teaching opportunities that pair novice and expert teachers may have great benefits for both parties. Expert teachers may feel enriched by new ideas and outsider perspectives on teaching practice. Novice teachers can boost their capacity to work with other disciplines while also enhancing their abilities to develop content-area specific pedagogies.

Roth (1998) conducted a three-month intensive study of science teachers participating in a co-teaching model of instruction as part of a school-wide improvement plan. The goal of the co-teaching experience was to pair novice teachers with experts in order to bolster skills such as questioning and providing feedback. Roth (1998) found that three types of teacher learning emerged as a result: (1) in practice learning, (2) ability to engage in conversations about practice, and (3) ability to synthesize theory and practice. "Once explicit, these aspects contributed to a change in their professional discourse in which they made sense of classroom events" (p. 387). Co-teaching reshapes traditional supervisory models by providing space for co-construction of narratives based on classroom experiences. Expert teachers can support novice teachers in ways that allow for organic growth. Opportunities for reflection on experiences are a necessary element for any teacher development program. Traditional structures and organizations often stifle this form of communication. Integrated STEM educational contexts rely on open exchange of ideas and pedagogies.

In many ways the goals of integrated STEM education closely parallel the vision and mission of liberal arts institutions. Integrated STEM education seeks to build student interest and capacity through the exposure of real-world scenarios that can prepare them as both learners and citizens. Liberal arts teacher preparation programs offer an ideal context for preservice teachers to collaborate with multi-disciplinary partners. "Disciplinary transcendence does not necessarily mean cutting oneself off from the ground where one stands, but rather widening one's horizons (Giri, 2002; Wall & Shankar, 2008, p. 552). This integrated STEM model interpreted the purpose of instruction more broadly. Social engagement was incorporated by design. Students were expected to communicate their understandings and justify their positions on social issues.

Challenges of Implementation

The subject silo model has long dominated the way in which teaching and learning occurs within school systems. Teacher certification systems are currently organized in a fashion that also values single subject area expertise. Teachers without extensive background in research, real-world contexts, or other disciplines may feel insecure or hesitant to implement models that stretch their own ability and comfort level (Fensham, 2009). Participation in extensive, embedded practical experience during teacher preparation can counteract reliance on traditional patterns of instruction. Furthermore, preservice teachers require opportunities to engage in multi-disciplinary group exchanges that promote social understanding and build collective trust.

Conclusion

Researchers or practitioners cannot easily label integrated STEM education due to the complexity of factors related to its implementation. The orange team central to this investigation synthesized a variety of instructional approaches based on collective professional knowledge of teaching and learning. Teachers pushed back on the idea of a "one size fits all" model of instruction.

The team created a curricular Frankenstein from project-based and collaborative learning approaches, engineering design challenges, responsive and flipped classroom techniques. Co-teaching was part of daily instruction but remained flexible based on the learning activity at hand. In order to manage all these working pieces teachers were constantly engaging in professional conversations. The ability of teachers to function productively as a group was central to their sustained classroom success.

In order for the integrated STEM movement to transition from novelty intervention to academic mainstay, further overlap is needed between preservice teachers and practicing professionals. Building capacity to integrate is a long-term endeavor that requires embedded professional development supports. The implementation of integrated STEM models requires serious commitment on the part of the teacher preparation provider to support novice teachers in the labor associated with contextualized lesson planning and instruction. There is also a need for physical materials as well as expanded community and departmental partnerships. Through early career exposure to integrated STEM approaches, collaborative practices may be perceived as less intimidating and more normative. Teacher preparation programs must reimagine siloed curricula to meet the needs of learners in compelling ways.

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Efficacy of Research Curriculum in Educator Preparation Programs

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Abstract

Responses were gathered from master's candidates in initial and advanced licensure teacher preparation programs. They were asked to discuss how completing a capstone research project contributed to their effectiveness as a teacher. Advanced candidates reported themes of improving practice, evaluating new school initiatives, and increasing collaboration with colleagues. Initial licensure candidates reported themes of using research to investigate specific topics, using research as part of assessment practices, and the importance of teachers as researchers. Conclusions suggested capstone research projects and the associated research experiences add value to teacher preparation programs and improve teacher self-efficacy.

Keywords: **master's candidate capstones, teacher researchers, teacher preparation, liberal arts**

The purpose of this study was to examine the perceptions of the impact of research-based capstone projects completed by teacher candidates at the master's level. Capstone projects as a requirement for program completion exist in many disciplines. What these projects entail varies widely, but in general, the purpose is to provide the candidate who is pursuing a degree with an opportunity to complete a performance-based activity that shows learning across courses in a program of study. At the master's level, these projects tend to be research projects that may or may not require the writing of a thesis to report on the research.

Teachers as Researchers

Teacher education programs, either at initial-licensure or advanced-licensure levels, are focused on improving practice. Preparation programs often do not emphasize developing teachers as researchers, although this may be changing with the current emphasis on data-driven decision making. Since 2009, for example, more than two-thirds of states have changed substantially the ways in which teachers are evaluated to include teacher impacts on student achievement (Center for Public Education, 2013). In many states and districts this requires setting a goal, working towards that goal, and measuring the impact on that goal; steps that are often synonymous with steps in the research process.

Both initial and advanced teacher preparation standards address the importance of teachers acquiring research competence. For instance, Performance 9c in Standard 9 of the Interstate Teacher Assessment and Support Consortium (InTASC) Standards says: "Independently and in collaboration with colleagues, the teacher uses…research to evaluate the outcomes of teaching and learning and to adapt planning and practice" (Council of Chief State School Officers, 2011). In addition, Domain II of the Teacher Leader Model Standards (Teacher Leader Exploratory Consortium, 2011) is "Accessing and Using Research to Improve Practice and Student Learning." Included in Domain II is the expectation a teacher leader: "Teaches and supports colleagues to collect, analyze, and communicate data from their classrooms to improve teaching and learning."

Despite these new trends, research methods are often seen as being in conflict with other program goals and in competition with other courses that are viewed as being more focused on helping all P-12 students learn (Honigsfeld, Connolly, & Kelly, 2013). Frankel, Wallen, and Hyun (2015) described how engaging in teacher research activities may be a poor use of teacher time and expertise. Consequently, research-based capstone projects, if seen at all in teacher preparation programs, are less likely to include comprehensive reports of a research study.

Alternatively, Cochran-Smith (2005) stated that teachers need to be able to conduct research about their own practices and programs. She suggested that an individual's research is improved based on the quality of the research preparation that the completer received in his or her teacher educator program. Research integration in education master's programs can range from meager to rigorous. Perhaps the most rigorous approach is used in Finland's teacher preparation programs, where all new Finnish teachers must complete a four-year master's program in one of eight university teacher preparation programs; all of which require the completion of a research thesis (Westbury, Hansen, Kansanenm, & Björkvist, 2005). The intent is for students both to understand the research basis for the work they are doing and to be able to conduct their own research. In most cases, this research work is based in clinical experiences over a two-year period of time. In an example in which the focus is more on candidate reflection, Brown and Benson (2005) described a culminating Capstone Exhibition in which candidates make oral presentations demonstrating knowledge of theories and practice in addition to knowledge gained through action research projects.

Benefits of Research Capstone Projects

Measures of the benefits of capstone projects are diverse. Boyd, Lankford, Loeb, and Wyckoff (2009) provided evidence that research capstone projects in educator preparation programs (EPPs) are correlated positively and significantly with P-12 student outcomes in the first and second years of teacher careers in New

York schools. Perry and Imig (2010) found that research capstone projects contribute to practitioner learning and that they provide a vehicle for understanding complex educational problems. McKinney and Day (2012) discovered positive effects of completing capstone projects, including "understanding and competence in doing a research project, interpersonal competence and confidence, and a sense of ownership and pride in the project" (p. 153). Van Zeer et al. (2006) described the positive link between teacher research and teacher leadership. Warren, Doorn, and Green (2008) found research experiences impacted teachers' sense of personal identity and their relationship with the school, including the conclusion that after research experiences, teachers were more likely to serve as a *catalyst for change*.

From this range of potential benefits of capstone projects, it appears that, more generally, teacher self-efficacy may be improved. An examination of the possibility that teachers may gain a measure of self-efficacy around using research entails both looking at teachers' beliefs of their ability to complete or use research strategies in their work—research efficacy— but also an examination of teachers' beliefs about whether that ability will translate into a positive impact on their classroom or school—outcome expectancy (Bandura, 1994).

Methodology

All of the respondents in this study ($n = 83$) were enrolled in the School of Education in a small, liberal arts university in the Pacific Northwest. Forty-four respondents (53%) in the investigation had recently completed a 36-credit hour Master of Education (M.Ed.) teacher leadership program. These were licensed teachers in cohorts on the main campus ($n = 8$), in a satellite campus in Edmonton, Alberta ($n = 24$), and in a residency program for teachers working in Catholic schools throughout the northwest ($n = 12$), including Alaska. The number of years the respondents had been teaching varied between 2 and 18 years. The remaining 39 respondents (47%) had completed a 36-credit hour initial teacher licensure program culminating in a Master of Arts in Teaching (MAT) degree.

All candidates in the study completed a capstone project that was a research-based investigation into a topic of the candidate's choosing. The candidates' investigations were conducted in the classroom or school where the respondent worked or where he or she was placed in clinical experience. Before the capstone research course in the M.Ed. program, candidates completed two, three-semester-hour research methods courses—one qualitatively oriented and one quantitatively oriented. In the MAT program, candidates completed a single research methods course covering both quantitative and qualitative methodologies prior to engaging in the capstone research project. After the research methods courses, the capstone project was completed as a three-semester-hour project during which candidates worked independently with the guidance of a faculty research advisor. The reports on these projects were five chapters, APA formatted, and were approximately 30 to 40 pages in length.

Data were gathered in two forms. The first set of data was from master's candidate reflections on their experience during their program. These data were generated from three prompts related to the program as a whole, with one prompt focused specifically on the research component of their program. The prompt for the research component was: *In what specific ways have you learned to use educational research? Describe ways these skills contributed to your ability to analyze and improve your own practice and the environments in which you work.*

The second set of data was from candidates' reflections about a required formal research presentation to the faculty of their school. Although the reflection included a summary of the presentation and the questions they were asked at the end of the presentation, the responses analyzed in this study were from the prompt: *What did you learn from giving the presentation?*

Data were analyzed iteratively. First cycle coding included in vivo and descriptive strategies (Saldãna, 2013). Second cycle coding was carried out as axial coding. The observed coding categories and exemplars were reviewed by two authors to check that the categories were comprehensive and inclusive.

Results

Because the advanced program and initial licensure candidates were at different levels of their teaching careers, the responses were disaggregated by level and examined for differences after themes had been identified in each set.

Advanced Program M.Ed. Candidates

Although there was some overlap between the responses to the two prompts, the responses mostly coded into two categories: one related to how the candidates learned to use research and a second related to the interaction with colleagues that candidates had experienced as a result of making a presentation of their research at their school sites.

In regard to the specific ways the candidates learned to use educational research, two predominant themes appeared in these responses. First, many of the respondents thought that having had these research experiences would improve the work they did. It was stated explicitly by three of the respondents that the research would *make me a better teacher*. More generally, many of the respondents talked about their new practice of using research when making decisions in their schools and classroom. Typical comments related to this theme included:

- *I have challenged myself to continue to support professional decisions I make in my classroom with research.*
- *Using educational research has allowed me to do my own research on the topics I teach, instead of depending on textbooks.*
- *Now that I have solid evidence on what works or what doesn't, I can take action based on it.*

Associated with this idea of improving the work of these teachers and administrators, eight of the respondents indicated that they were now more confident in the decisions they made in their classrooms and schools.

The second theme that appeared concerned evaluation and caution surrounding new initiatives and external mandates. Typical

comments in this theme included:

– *If a new initiative or project is being implemented it is important to have data to support the decisions that we are making to support if we should continue.*
– *Our ability to determine the validity of a project is essential to deciding if the idea is worth implementing or eliminating within our schools*
– *This course taught me to analyze the information carefully in order to ensure that what I am being told is actually supported by data.*
– *As teachers, we are consistently exposed to and encouraged to try new initiatives in our classrooms and schools. Before I would take the information given to me at face value and wouldn't necessarily dig deeper into the 'why' behind this program. Now I have the skills needed to bring up and support questions and concerns that I may have.*

Candidates were asked about what they learned from making a presentation of their research to their colleagues. This prompt generated responses that focused both on the candidates' personal growth and on the candidates developing a changed understanding of the environments in which the respondents worked. Categories in these areas addressed the difficulty in publicly presenting the research to others, the need to explain their research methodology, and the experience of sharing information with colleagues.

Many of the respondents were struck by the **difficulty in presenting** to their colleagues.

– *The presentation also taught me the importance of organization and practice. I was quite nervous beforehand, and I wished I had reviewed it a few more times before giving my final presentation to my audience.*
– *Given the feedback on my presentation, I know that I have some work to do on the presentation before I can feel fully confident in it.*
– *Before presenting this information, I was worried about talking*

about this project with others, especially about presenting in front of a larger group.

More specifically, a number of respondents discussed the need to explain **research methodology** to their audience.

- *The teachers I was presenting to had no idea what "significantly strong" r values meant… Sometimes we have to adjust our data and our information to a simpler form to our audience in order to get our point across.*
- *I learned how to explain the data analyses we performed in Microsoft Excel to others who are not familiar with it. I realized this is a difficult task!*
- *I thought it pragmatic to present the material from a researcher's point and then define any language through verbal, face-to-face interaction. It was harder than expected to remove myself from the research process I have been enveloped in for the last 10 months. Additionally, not all my colleagues are up-to-date with research concepts and terminology.*
- *A large portion of the teaching population run their classes off of the subjective rather than the empirical. Often times, this subjective assessment has basis or connections with scientific and research basis although that is usually realized after the fact.*

Consistently the respondents discussed the importance of sharing with colleagues.

- *I especially liked the fact that it sparked conversation with all of us about what we can do as a school to improve student learning.*
- *There is a real need for continuing education, professional development, and inter-staff sharing of ideas and best practices.*
- *We should continue to discuss what we are doing in our classrooms and continue to look at the research in order to make mindful, data driven decisions.*
- *I look forward to having further discussions and talking about successful practices and challenges in engaging staff.*

– *It's important for all of us to evaluate how and why we teach in addition to what we teach and it seemed that my presentation was able to spark that in many of my coworkers.*

Initial Licensure MAT Candidates

The MAT candidates were not required to make presentations of their work to colleagues. Analysis of MAT responses was solely from the research prompt of the reflective exit paper (In what specific ways have you learned to use educational research?). Responses coded into three categories: investigating specific topics, the use of research in assessment practices, and teacher as researcher.

Some of the candidates were appreciative of the opportunity to practice the application of the topics they were studying in their capstone research. These included instructional strategies such as Growth Mindset (Dweck, 2010) using music as a behavioral tool, or use of *reading buddies*. In a similar vein, candidates appreciated how the tools of research could assist in their work. The most frequently mentioned were library and literature review skills, and Excel—especially statistical analysis tools within Excel.

Candidates discussed the use of the research skills they had learned in assessment practices in a variety of ways.

– *I've worked collaboratively with colleagues to analyze assessment data in order to inform whole class activities focusing on subjects where students need the most supports.*
– *I plan to use pre- and post-assessments to collect affective, achievement, and performance data from my students. This data will help me determine if my initial styles of management and planning are effective and whether I am reaching all of my students in an equitable fashion.*
– *Concrete data gives you a clear picture of what each student understands and what they do not.*
– *It seemed daunting at first, but now I understand that data is important, and it's crucial to have all your practices and instruction be backed up by solid research.*

Additionally, candidates spoke more broadly about the importance of research to the practice of teaching.

– *I think my greatest take away is that research is a very important component of being a good teacher.*
– *Performing research can help guide your instruction and see if a particular strategy is achieving the desired outcome.*
– *I have gained an immense appreciation for not only those who have done research in my field in order to improve teaching my subject, but I have learned how I can incorporate research into my practice.*
– *I have come to realize just how important it [research] is in my own teaching, helping me to make improvements that benefit my instruction and my students, as well as in collaborating with other teachers to share results that may help in other classes.*

Conclusion

In Bandura's (1994) terms, the advanced program respondents discussed an increased ability to *complete tasks* or use research effectively. They discussed this as both improving their own practice in classrooms and schools and also in their ability to evaluate mandates imposed on them externally. Additionally, they discussed achieving *outcome expectancies*, or their ability to reach goals in their work, particularly with their faculty colleagues. Of particular note is the number of respondents who discussed how the activity of sharing research emphasized the need for faculties to discuss their own work with each other.

For the initial licensure candidates, the responses were generally more focused on their immediate application of what they had learned; of how they could apply the instructional strategies and assessment practices that they had learned about. Encouragingly, they also discussed the importance of research to their teaching and to working with colleagues.

These findings are consistent with McKinney and Day's (2012) observations of participants' feelings of interpersonal competence and confidence, and a sense of ownership and pride. Additionally, many of our respondents discussed how they hoped to continue

using their understanding of research to help their schools improve. This is also consistent with Warren, Doorn, and Green's (2008) findings that teachers with research experience became *catalysts for change*. More broadly, developing an understanding of research, not only within teacher work but as a set of skills necessary for citizenship is part of the liberal arts tradition. Kimball (2013) described this as a *moral and prudential* justification for teacher preparation in liberal arts colleges. Becoming a catalyst for change is likely to be applicable beyond the class or school.

We see these results as reinforcing the value-added nature of helping teachers become researchers in their own right. Including research capstones in preparation programs extends the abilities of these teachers beyond solely being able to conduct a research study. It helps them to become better teachers in their classrooms and in the educational communities in which they work.

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Perfect Storm Hits Georgia Schools: Teachers Overwhelmed

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Abstract

No Child Left Behind (NCLB), Race to the Top (RT3) and the Every Student Succeeds Act (ESSA) have piled up federal mandates into a "perfect storm" for Georgia teachers. This study considers the impact of this storm through the eyes of 23 Georgia teachers. A tidal wave of federal mandates leaves teachers overwhelmed and skeptical about their future.

Keywords: **: NCLB, RT3, Georgia Teachers, Classroom Change, Federal Mandates**

Dr. Larry Cuban, education historian, policymaker and professor at Stanford University, associated education reforms with weather cycles in *The Inexorable Cycles of School Reform* (2011). He stated, "Reforms, like weather fronts varying by seasons but similar across years, go through phases that become familiar if observers note historical patterns" (Cuban, 2011). Those with a few decades of public education under their belts have seen "reform" fronts blow through with every election cycle. During this study, a "perfect storm" hit and teachers were sent running for their umbrellas and boots.

This particular cycle is remarkable because it comes on the heels of the collapse of the "No Child Left Behind" (NCLB) Act (U.S. Department of Education, 2001). States filed for U.S. Department of Education NCLB waivers because they could not meet the 100% pass rates on Annual Yearly Progress (AYP) by 2015. At the same time, 18 Race to the Top (RT3) states and those with NCLB waivers—almost all states—were required to implement RT3 mandates (U.S. Department of Education, 2009) (Ravich, 2015). These mandates included a common core curriculum, computer-based common core testing and teacher evaluations based on student test scores. Thus, teachers coping with the NCLB "accountability" hurricane now faced an even greater storm of additional professional responsibilities associated with RT3. The "Every Student Succeeds" Act (ESSA) attempted to relieve RT3 pressures, but states are now too deeply invested to change directions (U.S. Department of Education, 2015). Furthermore, ESSA maintains NCLB's unattainable pass rates for students.

Teachers are usually subjected to one or two substantial federal/state mandates every three or four years. Gradual change is typically taken in stride. However, RT3 has multiple high stakes elements with the accompanying red tape. Andrea Gabor, in *Schools Caught in Red Tape Generated by New Education Mandates* (2013), describes how "reform" in Massachusetts may not only be pointless, but detrimental. "Bureaucratic obstacles in public schools could be limiting real progress and preventing the most effective reforms" (Gabor, 2013). As tensions grew, parents across

the country increasingly refused testing and questioned the effectiveness of test-centered education (Coulson, 2011; Hursh, 2008; Magil, 2015; Stouffer, 2015).

The Story

This "study" started without a research paradigm. In the fall of 2015, the author was awarded a sabbatical to reconnect with alumni and public education after decades as a professor. The plan was to shadow and talk with former students teaching in public schools located within a day's driving distance. The pool of teachers came from a professional alumni group started in 2003, through a Bellsouth grant, to validate our teacher education charter.

With only a vague idea of the pressures facing teachers in the fall of 2015, the author began visiting schools across north Georgia. Not expecting anything out of the ordinary, field notes were kept for personal reflection and future inclusion in courses taught. As visits progressed, it became clear something unusual and universal was happening. To tell the story of these teachers and their professional climate, the author backward engineered field notes into a research study.

The "Perfect Storm"

A "perfect storm" is when two extreme pressure fronts collide at the least convenient time and place. A hurricane is a storm, but a "perfect storm" is a hurricane destroying New York City during rush hour. To understand the "perfect storm" facing teachers today, one must consider two massive fronts colliding in U.S. public school classrooms.

The weaker front is historic "best" practices in public education—from traditionalism (teacher-centered) through progressivism (child-centered). Most veteran teachers and teacher preparers grew up under this front. Public schools in the last half-century were progressive, student-centered, teacher-directed and focused upon developing industrious "good" citizens. *The Educator's Encyclopedia* (Smith, Krouse & Atkinson, 1961) lists four purposes of education in American democracy as 1) Self-realization,

2) Human relationships, 3) Civic responsibility and 4) Economic efficiency. In the last century, teachers (primarily women) taught with relative autonomy in their neighborhoods, and earned a laborer's wage (until teacher unions intervened). Altruism reigned—teachers were like parents, nurturing students to become "good" (rather than "smart") members of society. This front was once quite strong and had local backing, but its influence has steadily declined under the pressure of the second front.

The stronger front is federally and state-driven education reform—summed in "accountability" and assessment-centered education. NCLB and RT3 have been "Hurricane force" reforms. ESSA dials back RT3, but keeps the storm on our shores. "Education reform" comes when political, corporate and academic "elites" focus on "accountability" as a solution to a political problem (Cuban, 2011). This clash of fronts lay waste to local control of education and upset the teaching profession. In RT3, academic decisions directly affecting classrooms were made in Washington, DC and passed on to state boards and districts for implementation (Mitchell, 2012). Districts, schools, teachers, parents and students have less control of the curriculum than ever before (Hursh, 2008). All the while, achievement scores have leveled or dropped (Coulson, 2011).

Before the Storm—Politicizing Education

In the 1960s, politicians rallied behind desegregation and campaigned for more mathematicians and scientists to compete in the Cold War and Space Race. In 1971, the U.S. Supreme Court upheld school desegregation, which hastened the end of community schools. The Space Race brought standards-based education and increased political interest in education as a means to leverage votes. In the 1980s the Cold War ended and global economics took center stage as industry went offshore and the U.S. economy tanked. Education reform served to deflect political accountability. Education commissions (supposedly nonpartisan) began producing blueprints for change.

In 1967, the Education Commission of the States (ECS)

addressed perceived shortcomings in public education. ECS seated commissioners from the fifty states, the District of Columbia, and U.S. territories. Commissioners were primarily politicians and academics—what Dr. Larry Cuban (2011) referred to as "elites." The main effect of the ECS was to shift education oversight from local communities to states and the federal government (Education States Commission, 2014).

In 1983, the National Commission on Excellence in Education (NCEE), published *A Nation at Risk*. The NCEE coined the term "achievement gap." *A Nation at Risk* (NCEE, 1983) attacked public education for less-than-perfect rankings on international achievement tests. Little emphasis was given to evidence wealthy students were significantly out-performing their counterparts in poverty (American College Testing, 2010; College Boards, 2013).

A Nation at Risk (1983) blamed poor test performance, global economic position, spiraling debt and lost manufacturing jobs on public education. The *Trends in International Math and Science Study* (NCES, 2015) functioned as the yardstick for measuring education across the globe, and the U.S. did not measure up as expected. At the same time, manufacturing in the U.S. hit an all-time low in comparison to other markets (France-Presse, 2009). Less developed nations advanced globally on the backs of cut-rate resources, fewer restrictions, and massive workforces (Nationsonline, 2010). The national debt increased from $72 billion to $442 billion from 1973 to 1983 (Manuel, 2010). *A Nation at Risk* attributed our economic woes to the "achievement gap" (Lutz, 1987). Stedman (1997) proposed the "gap" was mostly contrived, but politically effective.

According to NCEE, the perpetrators placing our "nation at risk" were public educators:

> If an unfriendly foreign power had attempted to impose on America the mediocre educational performance that exists today, we might well have viewed it as an act of war. As it stands, we have allowed this to happen to ourselves. We have even squandered the gains in student achievement made in the wake of the Sputnik challenge. Moreover, we

> have dismantled essential support systems which helped make those gains possible. We have, in effect, been committing an act of unthinking, unilateral educational disarmament. (NCEE, 1983, p. 5)

Thus, the political conversation among the "elites" was set. Politicians presented teachers as saboteurs.

In 1988, the Reagan administration initiated the National Assessment Governing Board (NAGB, 2010) which introduced the National Assessment of Educational Progress (NAEP)—the Nation's Report Card, a random sampling of test scores across the nation. NAEP began measuring the nation's academic health by test scores. President George H. Bush explored education accountability in the midst of an unsure economy, increasing inner city violence, and deficit spending.

Each successive president responded with increasingly invasive accountability programs: a) Goals 2000 attributed to Bill Clinton; b) No Child Left Behind attributed to George W. Bush; c) Race to the Top, and d) Every Student Succeeds Act, both attributed to Barack Obama. The Alliance for Excellence in Education and the Commission on No Child Left Behind formed to support "accountability" through testing (Alliance, 2010). Unfortunately, political reforms dismissed central tendency and statistical probability—virtually guaranteeing the failure of universal testing. Garrison Keillor (1986) humorously lampooned education reform, claiming children in his hometown were *all* above average.

President Clinton's *Goals 2000: Educate America Act* became law in 1994 and was amended in 1996. Clinton supported "clear and rigorous standards" for what every child should "know and be able to do" (Goals 2000, 1998). Furthermore, President Clinton called on states to require challenging tests of knowledge and teaching proficiency for new teachers (Clinton, 1998). Such testing became law in the 1998 *Reauthorization of the Higher Education Act* (U.S. Department of Education, 1998), a significantly amended version of the *Higher Education Act of 1965*.

Clinton also anticipated a teacher shortage as "boomer"

children moved through public education (Feistritzer, 1998). Policymakers thought state-approved teacher channels were too narrow and too slow. As a result, pre- and post-certification tests, such as Education Testing Service's *Praxis Series* (ETS, 2015a), were deployed by most states with a primary focus on content (Commission on Instructionally Supportive Assessment, 2001). Unfortunately, candidates from poverty were significantly less likely to become teachers under the new testing measures (Bennett, McWhorter & Kuykendall, 2006). Professional testing resulted in a lower proportion of minority candidates considering teacher licensure (Gitomer, 2001).

The *No Child Left Behind Act of 2001* (NCLB, 2001) greatly increased federal incursions into education. Under NCLB schools must publish Adequate Yearly Progress (AYP) reports to demonstrate academic progress. Schools fail AYP if scores fall below state proficiency goals (Peterson, 2005). The mandated AYP for 2015 was that 100% of U.S. students must be on grade level (Peterson, 2005). It should be noted here that not one state or U.S. territory met the 2015 NCLB requirements.

Under NCLB the curriculum narrowed to expedite accountability and standardization. Under Goals 2000, teachers were spending almost 80% of their teaching time on reading, writing and math (Perie, Baker & Bobbitt, 1997). The remaining 20% went to science and social studies. Today's curriculum includes these subjects, but also includes significant time for benchmark, practice and formative testing. A recent survey found 44% of 5,000 teachers spend over 20% of their time on test prep and test administration (PageOne, 2015). Science and social studies remain marginalized—art, music and physical education have all but vanished.

President Obama contributed Race to the Top (RT3). A key feature of the Obama administration's reform is a federalized common core curriculum (Weidle, 2010). Whereas NCLB federalized "accountability" testing, RT3 federalized the curriculum, its computer-based testing and use of results for evaluating teachers. According to Weidle (2010), core standards focus all students on college and include rigorous content and application of knowledge.

The new core curriculum narrows previously diverse curricula even further (Crocco and Costigan, 2007; King and Zucker, 2009; Darling-Hammond, 2010). Low-stakes subjects are the sciences and social studies. Low-stakes subjects are tested, but these subjects are not leveraged for accountability. No-stakes subjects, such as the arts (music, theater, visual, etc.), and physical fitness (recess, fitness, nutrition, sports, etc.) are typically untested and play no role in accountability.

RT3 pushes states forward on pay-for-performance (Rose, 2010). Key evaluation points include pre- and post-testing, student growth models, and teacher evaluations by administrators and students. States receiving RT3 funds or NCLB waivers are required to implement a similar evaluation system. In an RT3 world, teachers will receive pay and promotion based on student growth models. Perhaps the relationship between education reform and politics can be summed up simply as follows: Politicians dream of everyone, everywhere, and in every circumstance, passing every achievement test.

Fronts Collide in Georgia

In Georgia (recipient of $400M in RT3 funds) teachers faced a world of *newness—new* common core curriculum (Common Core Georgia Performance Standards, CCGPS), *new* teaching standards (Teacher Assessment Performance Standards, (TAPS), *new* state-wide teacher evaluation system (Teacher Keys Effectiveness System, TKES), *new* electronic "dashboard," *new* value-added growth model (Student Growth Percentiles, SGPs), *new* teacher growth model (Teacher Effectiveness Measure, TEM), *new* synchronized curriculum maps and pacing plans for class/team/grade/subject-level, *new* achievement test system (Milestones), *new* in situate special needs coordination (with teachers or para-pros), a *new* certification model—plus the "normal" 25-150 *new* students. These new mandates ensured the continued flow of funds to cash-strapped Georgia schools (PageOne, 2015; Ravich, 2015).

Teachers were in their fourth (or fifth) set of curriculum standards in a little over a decade. The state's Quality Core Curriculum

came in two iterations (Georgia Department of Education, 1999 & 2002), 2004, Georgia Performance Standards (GPS, GADOE, 2004) and 2013, Common Core Georgia Performance Standards (CCGPS, GADOE, 2013). In February 2015, "common core" was dropped from the name and CCGPS was renamed Georgia Standards of Excellence (GSE; GADOE, February, 2015). Ironically, the standards are very similar in content, but are rewritten, recoded and redesigned for testing and reporting purposes—it is quite frustrating for teachers to learn yet *another* set of categories, indicators and jargon.

Teachers also faced their third or fourth version of professional teacher assessments. The last decade has seen the Georgia Teacher Observation Instrument (GTOI) or the Georgia Teacher Evaluation Program (GTEP, GADOE, 2005), CLASS Keys (GADOE, 2008), Georgia Assessment of Performance on School Standards (GAPSS, GADOE, 2012) and Teacher Keys Effectiveness System (TKES, GADOE, 2013).

Student assessment changed. *Milestone* common core tests began in 2015—the third achievement test program in recent years. The *Milestone* is one among many tests required in Georgia public schools. According to PageOne (2015), of 5,100+ Georgia teachers surveyed, almost 25% administer six or more district or stated required tests.

Inductees faced their third certification test series over the course of a decade—*Praxis I* and *II* (Educational Testing Service, ETS, 2015a), Georgia Assessments for the Certification of Educators (ETS, 2015b), version one (ETS, 2015b), and GACE version two by Pearson, Inc. (GACE, 2015).

Teaching conditions changed. In 2014, Georgia's legislature cut $4.8 billion from its 180 school districts. The loss of funding resulted in 61 districts furloughing teachers (as much as a 5.5% salary cut), 127 increasing class sizes, 49 eliminating art and music programs and 102 increasing property taxes (Suggs, 2014). Many districts were forced to RIF (reduction in force) teachers—one district RIFed 119 faculty members (Jones, 2013).

Methodology

Participants

All participants in this limited field observation completed a nationally accredited (National Council for Accreditation of Teacher Education, NCATE) teacher preparation program between 2003 and 2013. Participants came from a pool of 294 teachers. Of those, 143 volunteered to participate. Forty-two volunteered for shadowing (observation) and interviews. Of those, 23 were selected based upon principal/district authorization, schedule compatibility and the travel limitations of the author. All participants were females teaching in primary (K-3), elementary (3-5) or middle (6-8) schools. All had at least two years of public school experience in their fields. All had additional endorsements (ESOL, reading, math, gifted, etc.) and about 25% had advanced degrees. Among these, four were Teachers of the Year in their respective schools.

Participants worked on grade-level teams with 3-5 colleagues, typically, three teams per grade. Teams taught 60-150 students each day. Departmentalization was the norm at team level—one teacher for reading, one for math, one for language arts, etc. On smaller teams, teachers covered two subjects. Lesson planning was by subject or grade-level—rarely by individual class. The RT3 goal is to have all teachers on all teams teaching the same thing at the same time. Autonomous lesson planning for one's homeroom has gone the way of the chalkboard. The author visited only one "traditional" self-contained classroom (rural) in which one teacher taught all subjects.

Context

All observations and interviews were in K-8 classrooms in Georgia. The participants represented 18 separate schools and 11 districts in northwest and north-central Georgia. The area covered approximately 700 square miles from the Alabama and Tennessee state lines (west and north) to U.S. Highways 20 and 85 (south and east). The schools visited were both rural and urban. Five of the schools were in the Atlanta suburbs. The average school had 800-1000 students and the average class had 20-25 students. More than

half of the schools were Title I (free/reduced lunches) and most classes were diverse blends of African American, Caucasian and Hispanic.

Procedures

While on sabbatical leave, the author visited former students to observe, talk and catch up. The author's original objective was to examine changes and reconnect with public school life after some years away. Each visit involved shadowing (observation) and a post-observation conversation or interview. The author kept notes on each visit with the intention of bringing an informed perspective to college-level, preservice teachers.

The author's field notes suggested a qualitative research paradigm (Guest, Namey & Mitchell, 2013). The author's field notes were easily adapted to Grounded Theory (1994, Strauss & Corbin), in which one observes and interviews participants, noting and collecting related statements and artifacts. Grounded Theory (GT) works well when quantitative, ordinal values are lacking (Nkwi, Nyamongo & Ryan, 2001).

Teacher comments were noted and compared for commonalities. Constant comparative analysis of field notes revealed all participating teachers shared similar concerns in a year of change. Field notes were the sole source of data. The author reviewed the 23 interviews and used a simple coding process to tally common issues and grouped them accordingly. Teachers' remarks were also marked as positive *(p)* or negative *(n)*. The *p/n* codes were to be summarized by topic in table form. Positive responses were hopeful and affirming; negative responses expressed distress or complaint.

From a pool of 250 teachers who were within a day's driving distance, the author set appointments to observe and interview the 23 volunteers. The author was on friendly, collegial terms with all the participants. Field notes were written post-interview. Names of participants, students, colleagues, staff, principals, schools and districts are in digital files, and are to be destroyed upon the completion of the study.

Each teacher was shadowed and then asked how their school year was progressing. "Assessment" was an expected theme, so the author planned to ask about validity and reliability if the subject arose. Two operational definitions were re-introduced from their college days: "Validity," meaning an assessment measures what it proposes to measure and "reliability," meaning the measurement is accurate and consistent across populations and over time (Gay, Mills & Airasian, 2011).

Shadowing lasted one or two hours and post-observation conversations were informal. InTASC/TAPS standards (required in Georgia's TKES system) served as reference points. The beginning of post-observation conversations involved various prompts upon diversity, classroom management, teaching methods, student feedback opportunities and expressions of care and commitment to students—similar to student teacher supervision experiences during college. Interviews lasted approximately 30-45 minutes.

Prior discussions with local teachers suggested topics for discussion. Local teachers invariably steered conversations toward TKES (explanation following), common core, growth modeling (student assessment), teaching teams and lack of professional fulfillment. Under NCLB and RT3, team teaching became the norm in Georgia. Teamwork takes a great deal of time—local teachers were attending as many as three after-school meetings each week

Teacher Keys Effectiveness System (TKES) had just gone into force after a year of piloting—a direct consequence of RT3 and acceptance of "stimulus funding." TKES evaluates teachers according to 10 teaching standards similar to InTASC. Summative assessments include teaching evaluations, test scores and student surveys. TKES allegedly yields data for pay and certification decisions. A significant part of TKES includes non-standardized benchmarking of individual students, then comparing those benchmarks to achievement test scores.

Student growth modeling (SGM) began as an ambiguous, beginning-of-school, non-standardized benchmark pre-test linked to spring achievement testing. Ironically, teachers discovered post-test comparisons would not be available until some months *after*

school started the *next* school year. The SGMs in TKES required individualized pre- and post-testing instructional plans for *every* student. SGMs (as conceived by the GADOE) would yield growth intervals and student percentiles to indicate whether teachers were exemplary, proficient or deficient teachers.

Prior to visiting teachers, local teachers were concerned about

- Pre-planning,
- RT3 mandates (TKES, SGMs and observations),
- teaching teams,
- diversity and central tendency, and
- a personal and school morale.

Interviews

Post-observation interviews began with a review of classroom demographics and the question, "How has this year started out for you?" The author assumed teachers would begin discussing pre-planning, time constraints and beginning-of-the-year experiences. The author next asked, "Do you have enough time to get everything done?"

"Tell me about your team." Teamwork and shared responsibilities are critical issues in today's schools. None taught in traditional, self-contained classrooms—mostly because of large schools, testing and new curricula. The author was aware most teachers served on at least three school teams.

"What about TKES?" directed the interview toward RT3 mandated assessments. "Do you think TKES will be a valid and reliable way of evaluating your teaching skills?" This question was included to see if teachers believe TKES has integrity and value. "Have you had a TKES observation yet?" was to elicit teachers' perceptions of high-stakes observations by administrators.

The author expected SGM comments because local teachers invariably brought up Student Learning Outcomes (SLOs) and SGMs in informal discussions. To ensure comments on these the author asked, "Will SLOs and SGMs be valid and reliable in evaluating you and your students?" This question was included to see if teachers believe the system has integrity as a measurement tool.

"Do your students' scores represent a normal curve (with regard to central tendency)?" was asked to ascertain how teachers perceived their student population and situation. All teachers interviewed studied central tendency and normal distributions under the guidance of the author as undergraduates. The author was prepared to review the highlights of central tendency if necessary. Central tendency is the "elephant in the room" when it comes to accountability.

Finally, "Are you fulfilled as a teacher?" "Why?" This question was included to ascertain the morale of the teacher. "Do you think everybody feels like you do?" sought to calculate the morale of school colleagues. "Are you fulfilled as a professional?"

After interviews, notes were transcribed into field notes and were coded as mentioned above. The author's field notes often included paraphrased quotes related to specific questions. In addition to the coded responses the author noted similarities with comments made by early interviewees.

Findings

The following data were from the coded responses of the participants (see Table One). Actual responses follow to give the reader a sense of teachers' concerns.

Table 1: Positive/Negative Codes (*N*=23)

Topics	*p* Positive	*n* Negative
Pre-planning	.43 (10)	.57 (13)
Teams	.91 (21)	.09 (2)
TKES	.09 (2)	.91 (21)
SLO/SGM	.0	1.00 (23)
Curve (SDM)	.13 (3)	.87 (20)
Fulfillment	.13 (3)	.87 (20)

Questions and Responses

How has the year started out for you? All teachers interviewed felt overwhelmed. Their primary complaints: not enough time to prepare; too many meetings. Pre-planning began in late July; the author conducted interviews in October and November. Apparently, pre-planning across the state was used for TKES implementation and instruction. In past years, teachers had fewer meetings and spent the remainder of their time in preparing their classrooms. This year was different. When school started, teachers felt they were already behind and under-prepared to deliver their new curricula in a TKES-driven environment.

"I used to spend the week before school getting my room ready and planning. This year we had workshops and team meetings almost every day of pre-planning." "A crazy year! There's always something more to do or a meeting to attend." "I used to plan more—now I spend a lot of time worrying about all the stuff I have to get done—I'm constantly just trying to keep up." "I've never had a year like this." "It's all standards—I have fewer and fewer choices when it comes to what I do in the classroom." "Most days I'm working from team plans—I rarely have time to do specific planning for classes." "Tons of meetings for TKES." "I feel sorry for the new teachers." "I don't feel like I get done as much as I used to."

"I'm overwhelmed!" "Okay, I guess, I'm here until 6:00 every night." "The year has started well enough, but it's been challenging." "There's a lot of new stuff—it's hard." "I love my kids! It looks like a good year." "I'm just trying to keep up." "TKES, SLOs, GSMs and meetings are taking lots of time." "Pre-planning was mostly TKES workshops and school meetings—I don't feel like I got my room as ready as I usually do." "Shifted to a new grade this year—big mistake—there's too much new stuff to learn."

Tell me about your team. All participants worked on grade level/subject teams. Even so, many were surprised about being asked about their teams. In most cases the author was introduced to team members—typically, four or five teachers teaching areas covered on achievement tests. The only subjects taught daily were

math, reading, language arts, science and social studies. The first three were considered the "riskiest" and most difficult to teach. Teachers serve on at least three teams: grade-level, subject and school. None of the teachers had team development training.

"With 400 students and 16 teachers, you have to work as teams. It's impossible to coordinate a standardized curriculum otherwise." "If we worked individually we would never stay together on the standards." "It's best to divide and conquer—I'm only responsible for social studies on my team. I haven't taught the entire curriculum since I graduated." "I suppose if all the lessons were scripted we could back off the teams, but who wants that?" "I like being on a team, but we waste a lot of time figuring out what's wanted." "In a smaller school, you might have self-contained classes and teamworking would change—you'd all be doing the same thing—on our teams we're all doing a different subject." "I've always been on a team. I don't know anyone who isn't."

What about TKES? TKES is big. The teacher assessment system involves a new common core curriculum, professional standards, observations, assessments, student growth models, student surveys, one-to-one technology for students and reporting progress through a "dashboard" into a state-wide database. Teachers see pay-for-performance as the underlying theme. Thus, TKES is perceived as a high-stakes assessment system aimed at teachers. The final assessment is to be an aggregation of teacher observations, assessments, student growth and student survey results.

"I doubt its validity, but I don't think it matters." "TAPS [standards] are valid, but the evaluations will be unreliable." "The observations make me nervous—I'll be surprised if I'm at my best." "How can student surveys be fair? Some teachers are stricter than others." "TKES doesn't see what I'm doing day-to-day—observation times are rarely the best sample of my work." "No, I blew my observation—was having a bad day—I got a couple of 2s on my evaluation." "I got all 3s and 4s!" "It's a game we have to play and I'll play the game as best as I can—you have to 'game' the system." "It is what it is."

Will SLOs and SGMs be valid and reliable in evaluating you and your students? "I don't like the SGMs—we don't control a lot of variables in students' lives." "If you're talking about using student scores to evaluate us—not likely." "The SLOs are a joke—the only test we give and hope everyone fails." "It's too early to tell." "I'm not sure it's necessary. I have a pretty good idea where my students are without all the modeling stuff." "Maybe, if all the other things were equal, but they never are." "SGMs are trying to do what teachers do naturally—I don't need them, but we have to do it." "I don't know enough about it yet." "The modeling doesn't tell me much I don't already know—this is all for TKES."

Do your students' scores represent a normal curve? All teachers were incredulous about accountability goals. NCLB, RT3 and ESSA mandate 99-100% pass rates for the entire student population. Yet, given a normal population and a valid and reliable assessment, 15-20% will fall a standard deviation below the mean. Teachers, especially in Title I classrooms, know their students, classes, school and state are subject to central tendency. Politicians do not know this. Teachers also know "rigorous" assessments mean lower scores and only a "dumbed down" assessment gets everyone over the bar. If every student *does* pass, skepticism should reign.

"RT3 doesn't believe in curves—they still insist all my students are above average!" "Yes, we're a normal curve and the same old problems exist—ability, family background and poverty." "How can teachers teaching different subjects to students from different socio-economic settings be evaluated fairly?" "Of course, but no one sees that but us." "We're Title I and I'll be lucky if a third of my class passes."

Are you fulfilled as a teacher? In October and November of 2015, teachers interviewed were not happy or encouraged by the direction their profession was headed. "Overwhelmed" was their most-used descriptor. Many voiced a disconnect between what they chose to do (serve students) and what they feel like they are doing (running an assembly line). The teachers interviewed expressed an absence of professional autonomy and dislike for

excessive, high-stakes assessments. Teachers balanced their love of children against their distaste for TKES.

Are you fulfilled? "Yes and no—I love my students, but I hate all the other stuff—and it just grows and grows!" "I've always wanted to be a teacher, but it's not what I thought [it would be]." "No. I feel like I work in a prison." "I have moments, but most of the time I'm working on documenting." "It's all about the curriculum and I want it to be about children and their interests." "Mostly yes—especially when I remember why I became a teacher in the first place—I love my kiddos." "I don't think I can do this for 18 more years." "Yes, this is what I'm good at."

Discussion

The teachers interviewed were unanimous in declaring RT3 changes "overwhelming" or "challenging." Most attributed it to the GSGM portion of TKES, CCGPS (new standards) and new Milestone testing. Milestone tests are a statewide-server-based McGraw-Hill test similar to the widely-used *Partnership for Assessment of Readiness for College and Careers* (PARCC). As mentioned earlier, the GSGM pre-test (SLO) component is unreliable.

The good news was that in spite of being "overwhelmed," classrooms were generally well-managed and learning was consistently monitored. Observations and conversations with team members helped build a context for teacher responses. Most had a positive attitude, but were not happy with their non-teaching workload. More than half said they were spending significantly more time planning and meeting after school than in past years and most suspected no one reviewed their web-based lesson plans. Slightly less than half begrudged the time taken from pre-planning for TKES meetings. Five teachers half-jokingly said they were not sure they were going to make it through the year. One teacher stated she was so frustrated she was contemplating resignation before the end of the school year.

Teams are the rule in Georgia, yet none of the accountability or evaluation measures address teamwork or team (in)effectiveness.

Further research is in order, especially as student tests scores become high-stakes measures for teachers. The teachers in the study were not anti-team, though they wished they had more autonomy as a professional. All wished for relevant, engaging lessons tailored to meet the individual needs of their students in the context of their strengths and interests. Most of the teachers picture a "good" team as one that supports, encourages and coordinates best practices. Almost all the teachers enjoyed working on teams with their colleagues, but disliked most of their meetings being taken up by implementation and keeping up with state mandates.

Teachers have as many as three team regular meetings each week—school, grade level and subjects. Most of the teams in this study were focused upon unilaterally mapping and pacing the new common core and preparing for TKES. All 23 teachers agreed team-teaching was necessary under the current conditions. Many suggested school size and the common core curriculum make teamwork a given. As long as uniformity and accountability dictate actions, teams will remain necessary. Interestingly, almost all the teachers said they taught their best lessons after testing was done.

Generally speaking, teachers did not think TKES would be valid or reliable. Their primary concerns with growth modeling (SGMs). They were concerned about uncontrolled variables, such as balanced classes (normal populations), socioeconomic circumstances and need-based faculty placements or teaching assignments. Most assume SGM is a pay-for-performance initiative—which they dislike. The TKES component with the least criticisms was leadership observations. Most appreciated evaluations on TAPS standards for professional growth, but were not happy with its 50% weight in overall evaluations. Among those who shared their TAPS observation scores, most received 3s (proficient/consistent), two mentioned receiving 2s (needs improvement/inconsistent) and five mentioned receiving 4s (exemplary/continual). No one reported receiving 1s (deficient/unobserved). Most distrust upcoming student surveys, but few were familiar with the questions on the survey. The notion of "gaming the system" came up often and was best described as doing "what one had to do to get by." Most teachers were content

with "proficient" regardless of what they thought of their own skills. Some went so far as to say "proficient" was a safe place to be with regard to TKES.

Teachers were unanimous in dismissal of SGMs as a valid, reliable or sufficient measure of student growth or professional ability. The teachers were clearly connecting growth models with value-added assessments and pay-for-performance. None were fans of high-stakes achievement testing—especially the new Milestone tests. Common arguments against testing were often mentioned. More than half of the teachers supported formative assessments, but many were suspect of high-stakes summative assessments. None liked the idea of being professionally assessed through students' test scores.

The CCGPS (common core standards; now, Georgia Standards of Excellence) are being learned on the fly as teachers use pull-down menus and online lessons with their digital dashboards. Of particular concern is how the new standards will be tested by Milestone. Teachers know very little about the new Milestone tests. They have been told Milestones will be language intensive with constructed responses from students—much more difficult than last year's CRCT tests. These concerns are justified because a significant number of students across the state failed to pass CRCT tests. Teachers feel that each new mandate seems to take time away from students, teaching and lesson development—the reasons most teachers teach. All the teachers stated this year had more workshops and meetings than previous years—mostly about TKES. The consensus was new mandates decreased their time planning and narrowed their teaching to team-set lessons. The national high-stakes content emphasis is a problem when it mandates almost exclusive, lockstep teaching of reading, writing and math to the near elimination of other subjects—particularly the arts. All of the teachers in this study wished they had more freedom to engage students in lessons and units about which they are passionate.

Many teachers seemed unfulfilled professionally. More than half flatly said, "No" to the question about fulfillment. A repeated theme was, "It is what it is." Discontentment with current

circumstances in teaching is quite evident. The idea of teaching being test- and curriculum-focused rather than student-focused lessons disturbs many. The lack of professional prerogative was also mentioned. Many teachers feel they have fewer and fewer professional choices to make in their classrooms.

Only three teachers planned to stay in teaching until retirement. The remaining twenty doubted they could stay in teaching until retirement. Some said they would quit now if they could afford it. Slightly less than half said they would eventually drop out because of families.

Conclusion

In the midst of our "perfect storm," teachers across the country are reeling from waves of NCLB accountability and the landfall of RT3 and ESSA accountability. The stronger front has overpowered the weaker front. Diane Ravich (2015) points out why RT3 stands to be much more pervasive than NCLB. The U.S. Department of Education controls much of public education today without congressional consent—power came through $5 billion awarded as part of the economic stimulus plan following the 2008 recession. RT3 compliance is assured because cash-strapped states gobbled up education funds. Georgia received $400 million in RT3 funds to alleviate teacher layoffs and furloughs, larger class sizes, eliminated art and music programs and to restore 180-day school years (PageOne, 2015). The problems facing Georgia were outlined in Alyson Klein's (2014) *Education Week* article, aptly titled: "Georgia Battles to Beat Race to Top Head Winds."

Under the current conditions, one may reasonably conclude teachers are trapped between Department of Education funds and state budgets. Teachers constantly face changing professional expectations. Furthermore, teamwork and team efficiency, key components in successful teaching, are virtually ignored. Institutional trust, morale and professional fulfillment decrease as federal and state agencies continue to "reform" education. Clearly, teachers, parents and politicians see education very differently.

Students are perceived as coinage by corporate America.

Corporate lobbyists want one thing—more coins. Politicians, under various influences, push public schools to mint more coins for the corporate machinery. The subtle difference may be our students more closely resemble the various denominations of our nation's currency—single cents to $100 bills. Each denomination finds its value in the marketplace. School are expected to make each child high-value to the economy—such is statistically impossible. Assessment axiom: If the bar is low; all will pass. If the bar is high; few will pass.

Many of the teachers interviewed alluded to public schools as assembly lines where teachers manufacture a product—the state's version of education. Teachers mint coins for corporate America's use. Indeed, as we view students, a manufacturing paradigm is evident—high-volume quantities are preferred over low-volume quality. Politicians and their supporters hope for quality while mandating quantity.

Ironically, the assembly line (even if a sound paradigm) fails because the line is continually retooled—"upgraded" and "improved"—by management (elites). Teachers and their teams spend much of their time repairing and retooling the line instead of manufacturing the product.

Today, public education policy has failed to improve education for the masses or achieve excellence. Freshmen enrollments and senior graduation rates should be similar, but are not. Richard Murnane (2013) studied graduation rates from 1970-2010; finding graduation rates to be stagnant or declining. According to the National Center for Education Statistics (NCES, 2011; Murnane, 2013) graduation rates in the South, New Mexico and Nevada are less than 70%—about the same or worse than 1970. NCES (2011) reports growth in social studies and geography has been flat since 1994. The average freshman graduation rate has grown marginally from 73.7% to 75.5% between 1990 and 2009 (NCES, 2011).

Thus, Goals 2000, NCLB and RT3 are failed reforms for public education. In light of decades of mediocrity or failure, one harkens back to *A Nation at Risk* (NCEE, 1983). This time around, the saboteurs are politicians. NCLB is dead and few in Washington,

D.C. attended its funeral. Yet, NCLB data indicates the likelihood of RT3 or ESSA succeeding. The author predicts RT3 and ESSA will follow NCLB in a few years and the nation will have little or nothing to show for two decades of reform. In the United States, student growth models, PARCC, Milestone and similar tests will *again* reveal students from households above $50,000 annual income test best. Low achievement will continue to mirror poverty (Duncan & Murnane, 2011; Reardon, 2011; Kohn, 2000). Education occasionally defeats poverty, but poverty regularly defeats education. Ending poverty would generate better test scores than any politically mandated accountability measure (Kohn, 2000; Sirin, 2012; Coe, et al, 2013).

Teachers in this study were skeptical. They seriously doubt common core, TKES or new achievement tests will result in valid or reliable accountability for students or teachers. In a study of Georgia teachers, 73% said testing did not benefit students (Magil, 2015). *High-stakes Testing and Student Achievement: Updated Analyses with NAEP Data* (Nichols, Glass & Berliner, 2012, p. 26) states, "The research on the impact of accountability-based policies and student achievement is varied, limited, and relatively inconclusive." This report also examined the pressure federal mandates place on teachers and states to perform well. Georgia ranked seventh of twenty-five in state-level "test-based pressure"—Kentucky indicated the least pressure and Texas topped the list (Nichols, Glass & Berliner, 2012, p. 5).

The winds of change in education have kept teachers from refining their skills and becoming deeply invested in teaching that arouses curiosity and enflames passionate learning. This year's perfect storm has made a difficult job worse. Furthermore, as with most storms, a trail of destruction and disappointment remains. Teachers have almost reached the limits of their flexibility and commitment to their profession. Many of those interviewed find themselves unfulfilled and looking for the exits.

Public education needs no more "accountability" reform—no more storms—if for no other reason than teachers need a degree of stability and predictability in their profession. Education politics

has failed. According to the College Board (2010), scores on the *Scholastic Achievement Test* (SAT) from 2000 to 2010 are approximately the same. A similar test, the *American College Testing* (ACT), has similar trends from 2002-2012, indicating less than half-a-point increase on composite scores (ACT, 2013). California's *Standard Testing and Reporting* (STAR) scores have decreased over the past decade (Edusource, 2013).

In more than a decade of test-driven "accountability" we have not significantly raised achievement and have failed to address other roads to success through a work ethic, persistence and service. Public education needs teaching professionals meeting the needs of every family and student under their tutelage—not on their assembly line. Teaching is a social rather than a scientific endeavor. Teachers motivate and engage rather than manufacture students.

Recommendations

At the outset, we can give teachers a break! In a sound system of governance, teachers protect students, principals protect teachers, superintendents protect principals, boards protect superintendents, and states protect boards. Current testing policies do not serve students well. As tens of thousands of parents refuse PARCC and similar RT3 tests (Nickerson, 2015; NJkids, 2015; Stouffer, 2015), teachers should be able to affirmatively accept refusals or join the movement without repercussions from principals. Principals should not face sanctions for supporting parents and teachers. Superintendents should defend parents, teachers and principals before boards and so on. The best place to begin this system of governance is in the school board room.

The best we can hope for is an enlightened group of politicians who will close the mints and assembly lines and reopen the schools. Politicians and corporations would do well to consider how poverty defeats attempts to mint identical coins. Poverty and education have a complex relationship. Does education decimate poverty or does poverty decimate education? Politicians see the former while teachers see the latter. Experience and research

suggest education alone is no foolproof vaccination for poverty. Poverty's children are often immune to education. Paradoxically, if all children can be educated, poverty ends; if poverty ends, all children can be educated. The federal and state governments might work on poverty while communities provide an education of intellect, industry and inspiration.

Perhaps the way to crack the poverty chestnut is adult education. If federal and state governments applied help (career training) where the hurt (unemployment) is in our nation, states and communities would be better off. High school-college-career may work for white-collar workers, but tech high schools and vocational schools are largely missing in our culture. Intellect stands with integrity and industry in varying degrees to yield a completely educated student. Experience and common sense suggest "being smart" is pointless without character and hard work. Many students will succeed in life relying on their hearts and hands.

Finally, public school curricula should flow from clients and communities. Relevant, passionate learning is meaningful and resilient—remote, mandated learning is not. All subjects have local content if teachers are allowed to create and integrate teaching and learning. Our public-school curricula should include as much of human experience as possible—literature, mathematics, sciences, social studies, arts, physical education and play. Accountability testing has failed to significantly validate its existence. Testing should return to the last century—intelligence and achievement tests—when students were tested, but stakes were low and data were valid, reliable and helpful for explaining a student's progress (or lack thereof) in the context of ability and others' progress. Such an approach will free and invigorate the teaching profession, restore the hope of service that drew most teachers into the field and meet the needs of unique students in unique communities.

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Tables

Table 1: Positive/Negative Codes (*N*=23)		
Topics	***p*** **Positive**	***n*** **Negative**
Pre-planning	.43 (10)	.57 (13)
Teams	.91 (21)	.09 (2)
TKES	.09 (2)	.91 (21)
SLO/SGM	.0	1.00 (23)
Curve (SDM)	.13 (3)	.87 (20)
Fulfillment	.13 (3)	.87 (20)

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