TEACHER EDUCATION QUARTERLY

Fall 2015

Advancing research and policy in teacher education since 1972

A publication of the California Council on Teacher Education

TEACHER EDUCATION QUARTERLY

Fall 2015
Volume 42
Number 4

Teacher Education Quarterly

Fall 2015 ◆ Volume 42 ◆ Number 4

Published four times a year by Caddo Gap Press
for the California Council on Teacher Education

Published by **Caddo Gap Press**
Alan H. Jones, Publisher
3145 Geary Boulevard, PMB 275, San Francisco, California 94118 U.S.A.
Telephone 415/666-3012
E-mail info@caddogap.com
Web www.caddogap.com

ISSN 0737-5328
Annual Subscriptions—$100 (individuals); $200 (institutions)—see page 104
or online at Caddo Gap Press website at www.caddogap.com

Teacher Education Quarterly

Panel of Readers

TEACHER EDUCATION QUARTERLY

Volume 42
Number 4
Fall 2015

Contents

Teacher Education Quarterly

Information for Authors

Authors wishing to submit manuscripts for consideration for publication in *Teacher Education Quarterly* are asked to follow these guidelines:

1. Manuscripts should be generated using Microsoft Word, double-spaced, between 15-25 pages in length, in Times New Roman 12 pt. font, 1 inch margins, and the names of authors NOT included on the actual manuscript.

2. A separate Microsoft Word document should be prepared as a cover letter, including all authors' names and professional affiliations, with the lead author's full contact information (mailing address, telephone number, and e-mail address), and the title of the manuscript.

3. All manuscripts must be submitted electronically at at:

http://submit.teqjournal.org/

4. Upon receipt, manuscripts will first be screened by the editor, and manuscripts potentially appropriate for the journal will then be sent to 2-3 members of the Panel of Readers for blind review. The principal author will receive an e-mail notification regarding the status of the manuscript.

For additional information, prospective authors may contact the editor:

Kip Tellez, *Teacher Education Quarterly*, Education Depoartment, University of California, Santa Cruz, 1156 High Street, Santa Cruz, CA 95064: e-mail

ktellez@ucsc.edu

Culturally Efficacious Mathematics and Science Teacher Preparation for Working with English Learners

By Belinda Bustos Flores, Lorena Claeys, Conra D. Gist, Ellen Riojas Clark, & Abelardo Villarreal

One of the biggest challenges in teacher preparation programs is fostering teachers' abilities to build relationships with students while simultaneously cultivating students' academic potential. This is specifically vital in the case of English learners (ELs). Many secondary teachers feel unprepared to work with and lack preparation to differentiate instruction for ELs (Durgunoğlu & Hughes, 2010; Flores, Clark, Claeys, & Villarreal, 2007; Reeves, 2006; Téllez & Waxman, 2006; Yoon, 2008). Moreover, teachers' underpreparedness affects their attitudes and beliefs about ELs (Durgunoğlu & Hughes, 2010; Yoon, 2008) and unfortunately hampers ELs' performance (Coady, Harper, & de Jong, 2011; Téllez & Waxman, 2006; Turkan, De Oliveira, Lee, & Phelps, 2014; Yoon, 2008). Furthermore, teacher education

Belinda Bustos Flores is a professor and chair of the Department of Bicultural-Bilingual Education, Lorena Claeys is executive director and research associate with The Academy for Teacher Excellence, and Ellen Riojas Clark is professor emerita in the Department of Bicultural-Bilingual Education, all in the College of Education and Human Development at the University of Texas at San Antonio. Conra D. Gist is an assistant professor in the Department of Curriculum and Instruction in the College of Education at the University of Arkansas, Fayetteville, Arkansas. Abelardo Villarreal is an external evaluator with the Intercultural Development Research Association, San Antonio, Texas. belinda.flores@utsa.edu, lorena.claeys@utsa.edu, gist@uark.edu, ellen.clark@utsa.edu, & abelardo.vallarreal@idra.org

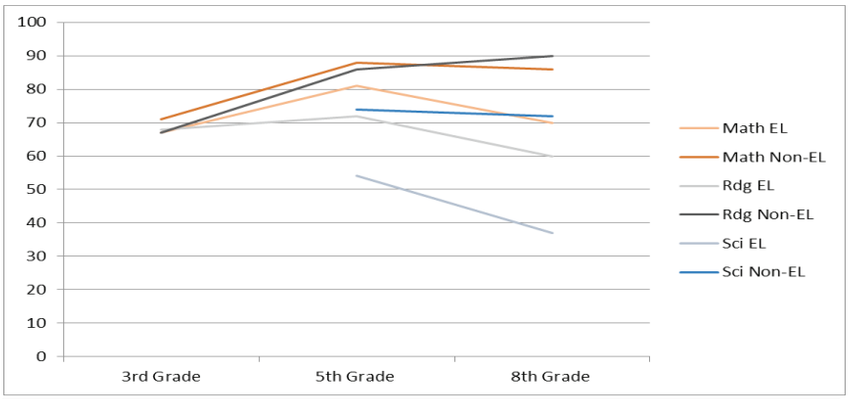
has failed to prepare secondary mathematics and science teachers for working with ELs (Turkan et al., 2014).

It is our contention that teacher preparation for working with ELs requires the following: (a) specialized content and pedagogical knowledge and skills; (b) specialized knowledge of ELs, including their language acquisition and learning processes (Coady, Harper, & de Jong, 2015; Lucas & Villegas, 2013); (c) specialized disciplinary knowledge for teaching ELs (Turkan et al., 2014); and (d) culturally efficacious praxis (Clark & Flores, 2005; Flores et al., 2007; Siwatu, 2007). Thus teacher education must make a concerted effort to recruit, prepare, and retain individuals pursuing mathematics and science certification who believe they have the capacity to affect ELs' learning outcomes. To ensure the efficiency and efficacy of teacher preparation, we should find ethical and responsive ways to examine program impact (Gist, Flores, & Claeys, 2014; Sleeter, Neal, & Kumashiro, 2014; Zeichner, 2003) and appraise the quality of these teachers in relation to ELs' performance (Téllez & Waxman, 2006).

A case in point is our own state of Texas: Although elementary teacher certification often requires a course for teaching ELs, secondary content teachers do not necessarily take similar course work. The disparity in secondary teacher preparation is evident in Texas State–mandated assessment results (see Figure 1). For example, students transitioning from elementary to middle school on average bring with them

Figure 1

State of Texas Assessment of Academic Readiness (STARR), 2014
Data from TEA (2014)



	Mathematics		Reading		Science	
Grade level	EL	Non-EL	EL	Non-EL	EL	Non-EL
3rd	67%	71%	68%	67%		
5th	81%	88%	72%	86%	54%	74%
8th	70%	86%	60%	90%	37%	72%

test scores that indicate a steady increase in mathematics and reading. In contrast, ELs' passing rates are lower than those of their non-EL peers. When ELs reach middle school (eighth grade), the gap widens in mathematics and reading, with science having the greatest decline (Texas Education Agency [TEA], 2014).

To address the challenge of ensuring the quality of preparation of secondary mathematics and science teachers, this article describes the efforts of the Academy for Teacher Excellence (ATE; Flores et al., 2007), which received Transition to Teaching grants to establish the Accelerated Teacher Education Program (ATEP). ATEP's purpose was to prepare ethnic minority teachers, mid-career professionals, and recent graduates to become highly qualified culturally efficacious mathematics and science teachers of ELs in high-need schools (Moseley, Bilica, Wanless, & Gdovin, 2014). Findings from ATEP are unpacked to (a) analyze mathematics and science teachers' efficacy beliefs, (b) explore the relationship between efficacy sources and the cultivation of mathematics and science teachers' teaching efficacy with ELs, and (c) contemplate practice and research implications for the design of culturally efficacious teacher preparation.

ATE's Accelerated Teacher Education Program

ATEP, in the College of Education and Human Development at the University of Texas at San Antonio (UTSA), was designed to integrate a culturally efficacious model for preparing teachers for success in public schools. *Culturally efficacious* is defined as (Claeys & Muñoz, 2014)

> holding a strong ethnic identity, demonstrating self-determination, employing critical reflection, exhibiting positive efficacy, revealing sociocultural competence, and engaging in transformative practices (Flores et al., 2007), in addition to having strong content, pedagogical, and technological-pedagogical knowledge. (p. 69)

As a community-based research model, ATEP addressed teacher development from the onset of preparation and through the novice years. Preparation included graduate-level course work, online modules, professional development, and a comprehensive induction support system. To address the needs of ELs, two intensive courses and professional development focusing on English as a second language (ESL) methodology and critical pedagogy were required. In preparing teachers, Durgunoğlu and Hughes (2010) noted the importance of mentors being able to model effective strategies with ELs. Hence participants' mentors were also in attendance to ensure an alignment between theory and practice. ATEP was specifically conceptualized to prepare mathematics and science teachers who are highly qualified, well prepared to deliver instruction to ELs, and culturally efficacious. Components included (a) a reciprocal collaborative partnership between university and schools (Flores & Claeys, 2010/2011); (b) a redesigned course work program to meet the needs of ELs; and (c) induction support that included coteaching, observation of master

teachers, working with parents and communities, and leadership training (Flores, Hernández, García, & Claeys, 2011).

Culturally Efficacious Teachers and English Learners

The implementation of a standards-based curriculum and instruction that is culturally relevant is a challenge confronting teachers (Rodriguez, 2005). However, extensive research has been conducted for educators and researchers on the importance of culturally responsive and critical pedagogy for ensuring student achievement (Gay, 2010; Gist, 2014a; Gist et al., 2014; Nieto, 2004; Villegas & Lucas, 2002). Several discipline-specific national organizations have developed standards for teachers to teach in a more culturally responsive manner (National Association for Research in Science Teaching, 2014; National Council of Teachers of Mathematics, 2000; National Science Teachers Association, 1996). Specifically, these standards call for the equitable accessibility of science and mathematics for all students, including ELs. Zapata (2013) suggested that efforts for reform would only occur if teachers are prepared from a sociocultural constructivist framework, in which "the complex layers of understanding gender, ethnicity, and social-status, utilized to frame science education, must include factors such as language and cultural norms" (p. 799). The same notion has been iterated about mathematics education teacher preparation (Celedón-Pattichis, 2008; Civil, 2007; Rodriguez, 2005).

To address these issues, ATEP employed the Culturally Efficacious Evolution Model (CEEM), which is situated in a socioconstructivist transformative framework. Flores et al. (2007) built and extended the work of Ladson-Billings (1994), Gay (2000, 2010), Darder (2011a, 2011b), Sheets (2005), and Sleeter et al. (2014) in constructing the model. They suggested that teachers must demonstrate content, pedagogical, sociocultural, and theoretical knowledge but also contended that personal knowledge of self is important (Clark & Flores, 2005; Flores et al., 2007). In becoming a culturally efficacious teacher, a teacher must recognize his or her own stance in terms of his or her ethnicity, culture, gender, and multiple forms of self (e.g., an educator, a scientist, a professor); this will help in understanding others and developing critical consciousness (Clark & Flores, 2014; Flores, Clark, Guerra, & Sánchez, 2008; Flores, Ek, & Sánchez, 2011). Becoming a culturally efficacious teacher is an iterative journey that begins with critical consciousness and cultural competency. For a teacher, cultural competency requires an understanding of the community in which the teacher is working and its resources as well as an understanding of the students the teacher is serving. In contrast to being culturally competent, cultural proficiency requires the teacher to have a much deeper knowledge about the community's social, cultural, political, and historical status (Celedón-Pattichis, 2008; Civil, 2007; Darder, 2011a, 2011b; Salazar, 2013; Zapata, 2013). Cultural proficiency is the recognition that knowledge and reasoning within different communities are derived distinctly and that people have unique ways of being and

understanding. In addition, a culturally proficient educator realizes that there are power relations within all classrooms, so if the instructor is trying to control the setting, this may be in opposition to how the students' perceive their role within the classroom. A culturally proficient instructor understands the multiple dimensions that exist in classrooms, culturally, cognitively, emotionally, linguistically, and also considers the physical environment.

To move beyond understanding requires the educator to engage in critical pedagogical practices. In the case of mathematics and science teachers, culturally responsive lessons would not solely approach the presentation of concepts from a Western stance but would encourage other points of view, provide readings from various lenses (considering, e.g., gender, ethnicity), and examine how scientific communities (including indigenous groups) across the globe approach or resolve issues. In addition, lessons would engage students in active learning and real-world problem-solving approaches that may have direct impact on their communities. As prior research has demonstrated, there is a relationship between self-conceptualization and efficacy (Flores & Clark, 2004) as well as interconnectedness between personal ideology (identity, motives, beliefs) and cultural-responsive teaching (Flores et al., 2011). Hence, to be culturally efficacious means that one has confidence in oneself as an instructor and signifies one's belief that one can impact learning regardless of what external factors exist beyond one's control. As a culturally efficacious teacher, one employs various knowledges as cultural responsivity—critical pedagogical practices. The teacher considers what students bring to the classroom and use what they know (the tools and skills they have) to be able to effectively impact students' development, learning, and achievement.

In an iterative process, a teacher is constantly in a state of being, becoming, and transforming throughout the lifetime as the teacher continuously engages in critical reflection and attains new understandings. This process is illustrated through the CEEM that was developed and deployed in the ATE program (see Figure 2):

1. *awakening cultural consciousness*: examining and recognizing unexplored own identities and multiple selves

2. *acquiring cultural competence*: exploring the sociocultural learning context and acknowledging cultural displays in understanding of others; being able to function within another cultural system

3. *developing cultural proficiency*: acquiring a deeper understanding of cultural knowledge and others' ways of being and beginning to recognize and apply cultural connections in practice

4. *actualizing cultural and critical responsivity*: enacting in transformative and critical practices and advocating for social justice; promoting empowerment and self-determination

5. *realizing cultural efficacy*: becoming a transformative guide, having agency and assuming responsibility, and ensuring that practice impacts outcome

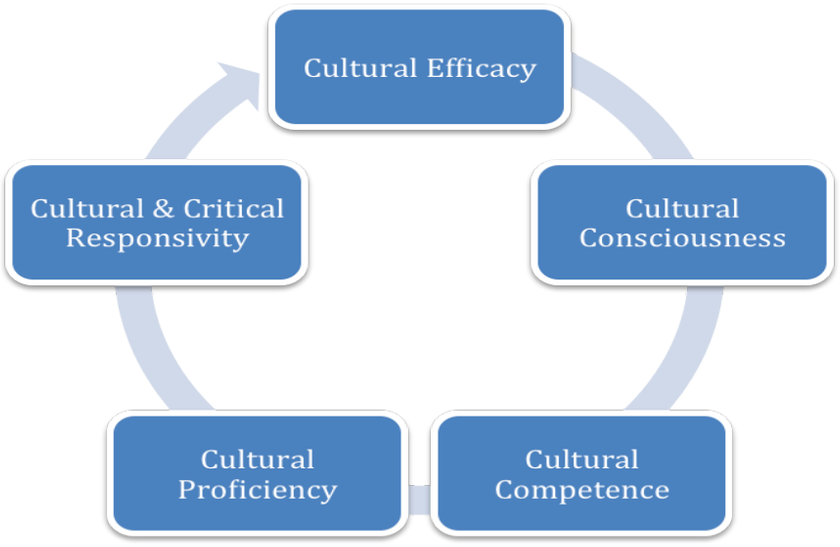
For mathematics and science teachers working with ELs, to be culturally efficacious requires the intersection of content knowledge (Swackhamer, Koellner, Basile, & Kimbrough, 2009); personal knowledge (Flores et al., 2007); knowledge about ELs, including second language acquisition (Turkan et al., 2014); and cultural and critical responsive practices. However, we contend that teaching efficacy beliefs is a key lever for ensuring culturally efficacious practices (Flores et al., 2007). In other words, it is important for mathematics and science secondary teachers to have personal, content, cultural, and linguistic knowledge, but their belief systems are also critical for applying this knowledge in their work with ELs. Therefore the following section focuses on literature concerning teachers' teaching efficacy and sources of efficacy development.

Teaching Efficacy

Several researchers (Bandura, 1993, 1997; Pajares, 1996; Zimmerman, Bandura, & Martinez-Pons, 1992) have proposed that an understanding of self is a critical aspect in the formation of positive self-efficacy beliefs. According to Bandura (2002),

> self-efficacy beliefs regulate human functioning through cognitive, motivational, affective, and decisional processes. They affect whether individuals think in self-enhancing or self-debilitating ways; how well they motivate themselves and persevere in the face of difficulties; the quality of their emotional life, and the

Figure 2
Culturally Efficacious Evolution Model and Dimensions



> choices they make at important decisional points which set the course of life path. (pp. 270–271)

In the case of teachers, understanding of self leads to competence, persistence, and perseverance for teaching in specific content areas (Brownell & Pajares, 1999; Pajares, 1997). Initially, researchers (Ashton & Webb, 1986; Woolfolk & Hoy, 1990) identified the construct of teaching efficacy as general teaching efficacy (GTE) and personal teaching efficacy (PTE). Originally, GTE was defined as a teacher's belief about teaching ability contingent on internal and external factors, whereas PTE was described as the degree of confidence that teaching will make a difference in students' lives. Over time, researchers moved toward Bandura's (1993) definition of the self-efficacy construct, which operationalizes PTE and outcome expectancy beliefs (OEB) in teaching efficacy. Hence PTE is a teacher's beliefs about being able to teach in situations wrought with variability and uncertainty, and OEB reflects a teacher's beliefs that practices will result in outcomes or differences (Bandura, 1997). Various factors may modulate the development of teaching efficacy beliefs, for example, (a) cultural values (Lin, Gorrell, & Taylor, 2002), (b) teacher preparation routes (Flores, Desjean-Perrotta, & Steinmetz, 2004), and (c) induction support (Flores et al., 2011; Woolfolk Hoy & Spero, 2005).

Teachers' approaches to classroom problem solving, strategy usage, and goal setting are likely mediated by their teaching efficacy (Zimmerman, 2000). Apparently, teachers with strong teaching efficacy are prone to engage in innovative practices (Tschannen-Moran & Woolfolk Hoy, 2001). Teacher efficacy has also been linked to students' achievement, motivation, and self-efficacy (Woolfolk Hoy & Spero, 2005). Going beyond teacher efficacy, cultural competence, and culturally responsive teaching, researchers have begun emphasizing cultural teaching efficacy (Clark & Flores, 2005; Flores et al., 2007; Siwatu, 2007). For example, establishing positive student relationships, developing a sense of trust, and engaging students as members of the classroom reflect culturally responsive efficacy (Siwatu, 2007). Siwatu proposed that the capacity to engage in culturally responsive teaching will likely influence teacher candidates' OEB. The inability to communicate with ELs and the failure to see the link between the native language and cultural identity are considered indicators of teachers' lack of teaching efficacy (Siwatu, 2007). McKinnon, Moussa-Inaty, and Barza (2014) found a low teaching efficacy for science teachers working in a foreign context and contended that the efficacy of these science teachers may have been dependent on their cultural adaptability.

Sources of Efficacy Development

Research has explored the development or "antecedents of self-efficacy beliefs of novice and experienced teachers" (Tschannen-Moran & Woolfolk Hoy, 2007, p. 944). Researchers have suggested that further research is needed to explore the development and the prior experiences that influence efficacy. To date, we have not

found studies investigating the antecedents of mathematics and science teachers serving ELs or studies exploring culturally efficacious teacher preparation. Given the importance of teaching efficacy, there is a need for extensive research on what type of teacher preparation or professional experiences assist in the development of a teacher's efficacy, specifically in a context in which ELs are present. Bandura (1993, 1997) hypothesized that the development of the individual's efficacy is incumbent on four sources of efficacy in a social context: mastery, vicarious experiences, verbal persuasion, and physiological arousal experiences. Mastery experiences include field- and community-based experiences in which teacher candidates practice their craft and that lead to accomplishing the specified tasks, in this case, teaching. Vicarious experiences occur when seeing someone how to model an activity that an individual hopes to accomplish. For example, field observations and service-learning experiences are likely sources of vicarious experience, as is observing mentors modeling teaching practices (Wagler, 2011). Verbal persuasion results when individuals receive feedback about their performance on a specific task, for example, when mentors debrief with the teacher after mentoring and coaching sessions. Physiological arousal occurs when feeling joy, excitement, or contentment as the activity is performed. For example, when teachers witness that students are acquiring a certain concept, they may feel a sense of satisfaction. Karabiyik and Korumaz (2013) noted that an increase in job satisfaction is correlated with higher teaching efficacy.

In the case of mathematics and science teacher candidates, studies have examined efficacy in terms of personal teaching efficacy (PTE) beliefs and teaching outcomes expectancy beliefs (OEB; Riggs & Enochs, 1990). For instance, efficacy differences were observed between prospective and practicing mathematics and science elementary teachers (Wenner, 2001). Practicing teachers had a greater sense of PTE, whereas prospective teachers had more positive OEB. In general, elementary teachers were more positive toward teaching mathematics than toward teaching science. Specific content course work appears to assist mathematics and science elementary teacher candidates' efficacy (Moseley & Utley, 2006). Of note, content courses embedded with pedagogical techniques assisted in increasing practicing mathematics and science teachers' efficacy (Swackhamer et al., 2009).

With the increased awareness that we need to better serve diverse populations, researchers have begun exploring the equity efficacy beliefs of mathematics and science teachers (Cone, 2009; Ritter, Boone, & Rubba, 2001) and have included specific items pertinent to the instruction of ELs (Swackhamer et al., 2009). In exploring teacher candidates' equity efficacy beliefs about science teaching and learning, Cone noted that community-based service learning had a significant impact on teacher candidates' OEB. Also, Swars (2005) observed differences in teacher candidates' mathematics teaching efficacy when teaching diverse learners as compared to self-reported positive teaching efficacy. It appears that providing science and mathematics teacher candidates with opportunities to engage in mastery experiences, such as

community-based service learning and field experiences, assists in their development of equitable teaching efficacy. Coady et al. (2015) argued that teacher education can aim for equity by ensuring teacher candidates are prepared to employ specific EL strategies. They suggested that teacher education "interrogate the terms used to describe effective practices in ESL and mainstream classrooms" and consider "more highly structured field experiences and specialized assignments for teacher candidates that provide models of effective instruction for ELLs" (pp. 23–24).

In other research, we see evidence of physiological arousal as a source of efficacy in which experiences lead to teachers' satisfaction and gratification. Collier (2005) proposed that there is a reciprocal relationship between teacher efficacy and caring:

> The act of caring and being cared for forms a loop which provides needed support to enhance student growth, development and performance while refueling teachers with experiences of gratification and appreciation, increasing satisfaction with teaching and commitment to teaching as a profession. (p. 359)

Noddings (2012) described the caring relation in teaching as the care ethics of "listening, dialogue, critical thinking, reflective response, and making thoughtful connections among the disciplines and to life itself" (p. 771). Bartell (2011) drew a theoretical map of how the caring teacher can negotiate student relationships as related to race, culture, politics/power, and academic achievement and posited a professional development design for caring mathematics teachers that integrates student mathematical thinking and competencies with dilemmas of practice related to issues of race, culture, and power. Specifically, Lewis et al. (2012) verified that there is a direct link between teacher caring and Latino ELs' self-efficacy in mathematics, which emphasizes the importance of fostering caring teacher–student relations.

The contexts in which caring teacher–student relationships are fostered also appear to have an impact on teachers' efficacy. Collective teaching efficacy, which is reflective of the school climate, appears to impact students' success, particularly in reading and mathematics (Hoy, Goddard, & Sweetland, 2000). Communities of practice, in which individuals dialogue about common goals, issues, or interests (Nika, 2014; Wenger, 1998), can serve as a context in which teachers develop positive relationships that value and respect others' views promoting their teaching efficacy (Nika, 2014; Takahashi, 2011). Takahashi observed that in analyzing and discussing student data, teachers' pedagogical practices and efficacy were reaffirmed in communities of practice. In addition, with the proliferation of online technologies, communities of practice have transformed over time, offering teachers participation in a social group, such as an online community of practice, to connect with and support each other engaging in meaningful interactive and reflective practices to continue learning and sharing professional strategies (Murugaiah, Azman, Thang, & Krish, 2012). Essentially teachers' connections, dialogue, and reflective practices as a community of practice serve as a form of verbal persuasion that support teachers' efficacy.

In summary, cultural, personal, situational, and contextual factors intersect in

teachers' lives, ultimately affecting their teaching efficacy. Drawing on this review, we posit that mathematics and science teachers must be culturally efficacious and engage in responsive practices to work effectively with ELs. They must know themselves, their students, and diverse communities, because all of these ways of knowing affect student achievement. We argue that the design of teacher preparation programs plays an integral role in the efficacy development of the teacher and that, collectively, the teacher education program structures and practices create experiences that serve as efficacy sources (i.e., mastery, vicarious, verbal, persuasion, and physiological) supporting teacher development.

Methodology

This study employed a mixed methods design because it allowed the researchers to look at teaching efficacy within a second language context from both macro and micro levels. This design was specifically suited to answering the following research questions:

1. Upon program entry, what are ATEP participants' teaching efficacy beliefs?

2. Are there differences between personal and outcome efficacy beliefs? Are there differences between entry and teaching efficacy and exit equity teaching efficacy?

3. How do ATEP's program structures as a community of practice act as efficacy sources that foster mathematics and science teachers' teaching efficacy with English learners?

Research Setting

Participating school districts. ATE partners with six high-need urban and rural districts experiencing severe shortages of secondary mathematics and science teachers. Legislation defines high-need schools based on (a) low-income families served, (b) low performance, (c) teachers teaching out of field, and (d) teachers with provisional credentialing. All participating school districts initially expressed reservations about ATEP, because for-profit alternative certification programs (ACP) had not met school districts' expectations. However, upon learning about ATEP's goals, district personnel agreed to prescreen and hire potential teachers.

Students receiving instruction. ATEP teachers primarily work with low-income students, students from an ethnic minority, and/or ELs. A high percentage of ELs, comprising mostly low-income Latino students, enrolled in participating schools are not meeting state expectations, not being academically successful, and not advancing to the next grade level. Although the school districts' objective is for students to be college and career ready, students often do not have role models from

underrepresented groups. ATEP's challenge was to ensure that teachers served in this capacity to make a positive difference in students' lives.

Participants

As observed in Table 1, a total of 143 students enrolled in ATEP; of these, 100 became teachers of record (TOR). In this study, 42 secondary mathematics and 58 science teachers participated; most were women (n = 76) as compared to men (n = 24). The majority were Latino (n = 51), followed by White (n = 29), African American (n = 10), Asian/Asian Indian American (n = 2), Native American (n = 1), and other (n = 7).

Data Collection Procedures

Darling-Hammond (2006) suggested that to determine program outcomes, multiple data sources should be garnered. Our data sources included (a) focus groups with 45 teachers, (b) forum responses from all teachers, (c) interviews with school administrators who had hired ATEP teachers, (d) interviews with project staff, (e) project evaluation survey, (f) the Mathematics/Science Teacher Efficacy Belief Inventory (MTEBI/STEBI; Riggs & Enochs, 1990) administered upon program entry, (g) Self-Efficacy Beliefs About Equitable Science/Mathematics Teaching and Learning (SEBEST/SEBEMT; Ritter et al., 2001) inventories administered upon program completion, and (h) archival records of project evaluators' reviews.

Table 1
Cohort Enrollment and Teachers of Record

	Math		Science		Total	
	Enrolled	TOR	Enrolled	TOR	Enrolled	TOR
Cohort 1 (2005)	8	7	19	14	27	21
Cohort 2 (2006)	7	7	7	5	14	12
Cohort 3 (Spring 2007)	11	8	13	9	24	17
Cohort 4 (Spring 2008)	0	0	4	2	4	2
Cohort 5 (Fall 2008)	0	0	2	2	2	2
Cohort 6 (Spring 2009)	3	3	11	6	14	9
Cohort 7 (Summer 2009)	5	4	6	4	11	8
Cohort 8 (Fall 2009)	9	6	7	4	16	10
Cohort 9 (Spring 2010)	3	1	7	5	10	6
Cohort 10 (Fall 2010)	1	1	4	4	5	5
Cohort 11 (Spring 2011)	6	4	2	0	8	4
Cohort 12 (Fall 2011)	2	0	1	1	3	1
Cohort 13 (Spring 2012)	2	1	3	2	5	3
Total	58	42	86	58	143	100

Note. TOR = teachers of record.

Focus groups. Teachers were invited to participate in biannual focus groups. Approximately five novice teachers per year volunteered to participate in the focus groups, which informed ATEP faculty and staff of the quality of support services for working with ELs and other resources available to participants. Other topics discussed were teacher–student relationships, student engagement levels and outcomes, teacher practices, and school context.

Forums. As part of the ATEP project, participants engaged in a hybrid community of practice where online forums provided spaces to dialogue, share ideas, discuss challenges, and support each other. Data related to ELs were extracted from these forums.

Interviews. Interviews were conducted during the first, mid-way, and final years. During each period, five school administrators, including principals and human resources personnel, were interviewed for 45 minutes to 1 hour. The interviews provided information on the quality of services provided by ATEP to participating campuses. Also, administrators reflected on their experiences with ATEP teachers in comparison to other first-year teachers. Specifically, questions were asked about teachers' preparedness in working with ELs.

Project evaluation survey. At the time of the study, two-thirds of all participants had completed their third year as TOR. These teachers ($n = 66$) were asked to complete a survey with a 4-point Likert-type scale ranging from 1 (*undecided*) to 4 (*very much*) and open-ended questions to indicate job satisfaction, quality and intensity of support, and quality of trusting teacher–student relationships.

Mathematics/Science Content Teaching Efficacy Scales. MTEBI/STEBI use a 5-point Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*) to measure teachers' confidence in teaching mathematics/science and teachers' beliefs in making a difference in their students' academic lives. Upon entry, participants completed the corresponding mathematics or science scale. These scales have demonstrated Cronbach's alpha reliability and validity (Riggs & Enochs, 1990). We used the original STEBI scales and replaced "science" with "mathematics" as appropriate. Our study's Cronbach's alpha results reveal an overall high reliability for the MTEBI scale ($\alpha = .962$, $n = 36$) and for the STEBI scale ($\alpha = .874$, $n = 54$). MTEBI Cronbach's alpha results demonstrate a high reliability ($\alpha = .969$) for the Personal Mathematics Teaching Efficacy (PMTE) subscale and a strong reliability ($\alpha = .86$) for the Mathematics Teaching Outcome Expectancy (MTOE) beliefs subscale. Similarly, STEBI personal science teaching efficacy (PSTE) subscale reliability ($\alpha = .872$) was high, and reliability for the science teaching outcome expectancy (STOE) beliefs subscale ($\alpha = .72$) was strong.

Mathematics/Science Equity Efficacy Teaching Beliefs. SEBEST/SEBEMT scales measured participants' equity teaching beliefs on a 5-point Likert scale rang-

ing from 1 (strongly disagree) to 5 (strongly agree). Using the STEBI as a model, the SEBEST was specifically established to measure science teaching equity efficacy teaching beliefs and had specific items concerning ELs. The SEBEST has an established Cronbach's reliability and validity (Ritter et al., 2001). For the purpose of this study, we modified the science scale by replacing the word "science" for "mathematics" where appropriate in the items. Participants completed the SEBEST/SEBEMT upon completion of program requirements. Cronbach's alpha revealed that both scales had high reliability (SEBEST, $\alpha = .965$, $n = 46$; SEBEMT, $\alpha = .966$, $n = 28$). SEBEST PSTE ($\alpha = .892$) and STOE ($\alpha = .958$) subscales also demonstrated high reliability. High reliability was observed on the SEBEMT's PMTE ($\alpha = .915$) and MTOE ($\alpha = .954$) subscales.

While the entry and exit tools are two distinct instruments measuring the latent construct of teaching efficacy, given the one-group design to reduce test familiarity, these measures were used to assess teaching efficacy over time. Moreover, the exit survey had specific items to assess teachers' efficacy about teaching ELs. Nevertheless, we recognize the limitations and threats to the validity of our study findings.

Archival evaluator reviews. Researchers examined the annual evaluators' reviews of project activities used to assess progress on ATEP project goals and objectives. Data were collected annually and shared during staff meetings to assist with program improvement.

Data Analysis

Using Onwuegbuzie and Teddlie's (2002) framework for mixed-method analysis, we followed these steps: data reduction, display, transformation, correlation, consolidation, comparison, and integration. During the first three steps, descriptive statistics (M, SD) were generated from Likert-type data, and qualitative data were analyzed for recurring themes and general patterns. The final steps included t-tests to compare each certification area (mathematics and science teachers, respectively) within-group differences on PTE and OEB subscales. We also examined differences for entry and exit teaching efficacy beliefs for each certification area. Because multiple t-tests were run for the purposes of reducing Type I error, a Bonferroni adjustment was computed, $p < .001$. Lastly, all data were triangulated to examine commonalities across findings as well as trustworthiness and to enrich and broaden the findings (Creswell, 2009).

Findings

To respond to each of the research questions, we first examine the MTEBI/STEBI results, and then we present the results of the entry and exit efficacy subscales to assess the development of efficacy over time. Last, using qualitative methods, we explore the ATEP participants' sources of efficacy and how these support the mathematics and science teachers' teaching efficacy for working with ELs.

Survey Findings: Teaching Efficacy Analysis

Entry teaching efficacy. In examining the entry teaching efficacy, survey data analysis revealed interesting findings for both the science and mathematics teachers. We first compared each scale's subscales by running a paired t-test on the respective mathematics or science PTE beliefs and the teaching OEB.

In the case of the mathematics teachers (see Table 2), we observed that the MTOE ($M = 2.72$, $SD = .70$) is slightly greater than the PMTE ($M = 2.53$, $SD = 1.16$) scores. However, t-test results show no significant difference on entry MTEBI PMTE and MTOE subscales. Somewhat similar trends (see Table 3) were noted for the ATEP science teachers with entry STOE ($M = 2.34$, $SD = .46$) scores significantly greater than PSTE ($M = 1.76$, $SD = .55$), $p < .001$. Initially, as measured by the MTEBI/STEBI, respectively, these ATEP mathematics and science teachers' PTE entry self-reported results revealed that as candidates, they were not necessarily convinced of their teaching capacity given the demands of the classroom.

Outcome efficacy beliefs (MTOE/STOE) entry results indicate that as candidates, they are not totally confident that their teaching would garner the expected outcome. However, their expected outcome mean scores were slightly greater than PTE. So, although they are not sure of their capacity, these teachers, as candidates, somewhat believe that they could impact student outcome.

Table 2
Mathematics Teacher Entry and Exit Teaching Efficacy

	MTEBI (entry), M (SD)	SEBEMT (exit), M (SD)
PMTE	2.53 (1.16)	4.04 (0.76)*
MTOE	2.72 (0.70)	4.27 (0.91)*

Note. MTEBI = Mathematics Teaching Efficacy Belief Instrument; MTOE = Mathematics Teaching Outcome Expectancy; PMTE = Personal Mathematics Teaching Efficacy; SEBEMT = Self-Efficacy Beliefs About Equitable Mathematics Teaching and Learning.

*$p < .001$.

Table 3
Science Teacher Entry and Exit Teaching Efficacy

	STEBI (entry), M (SD)	SEBEST (exit), M (SD)
PSTE	1.76 (0.55)	4.00 (0.71)*
STOE	2.34 (0.46)*	4.33 (0.94)*

Note. PSTE = Personal Science Teaching Efficacy; SEBEST = Self-Efficacy Beliefs About Equitable Science Teaching and Learning; STEBI = Science Teaching Efficacy Belief Instrument; STOE = Science Teaching Outcome Expectancy.

*$p < .001$.

Exit equity teaching efficacy. In conducting this analysis, we first examined differences between mathematics teachers' MTOE and PMTE scores. Greater MTOE mean scores than PMTE mean scores, $p < .001$, were noted. Employing paired t-tests, we then compared the ATEP teachers' entry with their exit equity PMTE. A subsequent paired t-test was run comparing entry with exit MTOE scores. Significant differences were found when comparing entry and exit subscales (see Table 2). Similarly, differences for the science teachers were noted on the SEBEST subscales, with STOE scores being greater than PSTE scores. Last, significant differences were noted when examining entry and exit subscales (see Table 3).

Again, it is interesting that teachers appear to be more confident about their capacity to make a difference than in their teaching capabilities. These findings are contrary to other findings in which Latino mathematics teacher candidates' OEB did not correlate to their personal teaching beliefs or positive attitudes (low anxiety) toward mathematics (Tillman, An, & Boren, 2013). In this study, Tillman et al. conjectured that the candidates' OEB were influenced by contextual factors such as considering mathematics difficult to learn, students' preexisting negative attitudes toward mathematics, and poor teaching approaches. Perhaps because a number of these ATEP candidates were mid-career individuals, they relied on past career success in responding to the OEB items. Moreover, a high percentage indicated that they had chosen the teaching profession because they wanted to make a difference in students' lives. One ATEP teacher shared,

> I became a teacher because I found that I enjoyed sharing knowledge so much that I was not fulfilled as a research scientist. Yes, I was discovering new things and I was part of the leading edge of science, forging tremendous discoveries, but there were no longer the intense intellectual discussions that I had in graduate school seminars and classrooms.

Thus it is important to not discount these prior experiences or motives in relation to efficacy beliefs. These ATEP teachers approached the teaching task from this lens, and as they attained greater knowledge, skills, and confidence, their teaching efficacy beliefs were altered.

Qualitative Findings: Program Sources of Efficacy Analysis

Given these quantitative results, we then examined our qualitative data (focus groups, forums, interviews, archival records, program evaluations) to determine whether the participants' teaching efficacy was supported through the project activities, including professional development, induction support, and course work, as well as through contextual experiences within the school setting. Deductive analysis revealed that these experiences served as sources of efficacy for ATEP participants. First, we outline program experiences as sources supporting PTE. Then, we discuss how these experiences supported participants' OEB.

Physiological arousal supporting personal teacher efficacy. In this study, sources of physiological arousal are operationalized as contextual factors that foster feelings of joy, excitement, and satisfaction. As novices, the majority (71%) rated the ATEP induction support system as effective for assisting them in becoming teachers. Many spoke about the espirit de corps they felt as members of a cohort–community of practice, which assisted them through the most difficult assignments; Angela stated, "The camaraderie within the cohort has given me the support I need to get through difficult days." Getting to know and work with others in the university setting was another highlight; they spoke positively about their rewarding experiences. Maria exuded with confidence, "I have learned a lot of effective strategies to incorporate in my class." Larissa reflected on strategies that she had learned to meet the needs of ELs and verified their effectiveness: "In my experience, science has it easy with ELLs [English language learners]. There are so many images and graphic organizers that we can use to show ELLs . . . that we can then integrate into a picture glossary." This validation encouraged other participants to implement these strategies with greater confidence.

Throughout ATEP, peer support not only affected teachers' experiences but also buttressed their retention. Respondents felt that their relationships with colleagues were effective and emotionally contributed to their development. Some found a supportive community of practice in others: "I was lucky enough to find a school where other teachers (in and out of my department) provided me with support and assistance. They were there for me on a daily basis to ensure that I didn't need anything or have questions on anything."

The campus climate created by administrators impacted participants' efficacy. Elibeth noted, "In my campus, I have very supportive administration and staff. I don't think I would have done it without all their help." Alejandra also spoke about her administrator, who was an excellent mentor who had worked with ELs:

> He used to be a biology teacher and a science specialist so he was able to help me with the curriculum when I needed the help. I remember one time I was panicking because the activity I had planned wasn't going well at all and I was on a time crunch with the content. I called him and asked for his advice. He came up with an activity for me that was quick and easy to grade. It worked much better than what I had planned.

The role that campus administrators play in a teacher's efficacy is crucial. In general, if teachers feel supported by their campus administrators, they are more likely to remain teaching on a particular campus. When asked to rate the support that they had received from campus administrators, 64% felt that this support was effective, whereas 14% were undecided. In the words of many, "they have always been there for me to offer constant support in resources, motivation, and personal issues when needed."

This supportive climate likely contributed to the ATEP teachers' high job

satisfaction (100%), with teaching meeting their professional expectations. Some teachers professed altruistic motives for entering the profession and, given their experiences, felt that all teachers should receive high-quality teacher preparation. For example, Lolita expressed, "I have high expectations for my students and I feel teachers should be held up to the high standards themselves and provide quality instruction for their student population and have positive impact on the lives and education of people."

However, it is also important to recognize that novice teachers are confronted with the politics of schools and the challenges of working with ELs. Jorge explained, "At my district there is too much in-fighting on curriculum issues between district and teachers, teachers and teacher to suit me. Some of these are quite contentious and not in the best interest of the student's education." Some teachers spoke not only of the challenges of being in this fray but also of the relationships with other teachers in the school as being a particularly difficult and unanticipated challenge. The intergenerational gap was reflected in comments such as concerning the "reluctance of older teachers to try new techniques." These challenges may inhibit teachers' efficacy development. In these teachers' voices, we realize that not all experiences were positive. Fortunately, in the case of ATEP participants, the positive outweighed the negative, as demonstrated by the teachers' high retention and commitment. Lorraine pronounced, "I still get the greatest enjoyment out of seeing the spark in their eyes when they have finally 'got it' . . . and report back how easy the STAAR [state-mandated] test was for them!" Cristina's experience briefly portrays the satisfaction and confidence of helping and impacting ELs:

> Many of the students who were ESL, started signing up for Saturday school only if I were to teach the class. In my short time at Laleer, I am now known to be the teacher who can work with the most challenging kids either because of language or behavioral problems. This reputation makes me very proud, because I know this is the result of very balanced measures of patience, discipline, authority, and the ability to love, respect, and never give up on students. Some of the students who started very upset for having two math classes, not only enjoy my class now, but they also have a different perspective about it.

Verbal persuasion supporting personal teacher efficacy. Sources of verbal persuasion are operationalized in this study as feedback on performance about particular teaching and learning tasks. For example, peers and mentors provided critical feedback that supported teachers' development. After observing a special education–mathematics teacher working with ELs, Effie, a mentor, wrote, "Mr. Macias demonstrated outstanding ability to engage each student, knowing his/her strengths and disabilities. Great Job Mr. Macias." Following a geometry lesson observation, Effie praised another mathematics teacher about establishing positive relationships with students, managing the classroom effectively, and offering a positive environment and about validating students' efforts and success. Again, the teacher is congratulated for her efforts: "Great ideas and good job."

Evidence of verbal persuasion as a source of teaching efficacy was observed in the online forum as teachers validated each others' ideas and provided examples of successful strategies for working with ELs:

> LYNN: I think student teaching, and coteaching will work for new teachers to get good practice with real-world practice and not overwhelm them. In math, there are many hands-on activities to help ELLs. Check book, measuring Furniture, counting money, etc.
>
> JAN: I also agree with the coteaching methods. Some ideas teachers should have in the classroom for ELL learners is to put yourself in their shoes. Pretend if you were new to the English language and you walk into the room. Is your room intimidating? (Too much can be overwhelming.) Here are some cool ideas that I have spot-checked in the science classrooms: word wall, picture glossary, language-based science games, and encourage participation.
>
> CLARISSA: Jan, I really love your strategies! In my clinical experience, I have seen teachers put ELLs on the spot with the intent of involving them in participation; however, the students become very self-conscious and say nothing at all. . . . Your strategies and techniques are great because they create a comfortable environment and benefit all students. Great post!!

In sum, it was evident that verbal persuasion experiences with mentors and peers provided teachers with an opportunity to receive feedback on culturally efficacious practices when working with ELs.

Vicarious experiences supporting personal teacher efficacy. Sources of vicarious experiences are operationalized as observing the modeling of an activity the teacher strives to accomplish. Course work, professional development, field experiences, observing master teachers, and coaching activities served as vicarious experiences. Frank surmised,

> The seminars I attend through ATE/ATEP gave me the value feedback and reinforcement that my career change was the right decision. In addition to the cultural awareness I was exposed to through courses and seminars, I learned how much different K–12 education was than from 15 years ago when I finished high school.

These accolades reflected both the content provided by the ATEP program and the quality of the faculty. Joe indicated, "There have been certain professors that have enabled me to expand my horizons on several issues such as school reform, Title I districts, multicultural awareness, classroom management and many other issues."

ATEP's intensive support system is highly regarded by school administrators and participants because project staff monitored and coordinated teachers' induction support with district- and school-sponsored activities. An administrator recognized the importance of novice teachers observing classrooms and students "because it allows them to see what the students are like." Clarissa shared her observation in a science classroom with ELs, explaining, "I have even seen teachers wait for up

to 5 minutes for a student to respond, knowing that the student is having a difficult time responding!" In a critical reflection about working with ELs, Melissa spoke of the importance of observations as a means of increasing teaching efficacy:

> You have to invest time to observe and learn about the new culture and behavior. You would then be able to adjust your behavior to avoid any conflict and more frustration. The best strategy would be to write everything down and reflect on it daily. Ask yourself what worked, what didn't work and why, and how you can improve the next day.

These vicarious experiences provided teachers an opportunity to observe strategies and reflect critically on the path to becoming successful culturally efficacious teachers of ELs.

Mastery experiences supporting personal teacher efficacy. Sources of mastery experiences are operationalized in this study as opportunities for teachers to successfully accomplish a teaching and learning task. Principals' initial observations concluded that ATEP first-year teachers had the content but faced "quite a challenge" when "disseminating that [content] to students and communicating and engaging students." In subsequent years, as a result of course work, induction support, and professional development, teachers began to demonstrate greater confidence in their teaching and their ability to impact students' achievement. Analisa, a mathematics teacher working with ELs, shared,

> I have increased my knowledge about diverse students (culturally and linguistically). For example, I have learned that all students should be viewed individually. Each student brings a different perspective into a classroom. . . . To accommodate diverse learning styles and diverse backgrounds in my classroom, I need to understand each of my students.

ATEP experiences had a positive effect on the teachers and also a lasting and positive impact on their teaching efficacy. This helped teachers meet their goals and improved learning for all students, as Analisa reflected:

> As a clinical teacher. I have improved my ability to make lessons relevant, engaging and appealing to best suit the needs of my students by relating and applying real-world situations to math and allowing them to use prior knowledge.

The bond formed between teacher and mentor cannot be understated. Teachers valuing the induction support described their mentors in glowing terms; Anastasia commented,

> From the very beginning of my first year at my school, my mentor teacher has never failed to assist me in classroom management issues, instructional strategies, lesson plan construction and overall development of me as a quality teacher in training.

Rafael felt extremely "blessed" with a great science department and, more specifically, an excellent mentor. Seventy-five percent of the respondents reported

that their overall experience in their ATEP induction support program had been rewarding. Ultimately, each teacher sought out the support he or she needed from the variety of individuals.

Administrators also valued the induction support, emphasizing the quality of the mentoring and coaching: "They [ATEP] had someone come for content, to show them [teachers] how to do the lesson. They had someone else help with classroom management." Another administrator stated, "UTSA has a pretty nice structure in what is planned for those teachers." "They [ATEP] didn't just leave the teachers here but rather they continued to nurture [them]." Principals' interviews identified the value that ATEP teachers brought to the campus to meet the needs of ELs. Principals' comments about ATEP teacher quality and effectiveness were positive and encouraging: "The ATEP teacher has had the same successes and concerns that most first-year teachers have"; "I feel positive about it, and I think the quality of teachers is good." Other principals provided greater feedback: "We got six people from ATEP for science and mathematics . . . and they've been fantastic. . . . They have excellent attitudes. . . . They all have a command of mathematics or science." The general feeling among principals is reflected in the following comment: "I've been very impressed with the quality of the candidates that I've selected. . . . Some of my [principal] peers don't like working with alternative certification people, because they don't feel that they have the depth, knowledge, pedagogy and ability to work with the students." A final analysis revealed that administrators rated ATEP teachers as being very well prepared as compared to ACP participants. Yet ATEP teachers were rated as equal or about the same when compared to traditional, university-prepared teachers. As the ATEP teachers demonstrated mastery in their practices, district personnel reported high satisfaction and offered teachers continuing contracts and hired new cohorts—a practice rarely seen in participating school districts. To date, nearly 84% of ATEP teachers have remained in the profession and maintained their commitment to working with students in high-need schools.

Experiences supporting teaching outcome efficacy beliefs. OEB is operationalized as a teacher's beliefs that his or her practices will result in outcomes or differences. Articulating a caring relationship and engaging students in the learning process are critical to a teacher's cultural efficacy in today's classroom (Siwatu, 2007) and to success with ELs (Lewis et al., 2012). We found evidence that ATEP teachers view themselves as caring and engaging teachers who promote their students' success (see Table 4).

We observed that, indeed, ATEP teachers are establishing caring, positive teacher–student relationships in their classrooms. Many echoed that it was particularly rewarding to work with students from diverse backgrounds: "My students are the world to me and ATE ATEP has helped build strong relationships with not only them but my coworkers as well." Victoria revealed how she engages students: "They like to play games . . . they like some fun things with games. . . . You can

always ask them something that relates to them." Jasmine, a mathematics teacher, shared with enthusiasm the effort she makes to learn the ELs' native languages:

> Making connections does not only mean a lot for the students. It meant a lot more to me as a teacher when I see how happy my students are as they think how I care for them. I believe teaching is more about caring.

As Collier (2005) noted, "in essence, caring is the fuel for teacher efficacy working in tandem to create the stable, capable and committed teaching force required for the effective education of our nation's children" (p. 358). Essentially, the teachers' feeling of satisfaction is aroused when students express their gratification. Furthermore, as an observable outcome, the "student and teacher success experienced within communities of caring increases confidence or efficacy in teaching skills and student ability to learn" (p. 358).

Student academic success in high-need schools is the underlying goal of the program and can serve to reinforce the teachers' efficacy. The external evaluator asked ATEP novice teachers to self-assess their impact on students' learning. Although teachers reported a greater sense of confidence in their capacity to teach and in their students' ability to learn, their self-reports initially focused on student grades as a measure of learning. Similar trends were found in subsequent years. After 3 or more years in the classroom, teachers attributed their success as "engaging students in instruction," "being able to reach every single one of my students," and "being able to hold students to high expectations." Teachers' initial judgments regarding student success were a reflection of their outcome efficacy beliefs. As teachers gained mastery experiences, follow-up debriefings demonstrated a different sense of their OEB. As Richard indicated,

> the program really puts an emphasis on being culturally efficacious and that is the most important quality you can have working at my school. Being completely honest, working in this school district was a major culture shock. Their values and beliefs are so different from mine. From my previous classes and the workshops . . . I knew the importance of learning about the new culture and trying to understand their differences rather than trying to make them conform to my beliefs.

Table 4
Characteristics of a Caring and Engaging Teacher

	Very much	Somewhat	Not at all	Undecided
I trust my students.	54%	39%	8%	0
My students trust me.	77%	23%	0	0
I am honest with my students.	92%	8%	0	0
My students are honest with me.	54%	46%	0	0
I care that all my students succeed in class.	92%	8%	0	0
My students know that I care for their success.	92%	0	0	8%
My students know that I am a dependable person.	100%	0	0	0

Note. Compiled by Accelerated Teacher Education Program external evaluator.

Ostensibly, the vicarious and mastery experiences of observing master teachers, developing a professional growth plan, participating in online professional development, modeling of teaching practices, and team teaching supported teachers' OEB development. Teachers' personal success and students' reception also promoted their cultural efficaciousness as teachers of ELs.

Discussion

Our mixed methods analyses reveal that program and school-context experiences work in tandem to support mathematics and science teachers' efficacy in working with ELs. Although differences were noted on exit as compared to entry efficacy scores for both the mathematics and science teachers, given the use of two different instruments and the use of self-reported measures, we caution over interpreting the results. Still, qualitative evidence indicates that these secondary mathematics and science teachers are supported through ATEP to become culturally efficacious.

Specifically, for mathematics and science teachers working with ELs, ATEP program sources of efficacy include the cohort model–community of practice; synergistic relationships between teachers, mentors, and school leaders; and the feedback teachers receive on their instructional practices. Although these program structures (e.g., cohort model–community of practice, synergistic relationship between schools and teacher education program) and practices (e.g., mentor and school leader discussion and feedback on teachers' instructional practices) are not necessarily innovative in and of themselves, when viewed as sources of efficacy development for working with ELs, these structures and practices appear to be significant vehicles for supporting mathematics and science teachers' usage of culturally efficacious practices with ELs. Rader-Brown and Howley (2014) found that teachers often defer to strategies recommended for all learners when working with ELs opposed to specific research-based strategies for ELs, which underscores the need for structuring culturally efficacious learning experiences to support teacher development. The commitment to cultural efficacy reflected in the program sources of efficacy is a qualitatively distinctive feature in the ATEP design and played a key role in the culturally efficacious development of mathematics and science teachers in this study.

We expect teachers to be successful with all students, yet often teacher preparation programs do not address populations like ELs; hence there is a lack of preparedness (see Durgunoglu & Hughes, 2010). Thus we posit that there must be intentionality if we are to have successful outcomes. The CEEM exhibits this type of intentionality because the teacher's developmental path is defined, linked to program design, and viewed as an evolutionary process. Akiba (2011) found that three program characteristics are significant for preparing teachers to address diversity: (a) The classroom must function as a learning community, (b) the instructor must model constructivist and culturally responsive teaching, and (c) teachers must have field

experience for understanding diverse students. Similarly, our study's findings reveal that all three of Akiba's program characteristics are associated with ATEP's efficacy sources for teachers developing culturally efficacious practices. For example, the ATEP cohort model offers vicarious and physiological efficacy sources via peer support that foster a community of practice enabling the mathematics and science teachers to examine and recognize unexplored identities and multiple selves and begin acquiring a deeper understanding of cultural knowledge. The design of ATEP utilizing the CEEM to assist faculty with a framework to support teacher development, coupled with the mentors' modeling in schools and field experiences, act as mastery and verbal program sources of efficacy. Interview and focus group data reveal that the mathematics and science teachers are acquiring cultural efficacy by exploring the sociocultural context of the classroom through teaching interactions and observing mentors modeling instruction. Taken as a whole, the program structure and practices provide efficacy sources that nudge the movement of mathematics and science teachers along an evolutionary cycle of developing and actualizing culturally efficacious practices with ELs.

Furthermore, it is important to note that the success of a teacher preparation program is dependent on the reciprocal collaboration between the teacher education program and schools (Flores & Claeys, 2010/2011). The urgency to assess the existing school culture before making a concerted effort to integrate new teachers cannot be understated. A school culture that devalues particular students or embraces a student deficit perspective can be counterproductive for new teachers' creativity, initiative, and efficacy. In this sense, the role of teacher education programs in supporting teachers' efficacy development must also include leading innovation for teachers and school leaders already in schools (Gist, 2014b). Research has suggested that even teachers who have the best teacher preparation are ineffective in unsupportive school contexts (Picower, 2011). Essentially, a collaborative synergy and commitment to improving teacher development are required between school leadership and teacher education leadership. For this to occur, teacher education program leaders must embody and model their cultural efficacy by striving to become transformative guides whose practices impact educational outcomes in schools and communities in meaningful ways.

Desimone, Smith, and Phillips (2007) explored policy influences on mathematics and science teachers' participation in professional development by examining policy attributes (i.e., authority, power, consistency, and stability) and found that stability and authority were the most influential. Therefore culturally efficacious teacher education programs situated to work persuasively with schools and districts over a long period of time may be best suited to discovering ways to create positive long-term impacts on ELs' outcomes. The power of synergistic, reciprocal, and collaborative relationship building between schools and teacher education programs is vital. Authoritative teacher education policies alone cannot ensure the development of effective teachers. However, policies that support the structures and practices that

facilitate collective buy-in and interest of teacher education programs and schools working together over a sustained period of time are needed to better understand the nuances for developing culturally efficacious mathematics and science teachers who will make a difference in ELs' academic outcomes (Battey et al., 2013; Rios-Aguilar, González Canche, & Moll, 2012).

Although many factors affect teachers' success, the most important indicator within our control is the design of teacher preparation. The CEEM undergirds the preparation of culturally efficacious mathematics and science instruction by intentionally and strategically moving novice teachers through an iterative cycle: (a) awakening cultural consciousness, (b) acquiring cultural competence, (c) developing cultural proficiency, (d) actualizing cultural and critical responsivity, and (e) realizing cultural efficacy. On the basis of the study's findings about the design of ATEP structures and practices in general, and the CEEM in particular, several research implications can be drawn. For one, instead of focusing on the entire teacher education program, future teacher education research studies may focus on exploring the impact of one program efficacy source (e.g., culturally efficacious discussion and feedback protocol) on the development of mathematics and science teachers' culturally efficacious work with ELs. Another research design could compare the impact of the different teacher education program sources of efficacy on the development of teachers' culturally efficacious practices to determine areas in which additional resources should be focused or intensified over the course of the program. For example, do some efficacy sources move teachers from awakening to actualizing levels of culturally efficaciousness at a faster rate? Also, investigating the impact of the mathematics and science teachers' culturally efficacious practices on student outcomes is critical for future research. In sum, as researchers and program developers, we must take up the challenge to develop ethical and rigorous methodologies to map the path of impact from teacher education program sources of efficacy to culturally efficacious mathematics and science teachers' influences on ELs' academic achievement.

References

Akiba, M. (2011). Identifying program characteristics for preparing pre-service teachers for diversity. *Teachers College Record, 113*(3), 658–697.

Ashton, P. T., & Webb, R. B. (1986). *Making a difference: Teacher's sense of self-efficacy and student achievement*. New York: Longman.

Bandura, A. (1993). Perceived self-efficacy, cognitive development, and functioning. *Educational Psychologist, 28*, 117–148.

Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman.

Bandura, A. (2002). Social cognitive theory in cultural context. *Applied Psychology: An International Review, 51*(2), 269–290.

Bartell, T. G. (2011). Caring, race, culture, and power: A research synthesis toward supporting mathematics teachers in caring with awareness. *Journal of Urban Mathematics*

Education, 4(1), 50–74.

Battey, D., Llamas-Flores, S., Burke, M., Guerra, P., Kang, H. J., & Kim, S. H. (2013). ELL policy and mathematics professional development colliding: Placing teacher experimentation within a sociopolitical context. *Teachers College Record, 115*, 1–44.

Brownell, M. T., & Pajares, F. (1999). Teacher efficacy and perceived success in mainstreaming students with learning and behavior problems. *Teacher Education and Special Education, 22*(3), 154–164.

Celedón-Pattichis, S. (2008). What does that mean? Drawing on Latino and Latina students' language and culture to make mathematical meaning. In *Mathematics for every student: Responding to diversity, Grades 6–8* (pp. 59–73). Reston, VA: National Council of Teachers of Mathematics.

Civil, M. (2007). Building on community knowledge: An avenue to equity in mathematics education. In N. S. Nasir & P. Cobb (Eds.), *Improving access to mathematics: Diversity and equity in the classroom* (pp. 105–107). New York: Teachers College Press.

Claeys, L., & Muñoz, H. (2014). Unearthing sacred knowledge: Enlazándonos con la comunidad. In B. B. Flores, O. A. Vásquez, & E. R. Clark (Eds.), *Generating transworld pedagogy: Reimagining la clase mágica* (pp. 67–80). Lanham, MD: Lexington/Rowman & Littlefield.

Clark, E. R., & Flores, B. B. (2005). Creating a just society: Multicultural teacher education and the changing classroom. *Teacher Education and Practice, 18*(3), 315–332.

Clark, E. R., & Flores, B. B. (2014). The metamorphosis of teacher identity: An intersection of ethnic consciousness, self conceptualization, and belief systems. In P. Jenlink (Ed.), *Teacher identity and struggle for recognition: Meeting the challenges of a diverse society* (pp. 3–14). Lanham, MD: Rowman& Littlefield.

Coady, M. R., Harper, C., & de Jong, E. J. (2011). From preservice to practice: Mainstream elementary teacher beliefs of preparation and efficacy with English language learners in the state of Florida. *Bilingual Research Journal, 34*(2), 223–239.

Coady, M. R., Harper, C., & de Jong, E. J. (2015, February 5). Aiming for equity: Preparing mainstream teachers for inclusion or inclusive classrooms? [Online]. *TESOL Quarterly*. doi:10.1002/tesq.223

Collier, M. D. (2005). An ethic of caring: The fuel for high teacher efficacy. *The Urban Review, 27*(4), 351–359. doi:10.1007/s11256-005-0012-4

Cone, N. (2009). Preservice elementary teachers' self-efficacy beliefs about equitable science teaching: Does service learning make a difference? *Journal of Elementary Science Education, 21*, 25–34.

Creswell, J. W. (2009). *Research design: Qualitative, quantitative and mixed methods approaches*. 2nd ed. Thousand Oaks, CA: Sage.

Darder, A. (2011a). *A dissident voice: Essays on culture, pedagogy, and power counterpoints: studies in the postmodern theory of education*. New York: Peter Lang.

Darder, A. (2011b). *Culture and power in the classroom: A critical foundation for the education of bicultural students*. Boulder, CO: Paradigm Press.

Darling-Hammond, L. (2006). Assessing teacher education: The usefulness of multiple measures for assessing program outcomes. *Journal of Teacher Education, 57*(2), 210–138.

Desimone, L. M., Smith, T. S., & Phillips, K. J. R. (2007). Does policy influence mathematics and science teachers' participation in professional development? *Teachers College Record, 109*(5), 1086–1122.

Durgunoglu, A. Y., & Hughes, T. (2010). How prepared are the U.S. preservice teachers to

teach English language learners? *International Journal of Teaching and Learning in Higher Education, 22*(1), 32–41.

Flores, B. B., & Claeys, L. (2010/2011). Academy for Teacher Excellence: Maximizing synergy among partners for promoting college access for Latino teacher candidates. *The Urban Review, 43*(3), 321–338.

Flores, B. B., & Clark, E. R. (2004). A critical examination of Normalistas self-conceptualization and teacher efficacy. *Hispanic Journal of Behavioral Sciences, 26*(2), 230–257.

Flores, B. B., Clark, E. R., Claeys, L., & Villarreal, A. (2007). Academy for Teacher Excellence: Recruiting, preparing, and retaining Latino teachers though learning communities. *Teacher Education Quarterly, 34*(4), 53–69.

Flores, B. B., Clark, E. R., Guerra, N., & Sánchez, S. (2008). Acculturation among Latino bilingual education teacher candidates: Implications for teacher preparation institutions. *Journal of Latinos and Education, 7*(4), 288–304.

Flores, B. B., Desjean-Perrotta, B., & Steinmetz, L. E. (2004). Teacher efficacy: A comparative study of university and alternatively certified teachers. *ACTION in Teacher Education, 26*(2), 27–46.

Flores, B. B., Ek, L., & Sánchez, P. (2011). Bilingual education candidate ideology: Descubriendo sus motives y creencias. In B. B. Flores, R. H. Sheets, & E. R Clark (Eds.), *Teacher preparation for bilingual student populations: Educar para transformar* (pp. 40–58). New York: Routledge.

Flores, B. B., Hernández, A., García, C. T., & Claeys, L. (2011). Teacher Academy learning community's induction support: Guiding teachers through their zone of professional development. *Journal of Mentoring and Tutoring: Partnership in Learning, 19*(3), 365–389. doi:10.1080/13611267.2011.597124

Gay, G. (2000). *Culturally responsive teaching: Theory, research, and practice*. New York: Teachers College Press.

Gay, G. (2010). *Culturally responsive teaching: Theory, research, and practice*. New York: Teachers College Press.

Gist, C. D. (2014a). A culturally responsive counter-narrative of effective teaching. *Cultural Studies of Science Education, 9*(4), 1009–1014.

Gist, C. D. (2014b). *Preparing teachers of color to teach: Culturally responsive teacher education in theory and practice*. New York: Palgrave Macmillan.

Gist, C., Flores, B. B., & Claeys, L. (2014). A Competing Theory of Change: Critical Teacher Development. In C. Sleeter, L. V. Neal, & K. Kumashiro (Eds.), *Addressing the demographic imperative: Recruiting, preparing, and retaining a diverse and highly effective teaching force* (pp. 19–31). New York: Routledge.

Hoy, W. K., Goddard, R. D., & Sweetland, S. R. (2000). Academic emphasis of urban elementary schools and student achievement in reading and mathematics: A multilevel analysis. *Educational Administration Quarterly, 36*(5), 683–702.

Karabiyik, B., & Korumaz, M. (2013). Relationship between teachers' self-efficacy perceptions and job satisfaction level. *Procedia–Social and Behavioral Sciences, 116*(2014), 826–830.

Ladson-Billings, G. (1994). *The dreamkeepers: Successful teachers of African American children*. San Francisco: Jossey-Bass.

Lewis, J. L., Ream, R. K., Bocian, K. M., Cardullo, R. A., Hammond, K. A., & Fast, L. A. (2012). Con cariño: Teacher caring, math self-efficacy, and math achievement among

Hispanic English learners. *Teachers College Record, 114*, 1–42.

Lin, H. L., Gorrell, J., & Taylor, J. (2002). Influence of culture and education on U.S. and Taiwan pre-service teachers' efficacy beliefs. *Journal of Educational Research, 96*(1), 37–46.

Lucas, T., & Villegas, A. M. (2013). Preparing linguistically responsive teachers: Laying the foundation in preservice teacher education. *Theory Into Practice, 52*(2), 98–109.

McKinnon, M., Moussa-Inaty, J., & Barza, L. (2014). Science teaching self-efficacy of culturally foreign teachers: A baseline study in Abu Dhabi. *International Journal of Educational Research, 66*, 78–89. doi:10.1016/j.ijer.2014.03.001

Moseley, C., Bilica, K., Wanless, A., & Gdovin, R. (2014). Exploring the relationship between teaching efficacy and cultural efficacy of novice science teachers in high-needs schools. *School Science and Mathematics Journal, 114*(7), 315–325.

Moseley, C., & Utley, J. (2006). The effect of an integrated science and mathematics content-based course on science and mathematics teaching efficacy of pre-service elementary teachers. *Journal of Elementary Science Education, 18*, 1–12.

Murugaiah, P., Azman, H., Thang, S. M., & Krish, P. (2012). Teacher learning via communities of practice: A Malaysian case study. *International Journal of Pedagogies & Learning, 7*(2), 162–174.

National Association for Research in Science Teaching. (2014). *Equity position statement*. Retrieved from https://narst.org/ngsspapers/equity.cfm

National Council of Teachers of Mathematics. (2000). *Principles and standards for school mathematics*. Retrieved from http://standards.nctm.org/document/index.htm

National Science Teachers Association. (1996). *National science standards*. Retrieved from http://www.nsta.org/publications/nses.aspx

Nieto, S. (2004). *Affirming diversity: The sociopolitical context of multicultural education*. New York: Pearson Learning.

Nika, S. D. (2014). Teacher professional development: Trends, prospects and restrictions. *European Journal of Social Behaviour, 1*(1), 5–9.

Noddings, N. (2012). The caring relation in teaching. *Oxford Review of Education, 38*(6), 771–781.

Onwuegbuzie, A., & Teddlie, C. (2002). A framework for analyzing data in mixed methods research. In *Handbook of mixed methods in social and behavioral research* (pp. 351–383). Thousand Oaks, CA: Sage.

Pajares, F. (1996). Self-efficacy beliefs in academic settings. *Review of Educational Research, 66*, 543–578.

Pajares, F. (1997). Current directions in self-efficacy research. *Advances in Motivation and Achievement, 10*, 1–49.

Picower, B. (2011). Resisting compliance: Learning to teach for social justice in a neoliberal context. *Teachers College Record, 113*(5), 1105–1134.

Rader-Brown, L., & Howley, A. (2014). Predictors of the instructional strategies that elementary school teachers use with English language learners. *Teachers College Record, 116*, 1–34.

Reeves, J. (2006). Secondary teacher attitudes toward including English-language learners in mainstream classrooms. *Journal of Educational Research, 99*(3), 130–142.

Riggs, L., & Enochs, L. (1990). Towards the development of an elementary teacher's science teaching efficacy belief instrument. *Science Education, 74*, 625–637.

Rios-Aguilar, C., González Canche, M. S., & Moll, L. C. (2012). A study of Arizona's teach-

ers of English language learners. *Teachers College Record, 114*, 1–33.

Ritter, J. M., Boone, W. J., & Rubba, P. A. (2001). Development of an instrument to assess prospective elementary teacher self-efficacy beliefs about equitable science teaching and learning (SEBEST). *Journal of Science Teacher Education, 12*(3), 175–198.

Rodriguez, A. J. (2005). Teachers' resistance to pedagogical and ideological change: Definitions, theoretical framework, and significance. In A. J. Rodriguez & R. S. Kitchen (Eds.), *Preparing mathematics and science teachers for diverse classrooms: Promising strategies for transformative pedagogy* (pp. 1–30). New York: Routledge.

Salazar, M. C. (2013). A humanizing pedagogy: Reinventing the principles and practice of education as a journey toward liberation. *Review of Research in Education, 37*(1), 121–148.

Sheets, R. (2005). *Diversity pedagogy: Examining the role of culture in the teaching–learning process*. Boston, MA: Pearson.

Siwatu, K. O. (2007). Preservice teachers' culturally responsive teaching self-efficacy and outcome expectancy beliefs. *Teaching and Teacher Education, 23*, 1085–1101.

Sleeter, C., Neal, L. V., & Kumashiro, K. (2014). *Addressing the demographic imperative: Recruiting, preparing, and retaining a diverse and highly effective teaching force*. New York: Routledge.

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

Swars, S. L. (2005). Examining perceptions of mathematics teaching effectiveness among elementary preservice teachers with differing levels of mathematics teacher efficacy. *Journal of Instructional Psychology, 32*, 139–147.

Takahashi, A. (2011). Co-constructing efficacy: A "communities of practice" perspective on teachers' efficacy beliefs. *Teaching and Teacher Education, 27*, 732–741.

Téllez, K., & Waxman, H. C. (2006). Preparing quality teachers for English language learners: A critical overview of critical issues. In K. Téllez & H. C. Waxman (Eds.), *Improving educator quality for English language learners: Research, policies, and practices* (pp. 1–22). Mahwah, NJ: Lawrence Erlbaum Associates.

Texas Education Agency. (2014). *Academic excellence indicator system 2012–2013*. Retrieved from http://ritter.tea.state.tx.us/perfreport/tapr/2013/index.html

Tillman, D. A., An, S. A., & Boren, R. L. (2013). Hispanic female pre-service elementary teachers' mathematics teaching self-efficacies, attitudes, and student outcome expectations. *Journal of Mathematics Education, 6*(2), 27–47.

Tschannen-Moran, M., & Woolfolk Hoy, A. E. (2001). Teacher efficacy: Capturing an elusive construct. *Teaching and Teacher Education, 17*, 783–805.

Tschannen-Moran, M., & Woolfolk Hoy, A. E. (2007). The differential antecedents of self-efficacy beliefs of novice and experienced teachers. *Teaching and Teacher Education, 23*(6), 944–956.

Turkan, S., De Oliveira, L. C., Lee, O., & Phelps, G. (2014). Proposing a knowledge base for teaching academic content to English language learners: Disciplinary linguistic knowledge. *Teachers College Record, 116*(3), 1–30.

Villegas, A. M., & Lucas, T. (2002). *Educating culturally responsive teachers*. New York: State University of New York Press.

Wagler, R. (2011). Out in the field: Assessing the impact of vicarious experiences on pre-

service elementary science teaching efficacy. *Electronic Journal of Science Education, 15*(2), Article 7336. Retrieved from http://ejse.southwestern.edu/article/view/7336

Wenger, E. (1998). *Communities of practice: Learning, meaning, and identity*. Cambridge, UK: Cambridge University Press.

Wenner, G. (2001). Science and mathematics efficacy beliefs held by prospective versus practicing teachers: A five year prospective. *Journal of Science Education and Technology, 10*, 181–187.

Woolfolk, A. E., & Hoy, W. K. (1990). Prospective teachers' sense of efficacy and beliefs about control. *Journal of Educational Psychology, 82*(1), 81–91.

Woolfolk Hoy, A., & Spero, R. B. (2005). Changes in teacher efficacy during the early years of teaching: A comparison of four measures. *Teaching and Teacher Education, 21*, 343–356.

Yoon, B. (2008). Uninvited guests: The influence of teachers' roles and pedagogies on the positioning of English language learners in the regular classroom. *American Educational Research Journal, 45*, 495–522.

Zapata, M. (2013). Substantiating the need to apply a sociocultural lens to the preparation of teachers in an effort to achieve science reform. *Cultural Studies of Science Education, 8*, 777–801. doi:10.1007/s11422-013-9513-8

Zeichner, K. M. (2003). The adequacies and inadequacies of three current strategies to recruit, prepare, and retain the best teachers for all students. *Teachers College Record, 105*(3), 490–519.

Zimmerman, B. J. (2000). Self-efficacy: An essential motive to learn. *Contemporary Educational Psychology, 25*(1), 82–82.

Zimmerman, B. J., Bandura, A., & Martinez-Pons, M. (1992). Self-motivation for academic attainment: The role of self-efficacy beliefs and personal goal setting. *American Educational Research Journal, 29*(3), 663–676.

Join the

California Council on Teacher Education

and Help Shape the Profession

The primary benefits of membership in the California Council on Teacher Education are:

◆ Involvement in Spring and Fall Semi-Annual Conferences;

◆ Subscriptions to two CCTE-sponsored journals, *Teacher Education Quarterly* and *Issues in Teacher Education*, plus *CCNews*, a periodic on-line newsletter, and other mailings, Conference announcements, etc.;

◆ Participation in ongoing deliberations about teacher education policy in California;

◆ Linkages through CCTE to national organizations in the field;

◆ Awareness of issues and developments in teacher education research and practice;

◆ Opportunities to meet, exchange information, and socialize with other California teacher educators.

Please enroll me as an individual member of the CCTE

Name _____

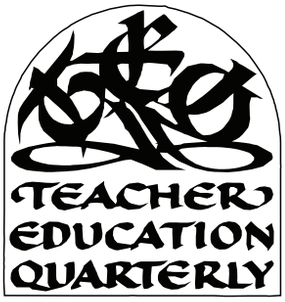
Address _____

City, State, & ZIPcode _____

Telephone _____ E-mail _____

Check appropriate dues category: ❑ Regular member at $110 per year;
❑ Retired member at $88 per year; or ❑ student member at $55 per year.

Send this completed form with your check payable to "CCTE" to:
Alan H. Jones, CCTE Executive Secretary
Caddo Gap Press, 3145 Geary Boulevard PMB 275
San Francisco, California 94118



"Can I Ask a Question?"
ESOL and Mainstream Teachers Engaging in Distributed and Distributive Learning to Support English Language Learners' Text Comprehension

By Megan Madigan Peercy, Melinda Martin-Beltrán, Rebecca D. Silverman, & Stephanie J. Nunn

The population of U.S. schools has shifted dramatically in the past two decades to include many more linguistically and culturally diverse learners (Calderón, Slavin, & Sanchez, 2011), while the teacher population has remained largely White and monolingual, with limited connections to immigrant communities (Howard, 2006). Among the many changes diverse learners have brought to U.S. schools is the increased need for the teaching force to understand how to teach English language learners (ELLs) effectively (de Jong & Harper, 2005). One solution to supporting ELLs has been an increase in English to speakers of other languages (ESOL) specialists "plugging in"[1] to grade-level mainstream classrooms (de Jong, Harper, & Coady, 2013; Dove & Honigsfeld, 2010) so that they can benefit from

Megan Madigan Peercy is an associate professor in the Department of Teaching and Learning, Policy, and Leadership, Melinda Martin-Beltran is an associate professor in the Department of Teaching and Learning, Policy, and Leadership, Rebecca D. Silverman is an associate professor in the Department of Counseling, Higher Education, and Special Education, and Stephanie J. Nunn is a postdoctoral researcher in the Department of Counseling, Higher Education, and Special Education, all with the College of Education at the University of Maryland, College Park, Maryland. mpeercy@umd.edu, memb@umd.edu, rdsilver@umd.edu, & stephjg@umd.edu

interactions with English-dominant peers as well as content instruction in English (Frattura & Capper, 2007). The inclusion of ELLs and ESOL specialists in mainstream classrooms is a relatively new phenomenon, and many researchers, policy makers, and practitioners are interested in how collaborating teachers learn and work in a variety of settings.

The goal of this qualitative study was to explore teacher learning through the co-construction of specialized knowledge and practices between ESOL specialists and mainstream teachers as they collaboratively planned, taught, and reflected on lessons. Although previous research has demonstrated that collaborative interactions among teachers can provide a meaningful forum for professional growth and development (e.g., Martin-Beltrán & Peercy, 2014; Peercy, Martin-Beltrán, Silverman, & Daniel, 2015; Zellermayer & Tabak, 2006), relatively little is known about the kinds of collaborative interactions teachers experience and the ways in which these interactions contribute to change in teachers' practices (Little, 2002, 2003; Webster-Wright, 2009). Because recent studies of teachers in U.S. classrooms have revealed that many new and preservice mainstream teachers admit to feeling inadequately prepared to teach ELLs (Durgunoðlu & Hughes, 2010; Molle, 2013), it is critical that teacher education and other professional development activities are built on a better understanding of how to support collaborative learning and work between classroom teachers of ELLs and ESOL specialists. Furthermore, increased linguistic demands generated by new content standards, such as the Common Core State Standards (National Governors Association Center for Best Practices & Council of Chief State School Officers, 2010), make it even more critical for all teachers to be well positioned to support ELLs across content areas.

The data we examine here emerged from the second year of a 3-year federally funded cross-age peer tutoring (CAPT) reading intervention designed to support vocabulary development and reading comprehension of ELL kindergartners and fourth graders who worked in little buddy–big buddy pairs to read researcher-created texts with science, technology, engineering, and mathematics themes. In this study, we explore the following research questions: How did elementary classroom teachers and ESOL specialists in a CAPT reading intervention study engage in collaborative planning, teaching, and debriefing to support students' comprehension of texts? How did the teachers' collaboration affect the ways the teachers both talked about and engaged in their practices with ELLs?

Conceptual Framework

As the Common Core State Standards Initiative (2010) takes effect in classrooms across much of the United States, there has been a shift to emphasizing explicit vocabulary instruction and increased use of informational texts. For ELLs, the challenges of working with text are even greater because of the cognitive and linguistic demands inherent in reading in another language, in which one's familiarity

with vocabulary, syntax, and relevant background knowledge may be less accessible, creating difficulty in ELLs' reading comprehension (e.g., Lesaux, Koda, Siegel, & Shanahan, 2006). However, if teachers know how to support ELLs through reading strategy instruction, first language (L1) support, and culturally responsive instruction, ELLs are more successful at comprehension and learning from texts (Calderón et al., 2011; Carrell, Pharis, & Liberto, 1989; Gay, 2010; Villegas & Lucas, 2002). We argue that collaborative work between grade-level classroom teachers and ESOL specialists can support teachers in teaching linguistically demanding texts to ELLs.

This study is grounded in sociocultural theory (e.g., Vygotsky, 1978; Wertsch, 1991), which has conceptualized learning as dynamic activity co-constructed across individuals (Gee, 2012; Johnson & Golombek, 2003; Lave, 1996; Lave & Wenger, 1991). This conceptualization of learning is often referred to as "distributed" learning (Johnson, 2006, 2009; Putnam & Borko, 2000), because the process of internalizing new knowledge is not an individual activity but rather a social one that occurs as learners interact with one another and other artifacts within particular social, cultural, and historical contexts. From this perspective, learning is distributed because it is "stretched across" (Lave, 1988, p. 1) multiple people, texts, and tools. Although previous research has framed and examined teacher learning as *distributed* (e.g., Elbaz-Luwisch & Orland-Barak, 2013; Zellermayer & Tabak, 2006), it has not previously examined teacher learning as *distributive*, which we argue expands our understanding of learning to the ways that opportunities for learning are connected across multiple settings and actors.

Greene, Dillon, and Crynes (2003) are among few scholars who discuss the concept of distributive learning, which they define as involving the use of technology "to provide instruction in a manner that does not require the learner to be present with an instructor" (p. 190). Although we do not focus on the use of technology, we draw on this construct to conceptualize sharing ideas among and across multiple participants in ways that create new affordances for learning. By distributive, we mean learning can occur in ways that are not limited to time and space boundaries. In other words, Teacher A's suggestion may impact Teacher B's practices not only once but on multiple occasions, and not limited only to when Teachers A and B interact. Additionally, Teacher B might tell Teacher C about what she discussed with Teacher A, which then impacts Teacher C's practices, although Teacher C never interacted with Teacher A about that topic directly. Drawing on the collaborative interactions of teachers in their coplanning and coteaching as they participated in this study, we illustrate instances of teachers' distributed and distributive learning. Specifically, we explored how the teachers in this study appropriated opportunities to reconsider their practices as they coplanned, cotaught, and debriefed with colleagues about the experiences they shared supporting ELLs' literacy development as they participated in the CAPT study.

Methodology

Context of the Study

The data examined here were part of a larger 3-year, federally funded intervention study in which we explored both student and teacher learning as they participated in a CAPT program aimed at strengthening the vocabulary knowledge and reading comprehension skills of kindergartners ("little buddies"; LBs) and fourth graders ("big buddies"; BBs) in three elementary schools with large ELL populations in a busy metropolitan area in the mid-Atlantic United States. This study focused on kindergarten and fourth grade because they are two critical transition years in literacy development (August & Shanahan, 2006), and the age difference between these two grades is ideal for cross-age learning. In kindergarten, children must establish a foundation of background knowledge of vocabulary, which is crucial for early literacy development (Snow, Porche, Tabors, & Harris, 2007). In fourth grade, students move from learning to read to reading to learn, and many students experience decreased motivation to read as they encounter more difficulty in text and may struggle academically (Chall, 1996; Chall, Jacobs, & Baldwin, 1990).

The CAPT program was taught during the regular English language arts (ELA) block and was supplementary to the students' regular ELA curricula. The research team developed eight text-based lesson sets, which included a mixture of narrative and expository texts centered around the themes of caring for the environment and measurement.

Lesson types. The CAPT program consisted of two types of lessons (see Table 2 for a summary of lesson topics, text types, and focal vocabulary words), teacher-led lessons and buddy-led lessons, which the research team designed based on previous work in the following areas: (a) work that shows the positive impact of peer interaction on ELLs' vocabulary development and reading comprehension (Martin-Beltrán, Tigert, Peercy, Silverman, & Guthrie, 2014; Topping, Peter, Stephen, & Whale, 2004; Wright & Cleary, 2006); (b) research that demonstrates ELLs' growth in learning through a variety of pedagogical supports, including opportunities to negotiate meaning in L1[2] (Hite & Evans, 2006; Samway & McKeon, 1999), repeating and paraphrasing (Long, 1996), simplifying syntax (Bailey & Butler, 2003), using nonverbal supports (Echevarría, Powers, & Short, 2006; Gersten & Geva, 2003), and defining vocabulary (Bailey & Butler, 2003); and (c) scholarship that has provided a rationale for the importance of supporting vocabulary development and reading comprehension for ELLs (Beck, McKeown, & Kucan, 2008; Gersten et al., 2007), who benefit from additional support related to comprehension of content. The curriculum for both lesson types provided teachers with a script that they could follow and adapt as they engaged students in the CAPT lessons.

Teaching vocabulary and reading comprehension. Members of the research team used *Words Worth Teaching* (Biemiller, 2010) and *The Educator's Word Fre-*

quency Guide (Zeno, Ivens, Millard, & Duvvuri, 1995) to choose four focal words for each text. In teacher-led lessons, kindergarten and fourth-grade students learned the definitions of the four focal words and teachers prepared them for their cross-age buddy lessons. The intent of fourth-grade teacher-led lessons was to explicitly teach focal vocabulary, to help BBs comprehend the story, and to engage BBs in practicing how to use vocabulary and comprehension strategies with their LBs in the cross-age lesson. The purpose of the kindergarten teacher-led lessons was to provide LBs with exposure to the focal vocabulary and main ideas in the texts prior to the time they spent engaging in paired reading with their BBs.

When K–4 pairs came together in buddy-led lessons, BBs read aloud to LBs using the vocabulary and comprehension strategies developed within the program. After reading the text, cross-age pairs engaged in various activities and games to apply what they had read in the text. In both lesson types, ESOL specialists frequently plugged in with their mainstream classroom colleagues to provide additional instruction and support during lessons.

Teacher participation. In this qualitative study, we focus on the opportunities for teacher learning through ESOL–mainstream teacher collaboration that occurred at one elementary school, Kennedy Elementary (all names are pseudonyms), in the second year of the intervention, 2012–2013. Eleven educators from Kennedy Elementary participated in the study (see Table 1). As we explain in the following, in this study, we focused on the collaborative interactions of two fourth-grade teachers with their ESOL counterparts.

Table 1
Participating Teachers

Name	Role
Bella	**Fourth Grade**
Carmen	Paraprofessional
Catherine	**Kindergarten**
Geoff	Kindergarten
Helen	**Kindergarten**
Kelly	ESOL Specialist
Kyleen	**ESOL Specialist**
Roberta	Special Educator
Stephanie	**ESOL Specialist**
Tamara	Fourth Grade
Ursula	**Paraprofessional**

Data Collection and Analysis

Data collection included video and audio data from CAPT teacher meetings and lessons, field notes from observations of CAPT lessons, and audio-recorded interviews with teachers. We began our examination of Kennedy teachers' learning by engaging in interpretive analysis (Creswell, 2009; Miles & Huberman, 1994) of observational field notes and transcripts from video and audio data from five 60-minute weekly teacher meetings led by the first author, which were held throughout the 2-month duration of the CAPT intervention.

The purpose of the teacher meetings was multidimensional and included providing support to teachers regarding how to implement the curriculum during intervention, gaining their insights about how their students were interacting with and learning from the curriculum, and asking them about their own learning experiences as they worked with the curriculum. During these meetings, teachers discussed strategies, challenges, opportunities, and experiences teaching the texts from the CAPT intervention. We examined and transcribed 375 minutes of video from the five teacher meetings, recursively moving between transcripts and video data as we coded.

After our initial examination of the data from teacher meetings, we examined field notes from the full data set of 42[3] teacher-led lessons at Kennedy (see Table 2) and found that fourth-grade teacher-led lessons contained more rich examples of teachers' collaborative interactions, because the kindergarten ESOL specialist was not present during the teacher-led kindergarten lessons. Furthermore, because of the emphasis in fourth-grade teacher-led lessons on preparing the BBs to lead LBs through the texts, fourth-grade teacher-led lessons provided greater evidence of how teachers supported one another and students in working with the texts. We therefore further narrowed the pool of teacher-led lessons to the 21 fourth-grade lessons in the data set and used field notes to identify five lessons that evidenced a high degree of collaboration between teachers during the lesson or that demonstrated how collaboration had an impact on instruction. We then closely analyzed 338 minutes of video data from these lessons, using audio and field note data from the lessons as supporting evidence, returning iteratively to each of the data sources. For the purposes of more deeply understanding teachers' perspectives on literacy and language learning, we drew on one additional data source: interview data from audio-recorded and transcribed 45- to 60-minute interviews with three of the focal teachers (Bella, Tamara, and Stephanie), conducted near the end of the CAPT intervention.

We used the constant comparative method (Strauss & Corbin, 1998) to identify themes and generate codes for the data. Initially, members of the research team worked independently to explore the data. We then shared our initial interpretations with one another, searching for similarities and differences in our interpretations, agreeing on major themes and initial codes, and then returning to the data set to

Table 2
Overview of CAPT Lessons and Teacher Meetings

Event	Topic	Teachers Present		Text Type		Focal Words
		Tamara's Classroom	Bella's Classroom	Narrative	Expository	
Lesson 0A	**Intro to CAPT Program**	**T**	**B**	**X**		**N/A**
Lesson 1A[1]	Consequences of Littering	T + S	B	X		Debris, Litter, Discard, Recycle
Lesson 1B		T	B			
Lesson 2A	**Steps to Care for the Environment**	**T**	**B**	**X**		**Complex, Destroy, Creature, Atmosphere**
Teacher Meeting 1	Planning/Debrief	T, S, B		N/A	N/A	N/A
Lesson 2B	**Steps to Care for the Environment**	**T + S**	**B + S**	**X**		**Complex, Destroy, Creature, Atmosphere**
Lesson 3A	What Happens to Our Trash	T	B		X	Contaminate, Empty, Practical, Result
Lesson 3B		R (filling in)[2]	B			
Lesson 4A	**Earth Day**	**T + S**	**B + S**		**X**	**Protect, Produce, Responsible, Resource**
Teacher Meeting 2	Planning/Debrief	T, S, B		N/A	N/A	N/A
Lesson 4B	**Earth Day**	**T**	**T**		**X**	**Protect, Produce, Responsible, Resource**
Lesson 5A	Measuring and Fashion	T	B	X		Measurement, Pattern, Apparel, Style
Lesson 5B		T + S	B			
Lesson 6A	**Types of Measurement**	**T**	**B**		**X**	**Heavy, Volume, Equivalent, Exact**
Teacher Meeting 3	Planning/Debrief	T, S, B		N/A	N/A	N/A
Lesson 6B	**Types of Measurement**	**T + S**			**X**	**Heavy, Volume, Equivalent, Exact**
Lesson 7A	Measuring and Construction	T	B	X		Construct, Segment, Gigantic, Modify
Lesson 7B		S (filling in)	B			
Teacher Meeting 4	**Planning/Debrief**	**T, S, B**		**N/A**	**N/A**	**N/A**
Lesson 8A	Measurement and Science Processes	R (filling in)	B	X		Procedure, Conclude, Determine, Decide
Lesson 8B		R (filling in)	R (filling in)			
Teacher Meeting 5	**Planning/Debrief**	**T, S, B**		**N/A**	**N/A**	**N/A**

[1] Lessons are indicated by number and letter: number indicates the text used, and letter indicates whether the lesson was teacher led (A) or buddy led (B).

[2] Occasionally, focal teachers were unavailable because of data meetings, Individualized Educational Plan meetings, professional development, illness, and so forth, during scheduled lesson times. In these cases, either Stephanie, the ESOL specialist (denoted by "S [filling in]"), or a member of the research team (denoted by "R [filling in]") taught the lesson in place of the classroom teacher.

explore the data further. Through this iterative process, we eventually identified the following codes: *difficulties with text*, *supporting student learning*, *change in practice*, and *distributive learning*, which we used to code the data. As we detail in the following, we found that teachers frequently engaged in collaborative interactions to determine how to support student learning in the CAPT program, and their collaborative efforts shaped the ways in which they engaged in practice.

Findings

Analysis of teachers' interactions in planning meetings and lessons revealed two major themes in the data: (a) teachers engaged in collaborative efforts to determine how to support student learning and (b) teachers' collaboration shaped how they engaged in their practices. With respect to the first theme, video, audio, and field note data from planning meetings revealed that the teachers built a shared understanding of how to work with the CAPT texts by identifying what students struggled with. This often meant that the ESOL specialists highlighted for their colleagues the language demands inherent in the CAPT texts that were challenging for ELLs, and this then moved teachers into discussions about how to support students in their work with the texts. Our close analysis of five CAPT lessons demonstrated that teachers' collaborative conversations also shaped the ways in which teachers *enacted* their practices.

Teachers' Collaborative Discussions

Identifying students' difficulties with CAPT texts. In the first teacher meeting that occurred during lesson implementation, teachers began by discussing the second teacher-led lesson, which they had all taught earlier in the day. In Excerpt 1, Stephanie, Geoff, Bella, and Tamara work together to build a shared understanding of what had been challenging for BBs during the cross-age lesson.

Excerpt 1

STEPHANIE (ESOL): Well, I was just listening to some of [the BBs] today as they read, and they misread [when practicing with each other]. . . . I'm just wondering if they should have a little more practice just reading the book before they present it [to LBs]? . . . And then also they're not sure about what's the most important part.

BELLA (4TH): Yeah, yeah . . .

TAMARA (4TH): When we were talking about "what's the most important part" [*addressing the research team members*], I would say for the future to [change the "What's the most important part?" comprehension question and] maybe come up with three solid questions for comprehension. . . . Instead of saying, "What's important?" saying, "Well, what's going on here?"

BELLA (4TH): You narrow it down [*makes tapering motion with hands*].

TAMARA (4TH): Yeah, exactly, narrowing it down because I think they—that question [what is the most important part] is too heavy for them and so they're like, "Okay, it's" [*makes broad, sweeping motion with her arms*]—you know.
GEOFF (K): Free-for-all.

TAMARA (4TH): Yeah, free-for-all. Exactly.

STEPHANIE (ESOL): Really? I feel like they pick up—they just pick some *minor detail* [about what they have read and say that it is the most important part].

BELLA (4TH): Right.

GEOFF (K): Right, and that's really the challenging part, is to distinguish between—

BELLA (4TH): The big picture, the big idea.

GEOFF (K): —what is important and what is "OK, that's nice."

BELLA (4TH), *affirming and building on Geoff's comment about "that's nice"*: That's interesting, but it's not important.

GEOFF (K): Right . . .

TAMARA (4TH): I guess I'm thinking, too, like with the [BBs] that Stephanie is talking about that can barely even read this. When they're saying, "Well, what's important?" they don't know what the answer should be. It's like, just thinking of maybe some [more specific] questions that they can ask that will help guide them . . .

STEPHANIE (ESOL): They don't know how to generalize. They can't say "[The main character] was littering, he was not taking care of the environment . . ."

RESEARCHER: Do you mean to ask them some specific questions that are very specific to the text itself?

BELLA (4TH): Yes, [specific] to the text, text-dependent questions. [*To Tamara and Stephanie*] Is that what you're asking? Text-dependent—

STEPHANIE (ESOL): Well, I think those would help with the kids who are struggling with reading [comprehension] . . . maybe if they spend more time with the text, they'll do better when they have to teach it to their little buddies . . . then maybe as the program progresses, you can sort of back away from asking so many questions so that they become more independent. (Teacher Meeting 1)

In this example, Stephanie, the ESOL specialist, began by noting that students were having a difficult time using the "What's the most important part?" prompt that was intended to support BBs' summarizing what they had read with their LBs every few pages in the text, and she noted from her perspective as a language specialist that students needed more time with the text. Indeed, previous studies have

documented the relationship between time spent with texts and general reading ability as well as comprehension for all readers (e.g., Brenner & Hiebert, 2010). For ELLs in particular, additional time spent with text, especially through multiple rereadings, has been linked with improved decoding, fluency, and comprehension (e.g., Blum et al., 1995). This was a theme to which Stephanie returned often, noting in an interview with the first author that when students were given more opportunities to engage deeply with text content, "they all do so much better. They do so much better when they have time to reread something. It's amazing, the difference it makes."

The fourth-grade classroom teachers, Tamara and Bella, agreed with Stephanie's assertion that students were having a difficult time summarizing the text and suggested that perhaps text-specific comprehension questions would better support students, noting (along with Geoff) that the CAPT summarizing strategy question "What's important?" might be too open-ended for students, particularly struggling readers ("can barely even read this"). Stephanie built on their conversation, first noting that one likely reason that students had a difficult time answering the prompt "What's the most important part?" was that generalization about text was a challenging skill for students. She also agreed that more specific questions would be helpful for struggling readers and stated that over time, perhaps students would need less specific questions.

At a planning meeting a week later, the teachers continued to show concern about the fourth graders' comprehension of the texts and ability to identify the main idea (or "most important part"; Excerpt 2). Earlier that day, the BBs and LBs had completed their fourth teacher-led lesson, preparing for their corresponding buddy-led lesson the next day.

Excerpt 2

BELLA (4TH): They're [the fourth graders in her class] not grasping it. They're not grasping the big picture. . . . I had to go back to the heading [and remind them that] the heading is a clue as to what that section is gonna be about. They were focusing on one little detail . . . they're not grasping that the big idea is within all three pages. They're just focusing on one thing . . .

TAMARA (4TH): Yeah, the big picture. . . . [If they are supposed to read] pages 1 to 3, they just look at page 3 [to state the main idea] . . . then it's like, [students decide] "I'm gonna pick something from this page" instead of going back and really looking at pages 1, 2, *and* 3.

STEPHANIE (ESOL): That's because they don't read all the words. They don't—they skip over so many words when they're reading, and I think they just miss the general—

TAMARA (4TH): They skipped all the other words and they're like, "Oh, yeah, [the answer is] 1, then." They just, like you [*looks at Stephanie*] said, they don't *read*. (Teacher Meeting 2)

In Excerpt 2, Bella and Tamara continued to express frustration with BBs' ongoing struggle to comprehend the text and generate the main idea. As in Excerpt 1, Stephanie brought a language-based cause to students' struggle to her colleagues' attention, stating that she had noticed that the students were not reading all the words in the text. Building on Stephanie's identification of the problem, Tamara affirmed Stephanie's assertion by providing an example from her classroom in which her students jumped to an incorrect conclusion and attributed this to students skipping over words as they read.

Taking a closer look at Excerpts 1 and 2, Bella, Tamara, and Geoff (all classroom teachers) identified a problem with students' lack of comprehension of the content, and Stephanie, an ESOL specialist, added another dimension to this by identifying specific language-based reasons that BBs were not comprehending the texts (they did not have enough time with the texts, they misread, they chose minor details as important, they did not read all the words, they did not know how to generalize). Stephanie, who was bilingual herself (though not in Spanish, the L1 of most of Kennedy's ELLs) and had a master's degree in TESOL and doctoral studies toward a world languages degree, drew on her pedagogical language knowledge (e.g., Bunch, 2013; Galguera, 2011) to highlight the kinds of language demands that texts presented for ELLs, as illustrated by her following comment in an interview:

> If they're gonna read something, you have to invest a lot of time into it. . . . What I always try to do with content, I mean, with anything we read, is we read it very carefully and we read it several times, and then I check for basic understanding. . . . You just have to spend a lot of time on one text if you're going to use something that's linguistically demanding and the content is something they know nothing about.

Stephanie also noted that another important aspect of students' challenges with literacy demands both within and beyond CAPT was related to the context for literacy instruction at Kennedy. She felt that the kind of literacy instruction that ELLs at Kennedy usually received did not adequately support them in understanding content because it focused heavily on skills they would use when taking high-stakes accountability tests:

> They just practice how to answer questions, which, you know, they need to know how to answer the [test] questions, but it doesn't help them improve their language skills. . . . Nothing is ever connected. I don't see that happening in the classroom where they combine different things that they are doing, and they create something with it, so that the kids are reusing the same words, practicing a certain skill, you know, that doesn't seem to happen.

Consequently, Stephanie said, students did not have opportunities to sharpen the language skills that would allow them to deeply engage with content.

Stephanie's perspective on the challenges that texts presented for ELLs was evident in many of her interactions with her colleagues. In Excerpt 3, Bella returns to the issue of students' comprehension, and Stephanie and Kyleen add to Bella's

comments, characterizing students' struggle with identifying the main idea as emerging from a more basic struggle to first decode the challenging texts they were reading, which was also leading students to skip over words and affecting their comprehension.

Excerpt 3

BELLA (4TH): Buddies need more support as far as understanding the big picture. Even with reading it once [all the way] through, I don't think they're grasping the big [idea].

STEPHANIE (ESOL): I think they're still struggling with just decoding.

BELLA (4TH), *emphatically*: Yes [*nodding*].

STEPHANIE (ESOL): All their effort is going into decoding.

KYLEEN (ESOL): I agree with the decoding thing, because some of the words . . . they can't decode it, the big buddies. Then they just sort of guess anything and just say it, and then they move on. Of course, the little buddy doesn't get the word either because the big buddy just sort of skipped over this. Unless you're there, when they get to that word and correct them on it, or help them to try to pronounce it better or just give it to them, then they just skip right over it. (Teacher Meeting 2)

Here Bella stated that students needed "more support" to aid their comprehension, and Stephanie and Kyleen added nuance to students' comprehension difficulties. Aware of the additional language demands that reading texts in English presents for ELLs, they noted that students needed more time with the texts so that they could first meet the basic demands of decoding them. This co-construction about students' difficulties with the texts created an opportunity for shared understanding among the teachers regarding the kinds of supports students needed for working with challenging texts, which we examine next.

Supporting student learning from CAPT texts. Teachers' conversations in which they identified students' struggles with the CAPT texts led to conversations about *how* to support student learning. In Excerpt 4, Stephanie took the teachers' ongoing discussion about students lacking comprehension of text content ("the big idea") a step further into discussion of how to assist students, returning to a suggestion she had made the previous week about students' need for extended time and practice with a text.

Excerpt 4

STEPHANIE (ESOL): If I had to teach that [text], I would spend a lot more time with the text. I would do activities with the text where they have to find information or answer questions. We've noticed with the fourth graders, when we do spend a significant amount of time with the text, and we read it several times, and we do *many* different things with it, then they begin to feel confident and they can

talk about what they've read. It just takes them a while. It takes time to process. (Teacher Meeting 2)

The notion that struggling readers needed more time with the text resurfaced again at a later meeting as the teachers thoughtfully considered the balance of student and teacher talk in the lesson and struggled with how to give the fourth-grade students more responsibility in the buddy lessons, while also adequately supporting their comprehension.

Excerpt 5

BELLA (4TH): Well . . . I think that [lessons are] too much teacher led. Too much teacher talk creates a dependency that's not good for them, and the objective is [the buddy-led lessons] will be student led and not teacher led. We [are supposed to] become the facilitators. We just pop in when we're needed.

STEPHANIE (ESOL): That's great, but the problem is—I still think that some kids are doing incredibly well—but the kids who are struggling readers, they really do need more support because as much as they struggle, if they can't read the work, they will not be able to do the work. I think some of our kids need a lot more support because when they're reading to their [little] buddies they skip over words, they say the wrong word, and it doesn't improve because they're reading [the text] one time, and then you're done with the buddy lesson and you're on to something different. I think from that perspective, they should spend more time with whatever text they're reading.

TAMARA (4TH): That's what's hard about it. Where is that happy medium [for teacher support of students in the lesson]? . . . For this population [ELLs], it's kind of like they might need a little more support . . .

STEPHANIE (ESOL): As ESL [English as a second language] teachers, we've seen the kids who've been left alone to struggle, and they're the ones who will not test out of ESL because—

KELLY (ESOL): Yeah, if the material is not differentiated so that they can't access the content and learn the vocabulary and the concepts, then they're not going to, but if they have the articles or the books that are in the lower level, or if they have repeated readings over and over [that supports their comprehension]. If it's too hard, it's just too hard, and they don't get it. (Teacher Meeting 4)

In Excerpt 5, Bella raised a concern about too much teacher talk during buddy lessons, and Tamara noted that she also struggled with how to balance her support of fourth-grade BBs with ceding control to students in the buddy-led lessons. Their ESOL colleagues responded with specific issues that could be problematic with giving too much control to BBs. Stephanie noted that struggling readers need more time with the text as well as the types of problems that insufficient teacher support can create (long-term ESOL status). Kelly added to the conversation about teaching challenging texts by suggesting specific instructional strategies for ELLs, such as differentiation, reducing the difficulty of the texts, and providing additional time with the texts.

Another strategy for supporting student learning that emerged in teacher interaction was L1 support. For instance, Tamara, who had no prior experience teaching ELLs, told her colleagues about the benefits she was discovering for some buddies when they supported one another in Spanish:

Excerpt 6

> TAMARA (4TH): One of my students came to me today, Juanita. Her little [buddy] is in Ms. [A's] class and she's a newcomer and very shy. I thought Juanita was a great buddy for [the newcomer] because Juanita can speak Spanish, and she's an excellent student. She [told me], "My [little] buddy's starting to come around." [*Laughs*] I said, "Good!" She was like, "Because I was speaking to her in Spanish, and I was asking her some questions," and whatever. I'm like, "Yes!"

For Tamara, the value of buddy pairing based on shared L1 was reinforced as relationships and comprehension grew (for detailed discussion of buddy interactions, see Martin-Beltrán, Daniel, Peercy, & Silverman, 2013; Martin-Beltrán et al., 2014), and her interactions with colleagues provided an opportunity to discuss and examine student growth. That Tamara was new to teaching ELLs and had a forum in which to examine and discuss the importance of L1 support for student learning was noteworthy because teachers inexperienced with teaching ELLs may discourage L1 use, working from the belief that students will not learn English if they are not required to adhere to "English-only" policies in the classroom (e.g., de Courcy, 2007; de Jong, Arias, & Sánchez, 2010).

How Collaboration Shaped Teachers' Practices

Earlier, we shared findings from teachers' discussions in their weekly debriefing and planning meetings regarding how the texts in the CAPT program created a struggle for comprehension as well as the ways in which teachers used their collaborative conversations as a stepping-stone to generate ideas for how to support student learning. An important further outcome of these conversations was evidence that teachers' collaborative discussions shaped their practices. In these instances, an insight or suggestion from a colleague could serve as a gateway to changing a teacher's instructional approach.

In the first teacher meeting, Tamara mentioned a suggestion from Stephanie to gradually release responsibility for using the CAPT vocabulary strategy from the teacher to the students. Specifically, Stephanie had suggested an initial teacher-led modeling of how to teach the first focal vocabulary word in the teacher-led lesson with BBs, followed by guided practice of using the strategy with the second word, and independent practice with the strategy for the third and final words, which gave students more opportunities for language output. As Tamara explained to her colleagues, this suggestion resulted in an important modification to her practice in the teacher-led lessons.

Excerpt 7

TAMARA (4TH): This was [Stephanie's] idea. . . . When we go through the [vocabulary] strategy, we'll model [the vocabulary learning strategy], and then we allow them to do it. . . . We modeled, maybe the first [focal word] . . . and then the second [focal word] we did as a whole group . . . but then by the third and the fourth word we had them kinda do it with their buddies[4] . . . so they can really get used to what it's like to talk to your [little] buddy. . . . Because [without this modification] it just, it was a *lot* of talking [by the teacher in the teacher-led lesson] [*Laughs*].

RESEARCHER: [A lot of talking] from you, you mean?

TAMARA (4TH): Yeah. [Stephanie] was like, "How about we have them—?" I'm like, "Great! Let's go!" Ever since then, we've pretty much done the same thing. Model, and then allow them to go ahead and do it. (Teacher Meeting 1)

The purpose in having BBs model the vocabulary strategy during the teacher-led lesson was twofold: to reduce the amount of teacher talk and to prepare BBs to work with their LBs by giving them a chance to practice their BB roles ahead of time. In doing so, Tamara was echoing a concern that Stephanie voiced often: Stephanie felt that students, particularly ELLs, needed more opportunities to produce language and that too much teacher-fronted instruction did not help students learn academic English.

Tamara's use of Stephanie's suggested strategy was evident during all three of the focal lessons we analyzed from her classroom, including the lessons in which Stephanie did not plug in. We share the following example to illustrate how this practice looked in a teacher-led lesson.

Excerpt 8

TAMARA (4TH), *to her class*: Now, there's a picture up here. I'm going to have a person—since I just modeled it, I'm going to have a person model it for the class, and then we're going to break out in partners, and we're going to listen to you as you make predictions based on the next picture. OK. How about Travis? Come on up. (Lesson 1A)

For the duration of the program, Tamara continued to engage BBs in modeling how they would introduce new focal words in the lesson to their LBs. Each time, she modeled the first focal word herself, then engaged students in guided practice, and finally asked two students to independently model the final two focal words for the class. She made this purpose explicit to her students during a lesson in which Stephanie did not plug in: "Instead of me standing up here and talking to you, I'm allowing you all to have the opportunity to try it out, OK? Go ahead. Explain the word to your partner" (Lesson 2A).

Thus, even when other colleagues were not present in the room, the teachers' collaborative efforts had a distributive impact on teachers' practices. As evidenced

in the preceding example, Stephanie and Tamara's collaboration on the previous teacher-led lesson encouraged Tamara to continue to use the strategy of guiding students through the process of modeling BB actions for the class, although Stephanie was not coteaching with her in that lesson.

Stephanie's collaboration with the other fourth-grade teacher, Bella, took a different form than her coteaching with Tamara. Stephanie's suggestion to Tamara regarding minimizing teacher talk and increasing students' opportunities for language output by giving students the opportunity to model instruction had occurred at the outset of the program and was evident in Tamara's first lesson that we chose for close analysis (Lesson 1A, Excerpt 8). Although Stephanie also plugged in with Bella during early CAPT lessons (Lesson 0, Lesson 1A), it did not appear that she had recommended this approach to Bella. In the first lesson we chose for close analysis from Bella's classroom (Lesson 2A), teacher talk was predominant. During this lesson, Bella read the entire book aloud to her students, spending 20 minutes of the hour-long lesson reading aloud from the text, with minimal student input (e.g., students repeated single words when prompted). Bella also spent a significant amount of lesson time directing students to different portions of the text and supporting materials, setting up her slides, and managing students' attention.

In the teacher planning meeting later that same afternoon (see Excerpt 1), the teachers discussed the challenges of helping the fourth graders comprehend the text in this lesson (Lesson 2A) and the previous teacher-led lesson (Lesson 1A). Bella agreed that her students struggled to read and to identify the main idea and important details. She noted that she liked the idea that Tamara had just shared in the meeting regarding Stephanie's suggestion (see Excerpts 7 and 8): to require BBs to take charge of part of the lesson.

Excerpt 9

> BELLA (4TH): I like the idea of letting the kids do [the CAPT vocabulary strategy] part of the lesson. Let them say it, then model it. The question is, are they going to do it with their buddy tomorrow? That's going to be the key. (Teacher Meeting 1)

In the subsequent lesson we chose for close analysis from Bella's classroom,[5] it appeared that Stephanie's suggestion had a distributive impact on teacher learning, as her suggestion for gradual release of instruction made its way from Stephanie, to Tamara, to Bella, to Bella's students. Bella's use of Stephanie's suggestion reduced the amount of teacher talk in her lesson and enabled students to practice reading as they would during the buddy-led lesson. Bella first explained the approach to students and then guided them through the text by calling on students to take turns reading the text aloud to the class and applying the CAPT vocabulary and reading comprehension strategies as they would use them the next day with their LBs. In Excerpt 10, a student reads part of the text aloud to the class, then Bella prompts the class to recall the reading comprehension strategy they would use with their

LBs; finally, Bella turns control over to students to work in pairs to practice the strategy as they would the next day with their LBs.

Excerpt 10

BELLA (4TH): All right, here we go. I want you to practice with the person next to you. I want you to practice reading it aloud and stopping. When you come to your [focal vocabulary] word what are you going to do? You're going to use the [vocabulary] strategy.

STUDENT, *reading text aloud to class*: Earth Day is celebrated in 180 countries. This is a good thing because people all over the world need to learn to work together to protect our Earth. International Earth Day is on the first day of spring, March 20th or 21st.

BELLA (4TH): OK, and we stop here and we apply the [CAPT reading comprehension] strategy, OK? What's the question? What do we ask our little buddy?

STUDENT: What's the most important part?

BELLA (4TH): What's the most important part? OK, I want you to discuss. I'll give you 30 seconds to discuss the most important part of what we read so far. OK? (Lesson 4A)

Stephanie plugged in to Bella's classroom during this lesson, and we observed that not only did it appear that what Tamara shared about her learning from Stephanie in the previous teacher meeting impacted Bella's approach to the lesson but Stephanie also provided important in-the-moment scaffolds as the lesson unfolded to help students grasp the concepts in the text. In Excerpt 11, she works with Bella to support students' understanding of the United Nations, which was mentioned in their text.

Excerpt 11

BELLA (4TH), *to a student reading aloud from the text to the class*: Stop, do you know what the United Nations are? Does anybody know who the United Nations are? Do you know?

STUDENT: The people that protect us.

BELLA (4TH): Who are they?

STEPHANIE (ESOL), *interjecting*: Well, what is a nation?

BELLA (4TH): Right.

STUDENT: A nation, like a whole bunch of people.

BELLA (4TH): OK, give me an example of a nation . . . [*addressing a student*] where are you from?

STUDENT: Oh, yeah. Like El Salvador is a nation.

BELLA (4TH): That would be a nation. (Lesson 4A)

As we see in this excerpt, Stephanie provided support for students' comprehension by breaking down Bella's more complex question ("Who are the United Nations?") and checking for vocabulary knowledge ("What is a nation?"). Building on Stephanie's supports, Bella continued with this simplified line of questioning ("Give me an example of a nation"), and she helped students to personalize the concept of nation ("Where are you from?"). In the teachers' first planning meeting (see Excerpt 1), Stephanie, Bella, Tamara, and Geoff had discussed narrowing down broad questions to make them accessible for the students when they struggled. This exchange during coteaching shows how Stephanie was able to collaborate with Bella in applying this approach when it was needed to support student learning and is representative of a strategy that Stephanie frequently used: checking and supporting student comprehension of text before engaging them in activities that required more complex language production, such as questioning and supporting LBs as they read their texts together and engaged in activities that required application and synthesis of what they had read.

Later in the same lesson, we noted another example of how collaborative instruction by Bella and Stephanie was used to support students' understanding of text. Bella reminded students about "good buddy behaviors" and asked them to elaborate on what this would look like with their LBs the next day. Stephanie, aware that the difficulty of the text they would read the next day would present challenges for some of the BBs and their LBs, encouraged students to consider how they could make use of extralinguistic features (pictures) and less text-dense features (headings, titles) to identify the main idea in the text if they, or their LBs, were struggling to do so.

Excerpt 12

BELLA (4TH): OK, so, reviewing: Don't forget tomorrow with your buddy you're going to go through your [comprehension] strategy. . . . You want to make sure the book is in front of them, OK? Don't forget, follow the checklist. Read for me, Roberto [from the checklist], read for me what else are we supposed to do?

STUDENT: Read with excitement.

BELLA (4TH): Yes, get that excitement in your voice, OK? Be excited about what you're reading.

STUDENT: I forgot to add, encourage your buddy to keep reading.

BELLA (4TH): OK, yes.

STEPHANIE (ESOL), *to Bella*: Can I ask a question?

BELLA (4TH): Yes.

STEPHANIE (ESOL), *to the class*: If you're doing the most important part

[one of the prompts in the CAPT reading comprehension strategy], what happens if you can't really remember what the most important part is? What are you going to—?

STUDENT: Go back and reread . . .

STEPHANIE (ESOL): What's one thing that you can look at so you don't have to reread the whole two or three pages? What do you look at?

STUDENT: Go back and look at the pictures.

BELLA (4TH): OK.

STEPHANIE (ESOL): The pictures, and what's another important text feature that will help you with the main idea? Evan?

STUDENT: The heading.

STEPHANIE (ESOL): The heading, very good. Right? You can use the heading and turn it—use your own words to explain it if your buddy's having trouble. Yes.

STUDENT: And the title.

STEPHANIE (ESOL): The title, yes.

BELLA (4TH): Absolutely.

STEPHANIE (ESOL): Because sometimes your buddy doesn't know and you need to kind of help them. (Lesson 4A)

Stephanie's interjection (initiated with "can I ask a question?") came at the end of the lesson, as the students were preparing to answer questions about the main idea of the text. Thus her reminder served as a support for students regarding how to engage with the text as they worked in their teacher-led lesson that day and was also intended as a scaffold for the next day, when they would meet with their LBs and would be responsible for helping their LBs to comprehend the text. Embedded in her support ("what happens if you can't really remember what the most important part is?") were previous teacher conversations and experiences about the difficulties students had with identifying the main idea (Excerpts 1–3), making clear the dialogic nature of the teachers' opportunities to collaborate in meetings and in lessons as they considered how to teach the CAPT texts.

Discussion

Questions regarding how to support ELLs instructionally as they engage with difficult texts have been an important part of a larger discussion about supporting the specific literacy needs of ELLs to catch up with English-dominant peers for some time (e.g., August & Shanahan, 2006; Harper & de Jong, 2004; Lesaux et al., 2006). The call for more research into effective practices for making content

accessible to all learners is only going to intensify as ELLs are more frequently placed in mainstream classrooms and content demands increase in difficulty.

As evidenced in these data, when classroom teachers and ESOL specialists have the opportunity to come together to support ELLs, they are able to form a more nuanced understanding of ELLs' learning experiences and needs, and this teacher learning circulates among teachers in distributed—and *distributive*—ways. As we explain in more detail in what follows, collaboration led the teachers in this study to engage in learning in *distributed* ways through shared social interaction but also to expand their learning in *distributive* ways, outside of the time and space boundaries of their immediate interactions about their teaching.

Mainstream teachers often noted that students struggled with the content and did not sufficiently comprehend the CAPT texts. Their ESOL colleagues shaded in this description with details regarding linguistic factors that contributed to students' comprehension difficulties and stepped in with specific supports before, during, and after lessons occurred. The shared experiences of planning, teaching, and debriefing about lessons gave the teachers common ground on which they could critically examine students' learning. Adding to their common understanding was the fact that all teachers participating in the CAPT program (mainstream teachers, ESOL specialists, and other supporting teachers, such as the special educator and paraprofessionals) taught the same lessons as their colleagues, both within and across grade levels, and had the opportunity to experience how both kindergartners and fourth graders participated in the lessons. This created another layer of common ground on which teachers could compare their experiences, explore student learning, and try different approaches to supporting student success. Thus the CAPT program's structure created opportunities for distributed learning through shared teaching experiences, paired with shared time for planning and debriefing, which were a powerful way for teachers to carefully explore and co-construct an understanding of student learning and to consider alternative ways to better support ELLs' understanding of the CAPT texts.

Furthermore, we found that teacher collaboration also had a *distributive* effect because it had an impact on teachers' practices even when teachers were not actively collaborating in the same space. That is, the effects of teachers' collaboration can reach across temporospatial boundaries, such as the impact that Stephanie's suggestion to Tamara had for Tamara's instruction, even when Stephanie was not present in the classroom (Excerpt 8), and on Bella's practices, as Bella appropriated and modified this strategy in her own instruction (Excerpt 10). This understanding of teacher learning as distributive adds to previous investigations of teacher learning and development through collaboration, which have focused on the development of community among teachers, and co-constructed interactions between teachers. Generally, this work has examined the impact of those interactions on the teachers directly involved in the collaborative interactions (e.g., Grossman, Wineburg, & Woolworth, 2001; Little, 2002; Martin-Beltrán & Peercy, 2012; Peercy & Martin-

Beltrán, 2012). This study broadens the scope of possibility for teacher learning and development from co-construction by exploring the impact of collaboration beyond the time and space boundaries of the original participants and situations. This has important implications for examining and fostering teachers' collaborative learning and needs further investigation, as we discuss subsequently.

Implications

The findings from this study point to the need for several areas of additional investigation. First, if we are to adequately prepare teachers to teach challenging content to ELLs, which is undoubtedly an issue facing teachers in the era of CCSS (see Kibler, Walqui, & Bunch, 2014; Peercy, DeStefano, Yazan, & Martin-Beltrán, in press), we must equip them with the necessary tools. We therefore need further research on the struggles that teachers and their students encounter when engaging with demanding texts (for one example, see Peercy, Martin-Beltrán, Yazan, & DeStefano, 2014) as well as research on factors that support teachers in successfully engaging their linguistically and culturally diverse learners in such work.

We argue that at least two kinds of initiatives will assist teachers in the work of scaffolding ELLs to access demanding content. These include the opportunities to collaborate with colleagues before, during, and after classroom instruction and ongoing professional development that is directly tied to their classroom instruction, experiences, and needs. Further research on successful (and unsuccessful) attempts at supporting teachers' collaborative efforts and field-based professional development as they work with challenging new curricula is therefore also needed, and especially important are studies that examine the relationship between various ways of supporting teacher learning and student outcomes. As previous work has illustrated, despite increased initiatives for coteaching from educators, few studies have specifically linked teachers' collaboration to their practices or student achievement gains (Friend, Cook, Hurley-Chamberlain, & Shamberger, 2010). A better understanding of teacher collaboration will require deeper examination of how teachers create a shared understanding of student needs and instructional goals, exploring questions such as the following: What knowledge is shared, and how is knowledge shared, between ESOL specialists and mainstream teachers? How do these teachers create a shared understanding of instructional goals and moves? As ESOL specialists and mainstream teachers collaborate over time, what kinds of changes in practice and student participation can be observed in classrooms? How does teacher learning occur in both distributed and distributive ways? More detailed studies of collaborative engagement among teachers—and resulting changes in teacher practice—will go far in informing the field's understanding of how collaborative professional development opportunities support teacher growth and will add to theory building in an area that has thus far been undertheorized.

It is not only the development of in-service teachers that requires further attention, however. We also must explore how to better prepare preservice ESOL and

mainstream teachers for the demands of using challenging curricular materials with ELLs, and how they might support one another in doing so. No longer can ESOL specialists and classroom teachers work independently, unaware of their colleagues' daily instruction, goals, and planning. Instead, their coordinated efforts are necessary to scaffold ELLs as they strive to access content, across all content areas. It is therefore necessary for teacher educators to explore how teacher education programs are and should be positioning teachers to meet these demands, through preparing them to collaborate with colleagues as well as by supporting mainstream teachers' awareness of ELLs' specific linguistic strengths and needs and assisting ESOL teachers in identifying the strategies, skills, and language needed to access content in mainstream classrooms.

Conclusion

One of the positive aspects of teachers' experiences in this study was that teachers with different specializations, strengths, orientations, and background knowledge participated together in the same instructional event, experienced student learning within the space of that shared occurrence, and reflected together on what students struggled with—and what they learned. This gave teachers a common set of experiences around which to build a shared understanding of how to support students, thus setting groundwork for shaping the teachers' thinking, their practices, and, most important, their students' opportunities for greater academic success. We believe that this study serves as an important foundation for future work exploring how to support teachers and students as they participate in a new era of reform-based instruction and learning.

Notes

The research reported here was supported by the Institute of Education Sciences, U.S. Department of Education, through grant R305A110142 to the University of Maryland. The opinions expressed are those of the authors and do not represent views of the Institute or the U.S. Department of Education.

[1] Rather than separately instructing ELLs by pulling out of the grade-level classroom for a short period of time or providing a separate class for ELLs, in plug-in models, the ESOL specialist joins the mainstream teacher in a collaborative approach to teaching. There are several models for plug-in instruction (e.g., Haynes, 2007; Patel & Kramer, 2013), with each teacher taking on a variety of possible roles. The most successful plug-in instruction includes collaborative planning by the teachers (Martin-Beltrán & Peercy, 2012; Peercy & Martin-Beltrán, 2012).

[2] The CAPT program encouraged pairing buddies based on their L1 so that they could negotiate meaning in their L1 together. Spanish was the L1 of the majority of Kennedy students designated as ELLs. The program also provided a Spanish–English bilingual gloss for the four focal words in each lesson and drew students' attention to Spanish–English cognates when relevant.

[3] This reduced pool from a total of 54 possible lessons was due to video/audio quality or instances in which a teacher was absent, and a member of the research team taught the lesson in his or her place.

[4] Here Tamara was referring to her fourth graders' classmates. In teacher-led lessons, her fourth graders worked with another fourth grader, role-playing that they were BBs and LBs, so that each fourth grader could practice what he or she would need to do in the buddy lesson the next day to help guide LBs.

[5] The next teacher-led lesson that Bella taught was Lesson 3A, but owing to our interest in teacher collaboration during lessons, the next lesson in the data set for this study is Lesson 4A.

References

August, D., & Shanahan, T. (2006). *Executive summary: Developing literacy in second-language learners*. Mahwah, NJ: Lawrence Erlbaum Associates.

Bailey, A. L., & Butler, F. A. (2003). *An evidentiary framework for operationalizing academic language for broad application to K–12 education: A design document* (CSE 123 Technical Report No. 611). Los Angeles, CA: University of California, National Center for Research on Evaluation, Standards, and Student Testing.

Beck, I., McKeown, M., & Kucan, L. (2008). *Creating robust vocabulary*. New York, NY: Guilford Press.

Biemiller, A. (2010). *Words worth teaching: Closing the vocabulary gap*. Columbus, OH: McGraw-Hill/SRA.

Blum, I. H., Koskinen, P. S., Tennant, N., Parker, E. M., Straub, M., & Curry, C. (1995). Using audiotaped books to extend classroom literacy instruction into the homes of second-language learners. *Journal of Literacy Research, 27*(4), 535–563.

Brenner, D., & Hiebert, E. H. (2010). If I follow the teachers' editions, isn't that enough? Analyzing reading volume in six core reading programs. *Elementary School Journal, 110*(3), 358–363. doi:10.1086/648982

Bunch, G. C. (2013). Pedagogical language knowledge: Preparing mainstream teachers for English learners in the new standards era. *Review of Research in Education, 37*(1), 298–341.

Calderón, M., Slavin, R., & Sanchez, M. (2011). Effective instruction for English learners. *Future of Children, 21*(1), 103–127.

Carrell, P. L., Pharis, B. G., & Liberto, J. C. (1989). Metacognitive strategy training for ESL reading. *TESOL Quarterly, 23*(4), 647–678.

Chall, J. (1996). *Stages of reading development* (2nd ed.). Fort Worth, TX: Harcourt Brace.

Chall, J. S., Jacobs, V. A., & Baldwin, L. E. (1990). *The reading crisis: Why poor children fall behind*. Cambridge, MA: Harvard University Press.

Common Core State Standards Initiative. (2010). *Common core state standards: Preparing America's students for college and career*. Retrieved from http://www.corestandards.org/

Creswell, J. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches*. Thousand Oaks, CA: Sage.

de Courcy, M. D. (2007). Disrupting preconceptions: Challenges to pre-service teachers' beliefs about ESL children. *Journal of Multilingual and Multicultural Development, 28*(3), 188–203.

de Jong, E. J., Arias, M. B., & Sánchez, M. T. (2010). Undermining teacher competencies: Another look at the impact of restrictive language policies. In P. Gándara & M. Hopkins (Eds.), *Forbidden language: English learners and restrictive language policies* (pp. 118–136). New York, NY: Teachers College Press.

de Jong, E. J., & Harper, C. A. (2005). Preparing mainstream teachers for English-language learners: Is being a good teacher good enough? *Teacher Education Quarterly, 32*, 101–124.

de Jong, E. J., Harper, C. A., & Coady, M. R. (2013). Enhanced knowledge and skills for elementary mainstream teachers of English language learners. *Theory Into Practice, 52*(2), 89–97. doi:10.1080/00405841.2013.770326

Dove, M. G., & Honigsfeld, A. (2010). ESL coteaching and collaboration: Opportunities to develop teacher leadership and enhance student learning. *TESOL Journal, 1*, 3–22. doi:10.5054/tj.2010.214879

Durgunoðlu, A. Y., & Hughes, T. (2010). How prepared are the US preservice teachers to teach English language learners? *International Journal of Teaching and Learning in Higher Education, 22*(1), 32–41.

Echevarría, J., Powers, K., & Short, D. (2006). School reform and standards-based education: A model for English language learners. *Journal of Educational Research, 99*(4), 195–210.

Elbaz-Luwisch, F., & Orland-Barak, L. (2013). From teacher knowledge to teacher learning in community: Transformations of theory and practice. *Advances in Research on Teaching, 19*, 97–113.

Frattura, E. M., & Capper, C. A. (2007). New teacher teams to support integrated comprehensive services. *Teaching Exceptional Children, 39*(4), 16–21.

Friend, M., Cook, L., Hurley-Chamberlain, D., & Shamberger, C. (2010). Co-teaching: An illustration of the complexity of collaboration in special education. *Journal of Educational and Psychological Consultation, 20*(1), 9–27.

Galguera, T. (2011). Participant structures as professional learning tasks and the development of pedagogical language knowledge among preservice teachers. *Teacher Education Quarterly, 38*(1), 85–106.

Gay, G. (2010). *Culturally responsive teaching: Theory, research, and practice* (2nd ed.). New York, NY: Teachers College Press.

Gee, J. P. (2012). *Social linguistics and literacies: Ideology in discourses* (4th ed.). New York, NY: Routledge.

Gersten, R., Baker, S. K., Shanahan, T., Linan-Thompson, S., Collins, P., & Scarcella, R. (2007). *Effective literacy and English language instruction for English learners in the elementary grades*. Washington, DC: Institute for Education Sciences. Retrieved from http://ies.ed.gov/ncee/wwc/pdf/practice_guides/20074011.pdf

Gersten, R., & Geva, E. (2003). Teaching reading to English learners in the primary grades: Insights into the new research base on teaching reading to English learners. *Educational Leadership, 60*, 44–49.

Greene, B. A., Dillon, C., & Crynes, B. (2003). Distributed learning in introductory chemical engineering: University students' learning, motivation, and attitudes using a CD-ROM. *Journal of Educational Computing Research, 29*(2), 189–207.

Grossman, P., Wineburg, S., & Woolworth, S. (2001). Toward a theory of teacher community. *Teachers College Record, 103*(6), 942–1012.

Harper, C., & de Jong, E. (2004). Misconceptions about teaching English-language learners. *Journal of Adolescent and Adult Literacy, 48*(2), 152–162.

Hite, C., & Evans, C. (2006). Mainstream first-grade teachers' understanding of strategies for accommodating the needs of English Language Learners. *Teacher Education Quarterly, 33*(2), 89–110.

Howard, G. R. (2006). *We can't teach what we don't know: White teachers, multiracial schools.* New York, NY: Teachers College Press.

Johnson, K. E. (2006). The sociocultural turn and its challenges for second language teacher education. *TESOL Quarterly, 40*(1), 235–257.

Johnson, K. E. (2009). *Second language teacher education: A sociocultural perspective.* New York, NY: Routledge.

Johnson, K. E., & Golombek, P. R. (2003). "Seeing" teacher learning. *TESOL Quarterly, 37*(4), 729–737.

Kibler, A. K., Walqui, A., & Bunch, G. C. (2014). Transformational opportunities: Language and literacy instruction for English language learners in the Common Core era in the United States. *TESOL Journal, 6*, 9–35. doi:10.1002/tesj.133

Lave, J. (1988). *Cognition in practice: Mind, mathematics, and culture in everyday life*. Cambridge, UK: Cambridge University Press.

Lave, J. (1996). Teaching, as learning, in practice. *Mind, Culture, and Activity, 3*(3), 149–164.

Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. New York, NY: Cambridge University Press.

Lesaux, N. K., Koda, K., Siegel, L. S., & Shanahan, T. (2006). Development of literacy of language minority learners. In D. August & T. Shanahan (Eds.), *Developing literacy in a second language* (pp. 75–122). Mahwah, NJ: Lawrence Erlbaum Associates.

Little, J. W. (2002). Locating learning in teachers' communities of practice: Opening up problems of analysis in records of everyday work. *Teaching and Teacher Education, 18*(8), 917–946.

Little, J. W. (2003). Inside teacher community: Representations of classroom practice. *Teachers College Record, 105*(6), 913–945.

Long, M. (1996). The role of linguistic environment in second language acquisition. In W. Ritchie & T. Bhatia (Eds.), *Handbook of second language acquisition* (pp. 413–468). London, UK: Academic Press.

Martin-Beltrán, M., Daniel, S., Peercy, M. M., & Silverman, R. (2013). *"We're special buddies": Examples of peer tutors providing cognitive, linguistic, and social support during interactions*. Paper presented at the annual meeting of the American Educational Research Association, San Francisco, CA.

Martin-Beltrán, M., & Peercy, M. M. (2012). How can ESOL and mainstream teachers make the best of a standards-based curriculum to collaborate? *TESOL Journal, 3*, 425–444.

Martin-Beltrán, M., & Peercy, M. M. (2014). Collaboration to teach English language learners: Opportunities for shared teacher learning. *Teachers and Teaching: Theory and Practice, 20*(5), 721–737.

Martin-Beltrán, M., Tigert, J., Peercy, M. M., Silverman, R. D., & Guthrie, S. (2014). *"Let's check the glossary": How English learners co-construct vocabulary knowledge in peer-tutoring reading discussions*. Paper presented at the annual meeting of the American Educational Research Association, Philadelphia, PA.

Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded source-book*. Thousand Oaks, CA: Sage.

Molle, D. (2013). The pitfalls of focusing on instructional strategies in professional development for teachers of English learners. *Teacher Education Quarterly, 40*(1), 101–124.

National Governors Association Center for Best Practices & Council of Chief State School Officers. (2010). *Common Core State Standards for English language arts and literacy in history/social studies, science, and technical subjects*. Washington, DC: Author.

Peercy, M. M., DeStefano, M., Yazan, B., & Martin-Beltrán, M. (in press). "She's my right hand": Teacher collaboration for linguistically diverse students' equitable access to curriculum. In J. C. Richards & K. Zenkov (Eds.), *Social justice, the Common Core, and closing the instructional gap: Empowering diverse learners and their teachers*. Charlotte, NC: Information Age.

Peercy, M. M., & Martin-Beltrán, M. (2012). Envisioning collaboration: Including ESOL students and teachers in the mainstream classroom. *International Journal of Inclusive Education, 16*(7), 657–673.

Peercy, M. M., Martin-Beltrán, M., Silverman, R. D., & Daniel, S. M. (2015). Curricular design and implementation as a site of teacher expertise and learning. Teachers and Teaching: *Theory and Practice, 21*(7), 1–27.

Peercy, M. M., Martin-Beltrán, M., Yazan, B., & DeStefano, M. (2014). *"Jump in any time": How the CCSS generate struggle and opportunity for shared teacher learning*. Paper presented at the annual meeting of the American Educational Research Association, Philadelphia, PA.

Putnam, R. T., & Borko, H. (2000). What do new views of knowledge and thinking have to say about research on teacher learning? *Educational Researcher, 29*(1), 4–15.

Samway, K. D., & McKeon, D. (1999). *Myths and realities: Best practices for language minority students*. Portsmouth, NH: Heinemann.

Snow, C. E., Porche, M. V., Tabors, P. O., & Harris, S. R. (2007). *Is literacy enough? Pathways to academic success for adolescents*. Baltimore, MD: Paul H. Brookes.

Strauss, A., & Corbin, J. (1998). *Basics of qualitative research: Techniques and procedures for developing grounded theory*. Thousand Oaks, CA: Sage.

Topping, K. J., Peter, C., Stephen, P., & Whale, M. (2004). Cross-age peer tutoring of science in the primary school: Influence on scientific language and thinking. *Educational Psychology, 24*(1), 57–75.

Villegas, A. M., & Lucas, T. (2002). Preparing culturally responsive teachers: Rethinking the curriculum. *Journal of Teacher Education, 53*(1), 20–32.

Vygotsky, L. (1978). *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.

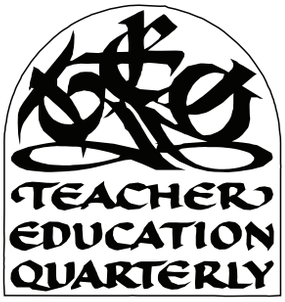
Webster-Wright, A. (2009). Reframing professional development through understanding authentic professional learning. *Review of Educational Research, 79*(2), 702–739.

Wertsch, J. V. (1991). *Voices of the mind*. Cambridge, MA: Harvard University Press.

Wright, J., & Cleary, K. (2006). Kids in the tutor seat: Building schools' capacity to help struggling readers through a cross-age peer-tutoring program. *Psychology in the Schools, 43*(1), 99–107.

Zellermayer, M., & Tabak, E. (2006). Knowledge construction in a teachers' community of enquiry: A possible road map. *Teachers and Teaching: Theory and Practice, 12*(1), 33–49.

Zeno, S., Ivens, S. H., Millard, R. T., & Duvvuri, R. (Eds.). (1995). *The educator's word frequency guide*. Brewster, NJ: Touchstone Applied Science Associates.



Preservice Teachers' Student Teaching Experiences in East Africa

Saili S. Kulkarni & Cheryl Hanley-Maxwell

> Perhaps travel cannot prevent bigotry, but by demonstrating that all peoples cry, laugh, eat, worry, and die, it can introduce the idea that if we try to understand each other, we may even become friends.
>
> —Maya Angelou

The world is changing. Human mobility is at an all-time high, and globalization is a consequence of that mobility (Haskins, Greenberg, & Fremstad, 2004; Suarez-Orozco, 2001). The influence of globalization can be felt in terms of transnational employment and recruitment, a greater wealth gap between rich and poor, technological advances, and cultural and/or linguistic diversity in schools (Goodwin, 2010). In response to globalization, there has been a surge across higher education institutions to internationalize the curriculum. Although the idea of being globally competent has been given more importance, there is yet to be a consensus on what this means in terms of planning and implementation at the university level (Roberts, 2007). In the field of teacher education, responding to a more diverse set of learners is one of the most important reasons for internationalization (Cushner

Saili S. Kulkarni is an assistant professor of special education in the Division of Teacher Education of the College of Education at California State University, Dominguez Hills, Carson, California. Cheryl Hanley-Maxwell is a professor and associate dean in the Department of Rehabilitation Psychology and Special Education of the School of Education at the University of Wisconsin-Madison, Madison, Wisconsin. skulkarni@csudh.edu & cheryl@education.wisc.edu

& Brennan, 2007). Therefore teacher education programs are attempting to place more preservice teachers in more diverse student teaching placements to provide them with this experience before they enter their own classrooms.

Traditionally, a preservice teacher preparation program would require students to spend one to two semesters teaching in local schools under the guidance of an experienced teacher. Conversely, intercultural student teaching programs enable students to supplement or replace such requirements with opportunities to teach internationally. The purpose of such programs is varied but includes language proficiency, increasing cultural sensitivity, providing global connections, and adding a layer of challenge to existing student teaching components (Cushner & Brennan, 2007).

Several studies have been conducted on the experiences of preservice teachers who have traveled overseas (Bryan & Sprague, 1997; Mahan & Stachowski, 1990; Mahon & Cushner, 2002; Quezada & Alfaro, 2007; Stachowski, Richardson, & Henderson, 2003). Each of these studies is briefly discussed, and implications from the studies were used to inform the current study.

Mahan and Stachowski (1990) surveyed 291 students over the course of 9 years to investigate their views about their participation as student teachers in the Overseas Project at Indiana University–Bloomington. These participants were able to articulate more types of learning in every learning category surveyed than those who underwent a traditional student teaching experience. Specifically, 63 students from the Overseas Project were compared to 28 students in the traditional program. Students from the Overseas Project were more likely to report learning related to global issues, classroom strategies, other individuals, curriculum/content usage, and self, even as compared to students who worked in diverse local communities in the United States (Mahan & Stachowski, 1990). The study highlighted the importance of capturing the types of learning student teachers were able to report from their experiences abroad. Because the study utilized a survey, however, there were limitations to the level of deep reflection each participant could provide. Additionally, without an articulation of what each kind of learning meant to individual students, the reader cannot be certain that meaning attributed to learning could be standardized across students.

In contrast, Quezada and Alfaro (2007) captured the self-reflections of four bilingual literacy (biliteracy) teachers who spent time in an international student teaching abroad program in Mexico. Quezada (2005) believed that student teachers who spend time teaching internationally developed a heightened sense of cultural sensitivity and came back viewing the United States from a different perspective. Four major themes emerged from Quezada and Alfaro's (2007) study: knowledge of perceived inequities, teachers as change agents, student intimacy, and internal versus external relationships. Knowledge of perceived inequities referred to the awareness by participants that there were inequalities that affected children on both sides of the Mexican border and how they could avoid perpetuating discrimination (Quezada & Alfaro, 2007).

Participants of the study reported external and internal pressures to adhere to a standards-based curriculum in the United States and how they might need to take risks when it came to educating their students (Quezada & Alfaro, 2007). This study highlights how intercultural student teaching may help construct critically resistant educators who can balance the pressures to adhere to standards with the need to create thoughtful citizens (Bates, 2008; Freire, 1970; Giroux & McLaren, 1986; McLaren & Farahmandpur, 2001). Although the study involved a smaller sample size than previous studies (e.g., Mahan & Stachowski, 1990), it was able to provide a carefully constructed set of opportunities for individual participants to self-reflect and critically construct meaning from their experiences.

Another study investigated the perceptions of 10 preservice teachers in an overseas student teaching program in China and how those experiences might affect their future teaching in culturally and linguistically diverse classrooms in the United States (Zhao, Meyers, & Meyers, 2009). The authors asked how preservice teachers perceived their teaching experiences in China and also their personal and professional growth. They then asked how the preservice teachers could apply a cross-cultural stance through the immersion experience (Zhao et al., 2009).

Findings revealed that the preservice teachers grew in terms of their cultural responsivity. For example, one preservice teacher reported on the opportunity to collaborate with both Chinese and American peers during roundtable discussions and how this made her feel more confident about building cross-cultural relationships with students and families in the United States. This suggests that intercultural student teaching can also support preservice teachers in building relationships with families of their students from diverse backgrounds.

It is important to note, however, that previous studies of intercultural student teaching programs are often framed positively and do not provide significant information on some of the challenges faced by participants or coordinators in implementing these programs. Van Damme (2001) wrote that oftentimes, when international opportunities are present, they are created and implemented in terms of the national frame of reference of the participating nation. For example, if a student from the United States were to travel to China for his or her study abroad or student teaching program, the program would be structured primarily around a more Western lens. Therefore it is important to be aware of the challenges and limitations of international student teaching programs, despite previously reported positive results.

In summary, previous studies on international student teaching programs have examined sources of learning (Mahan & Stachowski, 1990), provided critical reflection on the role of culture (Quezada & Alfaro, 2007), examined the effects on domestic practice with culturally and linguistically diverse individuals (Zhao et al., 2009), and highlighted the need for more studies examining preservice teacher growth (Marx & Moss, 2012). This literature, however, is limited in terms of (a) the kinds of teachers who participated in intercultural student teaching programs, primarily general education teachers; (b) the parts of the world in which these pro-

grams were offered—no data were previously collected from participants in East Africa—and (c) addressing programmatic challenges in addition to benefits—only two studies briefly addressed challenges. Given these needs, this study examined the role of one intercultural student teaching experience in shaping teacher preparedness, cultural responsivity, and perspectives on global education: the East African student teaching program at a Western university.

The current study attempted to provide a more balanced view of international student teaching by highlighting benefits while also bringing up programmatic challenges and needs. This study was conducted in rural East Africa, which is a region of the world none of the other intercultural student teaching literature has, to date, covered. Specifically, this study examined the influence of a university-based student teaching program in rural East Africa on the beliefs of four preservice teacher participants.

Research Questions

Three main research questions were important to the objectives of this study:

1. How did preservice teachers feel the East African student teaching program informed their overall preparedness to teach in U.S. public schools?

2. How did preservice teachers feel the East African student teaching program informed their ability to become culturally responsive educators in U.S. public schools?

3. How did the East African student teaching program inform preservice teachers' perspectives on the global context of education?

Theoretical Framework

Several important components have been identified as important to the preparation of preservice teachers: (a) personal knowledge/autobiography and philosophy of teaching; (b) contextual knowledge/understanding children, schools, and society; (c) pedagogical knowledge/content, theories, methods of teaching, and curriculum development; (d) sociological knowledge/diversity, cultural relevance, and social justice; and (e) social knowledge/cooperative, democratic group process, and conflict (Goodwin, 2010). These knowledge domains, particularly contextual knowledge/understanding of children, schools, and society, provide a lens through which to understand the experiences of the preservice teachers who participated in the East African student teaching program. Consequently, preservice teachers' reflections on how they came to understand education through a global perspective were viewed and interpreted using the lens that teachers need to be prepared through the knowledge domains indicated in Goodwin (2010).

The East African student teaching experiences of preservice teachers were also positioned using culturally relevant pedagogy (Ladson-Billings, 1995). Culturally relevant pedagogy suggests that teaching that is truly responsive to student diversity and needs is created through teachers who are themselves aware of and embrace diversity in all its variations; who have high expectations for all students; and who challenge students to become sociopolitically conscious citizens (Ladson-Billings, 1995). Especially in the current public school system in the United States, where the majority of students come from nondominant backgrounds (U.S. Census Bureau, 2010), it is critical for educators to have a clear grasp on how to work with different populations of students and their families. The theory of culturally relevant pedagogy (Ladson-Billings, 1995) provided a framework for the outcomes of the East African student teaching program at a Western university. It was the main objective of this study to understand how the experience of living within a different sociopolitical and cultural context influenced the beliefs of preservice teacher participants when they returned to teaching in the United States, specifically their beliefs in terms of preparation, culturally responsive practice, and the global nature of education. Both Goodwin (2010) knowledge domains and Ladson-Billings (1995) culturally relevant pedagogy informed the lens and overall study objectives.

Methodology

Because this study was framed through preservice student teaching in East Africa and was structured through the teachers' perspectives on their overall preparedness, cultural responsiveness, and understanding of education in a global context, a multiple case study methodology was used to construct and frame participant experiences. Each student participant served as an individual bounded system (Stake, 1995), and cross-case comparisons were drawn using a priori themes.

Research Context

A description of both the East African country and the program in which participants were able to student teach is outlined in the following sections. Although the country in which student teaching occurred is masked to protect the program and participants, it is important to provide historical data to situate both the student teachers and the overall program in which they participated. Therefore we provide some information about the overall country's historical context as well as the program setup and structure.

Historical context. The East African country in which participants engaged in student teaching has a long history of military presence and dictatorships. The country also has a long and violent history of British colonialism. Three main types of violence can be actualized through this enduring colonial history: psychological (Fanon, 1968), physical (Galtung, 1969), and structural violence (Kabwegyere,

1972). When thinking about psychological violence specifically, colonialism in the East African country left a feeling of distance between "natives" and "educated Africans" (Kabwegyere, 1972, p. 312). Indeed, the educational system in the East African country can be one of the institutions in which psychological violence is most pronounced, especially given the current prevalence of missionary projects centered in rural villages (Kabwegyere, 1972).

Student teaching program. We can then situate the East African student teaching program in a similar context as exemplified by postcolonial, psychological violence. The East African student teaching program started in 2010 through a partnership between a professor in the curriculum studies department at a large Western university and an East African refugee couple involved with a nonprofit organization in Canada. The couple built the school in a rural village as a Community Christian institution. Preservice teachers from the Western university applied for the program through their study abroad office. After a review of letters of recommendation, transcripts, and official documentation, they were interviewed by a study abroad office coordinator and the curriculum studies professor. Preservice teachers selected for the program received a brief preorientation from the professor and an in-country orientation in a major city in East Africa before beginning their 8-week student teaching program at a rural village school during the summer. The preorientation included logistical information about the program but little to no context or historical background, especially for the first cohort of student teachers who participated. The second cohort were given one to two sessions of preorientation, which included program logistics and an overview of the East African country's history. Within the East African country, participants received tours of a major university and some local schools. These tours were largely situated in metropolitan areas very different from the context in which the student teachers would be working.

Instruction at the village school occurred in English, which is the national language of the East African country in which student teaching occurred. Although there were challenges around certain words in British English versus American English, as well as differences in pronunciation, participants were not required to learn the local village language before beginning their student teaching programs.

Participants of the study could not be interviewed for the study prior to their departure for the program. Instead, the interviews and data collection created a reflection of their experiences after having completed their 8 weeks of student teaching abroad. Some of these interviews asked them to think back to their experiences about 3–6 months after they had returned. This was more true for the participants who went as part of the very first cohort, who could not be approached immediately after returning from the program because of timing and approval of the Institutional Review Board (see "Limitations").

Participants

Four preservice teachers[1] participated in the East African student teaching program through a partnership with a large Western university (see Table 1 for participant characteristics). All preservice participants identified as White, middle-class individuals between the ages of 18 and 22 years. Three of the four participants were general education preservice teachers, and one was a special education preservice teacher. All had completed part of their student teaching in a Western city and part of their student teaching (8 weeks) in East Africa. The four preservice teachers' experiences were collected through a series of semistructured interviews and weblogs.

Data Collection

Semistructured interviews were completed soon after participants returned from East Africa to capture their reflections after they returned and started working in public schools in the United States. Weblogs were collected from each participant and captured their experiences while they were participating in the student teaching program in East Africa. A total of two semistructured interviews were conducted per participant, and each participant kept a total of one running blog (sample interview protocol is listed in the appendix). Interviews with participants were conducted in person or remotely through telephone or Skype. Each interview with participants lasted between 30 minutes and 1 hour and was audio recorded and transcribed. Therefore, a total of 8 interviews and 32 blog entries (1 per week per participant) were collected, in addition to field notes during and after interviews and blog reviews.

Trustworthiness

Transcriptions were sent back to participants for review to ensure the accuracy of the interview content (i.e., member checking). Additionally, a series of field notes were collected throughout the process of data collection and analysis to

Table 1
Characteristics of Student Teacher Participants

Name	Gender	Age (years)	Race/ethnicity	Type of certification program	Current U.S. work placement
Wendy	Female	18–22	White/Caucasian	General ed.	5th grade teacher
Ethan	Male	18–22	White/Caucasian	General ed.	2nd grade teacher
Beverly	Female	18–22	White/Caucasian	General ed.	Substitute teacher
Bertha	Female	18–22	White/Caucasian	Special ed.	Kindergarten special ed. teacher

create deeper understanding of what participants shared in interviews and blogs. The use of multiple sources of data allowed for triangulation of information across data source (Creswell, 2008). Furthermore, because the four participants were part of a multiple case study, recurring themes were also generated across participants (Stake, 1995).

Coding

Codes were generated from interview transcripts, weblogs, and field notes based on the a priori themes of participant perspectives on (a) preparedness to teach, (b) preparedness in terms of cultural responsivity to student diversity, and (c) education in a global context. During first-cycle coding, segments of text were categorized using the three broad a priori themes. Then, during second-cycle coding, each set of transcripts and codes was reread and filtered into subthemes that fell within each first-cycle theme. Finally, cases were constructed and relevant subthemes were refined within each participant's individual and through collective experiences. This process was continued until data reached a point of saturation and no new information came forward.

Results

Analysis of the student teaching program revealed that the opportunity to teach in East Africa had influences on student thinking and that some participants gained new understandings as they transitioned back into teaching at public schools in the United States. Although some variation was apparent with individual participants, all of them reported that the program created some level of personal growth. Based on the original themes of (a) beliefs about teaching culturally and linguistically diverse learners, (b) preparedness to teach, and (c) the global context of education, a series of important themes emerged from participants' individual and collective experiences student teaching in East Africa. These included (a) understanding of second-language learners and (b) Whiteness as equated with wealth and knowledge, (c) "teaching on your toes," (d) curricular negotiation, (e) sustainability of connections to East Africa, and (f) material resourcefulness. Each of these themes is discussed briefly in the following.

Understanding Second-Language Learners

Preservice participants all reported feeling empathy toward English language learners as a result of their experiences in East Africa. In East Africa, participants had to communicate with students who spoke both a local language and a version of British English. The challenge of having to communicate across language barriers while completing their student teaching built participants' confidence in terms of working with English language learners. As nonnative speakers of the local language

spoken in their East African student teaching placement, all student teachers had to become resourceful in terms of communicating with their students, sometimes differentiating using visual representations to supplement lessons, small group instruction, and breaking down complex sentences to check for understanding. Although participants learned these strategies informally through student teaching experiences, many of them are actually best practice for working with English language learners (Bal, Khang, Kulkarni, & Mbeseha, 2011).

Beverly also reinforced this idea during her interview. She remarked that beyond the teaching aspect, she saw language as an important takeaway of the program. Beverly felt that the experience teaching in East Africa had given her this newfound understanding and empathetic view of second-language learners. She recognized how the program enabled her to "think about what [she] said and how [she] g[ave] directions." Beverly was able to come away from the program with the desire "to work with English language learners."

All participants had encounters with language that suggested that they were empathetic to differences in understanding. Indeed, having an empathetic disposition has been deemed an important trait for teacher success with culturally and linguistically diverse learners (McAllister & Irvine, 2000). Participants were also able to use this empathy to develop supportive practices for working with second-language learners in their schools in the United States.

Whiteness as Equated With Wealth and Knowledge

In addition to language, because all the preservice teachers interviewed in this study were White, they all mentioned having some different experiences in terms of race. The students and staff in the East African school treated the participants as a source of knowledge and perceived them as wealthy. This had huge implications for their individual practices back in the United States.

Wendy spent most of the latter half of her interview, as well as a few pages of her photo book, talking at length about how those instances of White privilege made her feel. She mentioned how she felt it was "kind of shocking how [she] was received" and how she felt as though she were "put on a pedestal." Additionally, she noted how "everybody assumed that [she] had tons of money and that [the White student teachers] had way more knowledge than they did at the school."

Wendy perceived that there was a level of assumed competence and wealth associated with her status as a White person. In many instances, Wendy described how this visible privilege she was given made her very uncomfortable.

Although Wendy felt uncomfortable with the additional attention she received, her ability to place this within her own privilege as a White, middle-class person from the United States showcased her awareness of these differences. She was able to come away from the East African student teaching program thinking carefully about her own privilege in relation to her students and using this to inform her in-

struction both in East Africa and the United States. For example, Wendy mentioned later in her second interview that, although many of her students in the United States were from White, middle-class backgrounds, it was important for them to have opportunities to engage with people from backgrounds different from their own. She provided her students with opportunities to engage with the children at the East African village school for this specific purpose.

As mentioned in the historic context for the East African country, there is a colonial history in East Africa partially responsible for some of the forms of psychological violence witnessed by the preservice teacher participants (Essed, 1991). Specifically, this manifested in the associations that rural village school staff had toward the preservice teachers. It is important to note that not all preservice teachers came away embracing differences and/or a critical understanding of race. For instance, Ethan seemed to appreciate the attention and came away from the experience forming very different ideas than Wendy:

> People here love us *because* we are White—Muzungo, the term meaning "the White man." They are so happy to have Europeans/Americans here helping them. To me, it seems the ultimate selflessness. They are so open to change and help that they eagerly hand their children and their lives to us without even knowing us. Everyone says hello, everyone welcomes us. It's not to say that they are not proud of their culture, their ways, or the progress they have made, because they are. But they know that if they are to catch up with the rest of the world, they need us. To them we represent the future, we represent progress, and we represent *hope*.

Through Ethan's blog reflection, it is apparent that he did not feel the same level of discomfort but seemed to believe that his power as a White person could be used to provide aid to the children in rural East Africa. In the post, Ethan equated his Whiteness with "hope" and "progress" and seemed to suggest that without the outside influence of Americans, the East African rural village would not grow. This seemed to reflect a deficit view of the people he encountered in the East African village. The reflection also connected with his later interview in which he described his school setting in a mid-sized urban district. Ethan remarked that "the kids that are at [his] school are super low and about 50% are like English language learners."

The description of students as "super low" also has a deficit-based connotation. Thus his blog response and interview both suggest that he may have held a deficit-based perspective of people from nondominant backgrounds, positioning himself as knowledgeable in those situations. Indeed, Ethan perceived himself as providing a service to the children in East Africa and a service to his students from linguistically diverse backgrounds in the United States. Despite this, however, he did learn to appreciate some of the more technical elements of the student teaching experience, as he reported through his later comments on preparedness and the school structure.

Teaching on Your Toes

One of the positive outcomes for preservice teachers was the experience of having to "teach on [their] toes." Wendy described her experience in East Africa as having to constantly teach material without much background or preparation. All of the preservice teachers described being "handed the chalk" and asked to teach during their first hour in the East African school. They explained that without lesson plans or materials prepared, they were forced to "teach on their toes" and how rewarding this experience was in terms of being able to think quickly, which is common in teaching students with a variety of needs and the multitasking needed in U.S. public schools. Indeed, previous research on intercultural student teaching suggests that preservice teachers learn how to work without a set of materials and lesson plans, which are commonly unavailable in international classrooms (Hayden & Thompson, 1998). They are forced to become more creative in their teaching. This is precisely what occurred with student teachers in East Africa.

Wendy, from whom this theme was derived, spoke at length about the experience of "teaching on your toes." Wendy described it using her impressions of her first day of teaching in the East African village:

> It was like one of those nightmare moments that you have when you're totally unprepared and I had to figure [it] out, and that's kind of the way the summer went because the curriculum over there was really scarce. We hardly had anything to go on so many situations where I felt like I didn't know what I was doing, but then you figure it out and you are confident in the kids right in front of you and . . . you just have to take control of the situation and teach on your toes and that's the piece that I didn't have from student teaching in [a Western city]. . . . You really had to figure out the material quickly and then figure out how to teach it to these kids, so it was so real life and so on your toes and so that prepared me for really . . . I feel like any situation in the classroom.

Though not negating lesson preparation, this quotation speaks to the moments in teaching that are unpredictable and how Wendy felt confident that she would be able to handle these moments better as a result of her experience in East Africa. Throughout Wendy's interviews and other reflections, she points out how having to teach on her toes gave her a sense of confidence she would not have otherwise achieved. She compares her experience with that of the Western school district, where everything is structured. Having had the opportunity to experience both predictability and chaos, Wendy found herself prepared for both kinds of teaching environments.

Beverly also suggested that she felt she was prepared in being resourceful. It was important because she had to be creative with what [she] had readily available. She mentioned how she would "like finding ways to use limited things" and learned to "be flexible" and how as a substitute she "know[s] how to handle that . . . and how nothing fazes [her] now."

Beverly currently works as a substitute teacher in the United States and was able to reflect on her experiences in East Africa by suggesting that despite the unpredictability of substitute assignments, she does not feel fazed, because there were frequent times during the East African student teaching program where she had to improvise teaching and she continued to expect success from all of her students.

Therefore student teacher participants all indicated that there were multiple instances where they had to teach on their toes and that these lessons in patience, flexibility, and improvisation were helpful to their domestic teaching.

Curricular Negotiations

In addition to having to maintain a degree of flexibility about teaching in general, student participants also recalled having to be flexible about *what* they taught. For the initial cohort of participants, this meant shifting expectations about what a curriculum at the East African school might look like. For the second cohort, it meant adjustments in how Western materials and instructional tools were integrated into teaching in East Africa.

Wendy negotiated this difference by finding ways to embed her philosophical ideas about education within the existing system. During a lesson "on fractions . . . instead of telling them directly . . . to multiply the denominator by the same number, [she] drew a bunch of strategies on the board and had hands-on materials . . . provid[ing] 3 different strategies and then [they] could pick how to solve the problem." Wendy differentiated the instruction for the group of learners and was able to find a way of incorporating some hands-on material within the more "rote" learning.

Ethan too noticed the difference in instructional style in the East African school. Ethan also saw value in some of the strategies already implemented in the East African school. In his second interview, he mentioned that in his current teaching, he uses some of the "call and response" he learned in East Africa.

Ethan did find value in some of the more traditional schooling elements found in the East African student teaching program and brought these elements to his classroom in the United States. For example, in East Africa, Ethan's class would "put up a definition on the board and the class [would] read the definition together," and Ethan mentioned how he "picked that up there" and used it in his class in the United States. Although he had a difficult time with the unstructured nature of the student teaching program, he was able to come back with something valuable to share with his own classroom.

Beverly had a bit more difficulty with negotiations of the curriculum. She mentioned that she tried to "strike a balance" between preparing students for examinations and using more interactive activities.

Beverly seemed to try to work within the existing framework. Though she attempted to bridge both the philosophical tenets of her Western university training and the expectations of her in East Africa, she seemed to feel a tension to stick

to having students pass their exams. She mentioned that the students "had to get through [exams]" and that the instructional assessments were not "based off what students know."

As the only special education teacher of the group, Bertha had a unique experience with the curriculum. Interview reflections with her focused on curriculum as well as students who were struggling in the East African school. Bertha spoke at length about stigmatization of students who were struggling. For instance, she mentioned how there was a tendency to call out the grades for student assessment scores and how she did not agree with that practice. Bertha started direct instruction with the students using materials she brought from the United States. She was able to negotiate with teachers as to why she was using direct instruction and was able to begin implementing it into the school structure. As part of Bertha's unique training among the participants, she seemed to be able to effectively incorporate differentiation and directed instruction into the curricular organization. She remarked afterward that one of the teachers mentioned a desire to "continue on with direct instruction" after the student participants left.

Overall, one of the main challenges that students faced as teachers in East Africa included the negotiation of curricular differences. The structure of schooling in the East African school was very "old school," as Ethan remarked. Instruction for students was geared toward preparation for examinations. The students were made to sit in rows, and teachers initiated a call-and-response method of instruction. Some student teachers had more overall success with achieving balance. In particular, Wendy was able to find ways of balancing the values of the East African community with her own philosophical stance toward education. Similar to Quezada and Alfaro's (2007) theme of external and internal pressures, preservice teachers in the East African student teaching program had to learn to negotiate the standardized curriculum in East Africa with their own university training in more conceptual pedagogy. This opportunity was able to provide preparation for such negotiation in their domestic practice, as there is a continued push for standards-based instruction in the United States (No Child Left Behind Act, 2001).

Global Perspectives on Education

Goodwin (2010) explained that contextual knowledge and an understanding of children, schools, and society are important components of teaching. Situated within this framework, artifacts were coded for global perspectives on education. For student teaching participants, global understanding of education revealed the additional subthemes of (a) sustainability of connections to East Africa and (b) material resource appreciation.

Sustainability of connections to East Africa. All student teaching participants had opportunities to share their experiences of how teaching in East Africa helped them create a more global definition of education. In their interviews, most of the

student teachers found this question challenging and provided examples from their own classroom teaching experiences of how they were connecting the experience in East Africa with their instruction in the United States. Bertha in particular described how, despite the mandates that go along with her current job as a special education teacher, she wants to continue to be present in the lives of the people she met and connect that with her domestic teaching. She was interested in "keep[ing] this flame burning" and "want[ed] to see how the direct instruction had taken off." She additionally mentioned how she "thought about different avenues of how to get back there." She worked with her students to write letters and "took pictures of [herself] and two of [her] students," and she talks to her students in the United States about the school. As Bertha worked with kindergarteners, her students even asked if they could "ask the [East African village students] for a play date."

As the special education teacher of the group, Bertha was invested in seeing specific strategies, such as direct instruction, which she started in the East African village school, continue to be implemented after her departure. She tried to find ways to reach each of her students in the village school, which was part of her previous training through the special education teacher program at the Western university. Additionally, she found a way to connect the students she sees for resource instruction in her kindergarten class with the students in East Africa through letters. Bertha was trying to sustain the connections she built through her student teaching experience. Bertha was, however, not the only student to continue to sustain a connection with the East African village school. In fact, all student teacher participants, when asked about how their perspectives of education expanded as a result of their experiences, mentioned that they had maintained some kind of direct connection with the East African village school.

Ethan mentioned how a YouTube video he created, which contained pictures of the 8 weeks in East Africa, was something he showed his second-grade students in the United States. He also mentioned how his class wrote letters to the students in East Africa and that these letters were being mailed out within a few weeks of the interview. He also mentioned becoming friends with a man from the same country in East Africa as the village school. This connection, however, was superficial in some respects, as he described how he connected with the man based on being from the same country and generalized this with his experience of visiting. For example, he said how he explained to the man that "he too had been to Africa," suggesting an overgeneralization of the continent and also bypassing within-group differences among individuals from the continent of Africa.

As a substitute teacher, Beverly did not have as many opportunities to directly connect her students to the students in East Africa. She does, however, maintain connections with the program coordinators and fellow teachers in East Africa using technology such as Facebook.

Wendy also mentioned that she used technology such as Facebook to keep in touch with teachers in East Africa. Of the four participants, she was also the only

teacher able to directly implement her student teaching experiences into the fifth-grade curriculum at her school. Wendy mentioned how the "coolest thing about 5th grade in the district is that in social studies" the students had standards related to "cultures of the world" and that she "spent a month and a half teaching about Africa." Without generalizing, Wendy capitalized on her visit to East Africa by sharing her experiences with her fifth-grade students and trying to stay connected to her student teaching experiences. Wendy's class wrote letters to the students, similar to Ethan and Bertha, and additionally sent short stories of their course work to the rural village children.

Therefore all of the teachers of the East African student teaching program were able to maintain some kind of connection to the teachers, students, and/or coordinators of the program. This speaks directly to the sustainability of the preservice teacher relationship with the East African student teaching program. Preservice teacher connections made during their student teaching in East Africa demonstrate continued presence and contact despite the lapse of time. Furthermore, this means that the outcome of the intercultural teaching experience was not an isolated event but continues to inhabit the participants' thoughts about education and instruction. Each student teacher found a way to keep his or her "flame burning." Through such efforts, the program, the school, and experiences for the preservice teachers' students in the United States continue to flourish.

The experiences of the four preservice student teachers who completed part of their student teaching in East Africa suggest that international student teaching is complex and multifaceted. Similar to previous comparisons made between intercultural student teaching and traditional student teaching programs in the United States (Mahan & Stachowski, 1990), international student teaching in East Africa provided the four preservice teachers with opportunities to apply their knowledge and display different kinds of learning. The East African student teaching program pushed preservice teachers outside of their comfort zone by enabling them to think carefully about language differences, negotiate differing curricular philosophies, and consider their students' immediate context. Although it can be argued that these elements may be found in traditional student teaching placements, there is something to be said for the unique immersion experience that intercultural student teaching programs provide (Cushner & Brennan, 2007). Indeed, each preservice teacher commented on how being in a different country and teaching context helped strengthen his or her classroom preparation in these ways.

The drawback to intercultural student teaching programs, however, is that there needs to be a heavy reflection component both before and after the experience to avoid what Van Damme (2001) called a voyeuristic view of the culture of the "other." The Longview Foundation (2008), in its report of best practices for internationalization in higher education, suggested that pre- and posttravel reflection should be a part of international experiences. More opportunities to deconstruct experiences would have been an important addition to the East African student teaching program and

could possibly help minimize a more voyeuristic view of the East African village community. Aside from this, reflection was also something that every preservice teacher suggested as important and underdeveloped in the program. Thus it is important to note changes that need to occur for the East African student teaching program to thrive. Whether the East African student teaching program should be implemented more fully at the Western university depends on the implementation of several of these changes. Though intercultural student teaching programs are certainly important influences on preservice teacher learning, structure is critical.

Discussion

Burant and Kirby (2002) suggested the importance of field-based experiences in informing teaching beliefs. The student teaching program in East Africa provided some direct opportunities to inform the beliefs of preservice student participants. It is important to consider that simply by participating in the East African student teaching program, these participants showed their abilities to step outside comfort zones and take risks. In final reflections, preservice teachers were asked if they would recommend the program for *all* teachers. Many suggested that, despite being effective educators, not every individual is cut out for such an experience. In some ways, the student teaching in East Africa created new tensions and opportunities to reexamine previously held notions about education, preparation, and privilege. In other ways, it reinforced stereotypes and deficit-based perspectives.

In particular, Ethan seemed to take the position of "the savior." He used this position when his blog post suggested that the White people "represented hope" for the rural East African village. Unconsciously, Ethan gained a lot from his experience. Although he suggested that he used several of the directed teaching methods from East Africa, and also that he felt some confidence after having to teach on his toes, he minimized these in his interviews, not directly acknowledging them as benefits of the experience. Ethan also continued to use deficit-based thinking when describing his own students as "low." Although the experience was somewhat valuable for him, his failure to fully reflect on these valuable components has led to him solidifying previously held stereotypes of different communities. Indeed, Van Damme (2001) suggested that there is a risk associated with internationalization in higher education, namely, the creation of a voyeuristic view of culture, which could be true in Ethan's case.

Similarly, as the only special education teacher of the group, Bertha held some deficit-based views of the educational structure for individuals with disabilities in East Africa. These ideas likely came from the perspective that Westernized policies for people with disabilities are viewed as most progressive around the world (Thomas & Loxley, 2001). This became evident when Bertha described education in the East African village before the school was built as nonexistent. She privileges certain kinds of knowledge, particularly traditional school-based instruction. Indeed,

Western notions of special education have the "potential to erase local, indigenous ways of responding to and accommodating difference" (Artiles, Kozleski, Waitoller, & Lukinbeal, 2011, p. 8). This idea coincided with what Bertha deemed her greatest achievement in East Africa: the use of directed instruction with students. Bertha seemed frustrated that many of the materials she brought with her were not adopted by the East African teachers but was happy when the teachers took up direct instruction. Although the use of directed instruction with students who are struggling in school is valuable, it became the major focus of Bertha's program, as opposed to community engagement.

Beverly also had some difficulty engaging with community; however, she presented the unique perspective of having traveled to East Africa previously, as well as other parts of the world. For her, the struggle to adjust was not as difficult because she had done so in the past. Though she had an easy time staying connected with the coordinators and the program overall, her substitute position made it difficult for her to engage her students in the United States with those in East Africa. Despite her vast experience, Beverly was still able to come away from East Africa with some new takeaways, particularly as it related to her overall confidence and ability to handle the sometimes chaotic classrooms that come with her substitute position. She also felt she was able to challenge societal norms in terms of material resources available in the United States.

Wendy's responses and artifacts presented as the clearest illustration of a culturally relevant educator. Wendy reflected on how the experience in East Africa gave her new confidence going into any kind of classroom. She learned to negotiate the curriculum mandates in East Africa so that she could balance requirements with critical thinking skills. With the advent of standards-based curriculum, which teachers across the United States are being required to follow, this negotiation is critical (Schmoker & Marzano, 1999). Wendy also seemed to come away with a new perspective on education. She was able to understand that sometimes the decisions put forward in staff development meetings, such as "what color paper to use," can be arbitrary. She saw the bigger picture and realized that many issues were more important. Wendy commented at the end of her second interview that she had come away from the experience with an even greater "appreciation for the profession."

Across cases, however, all preservice teacher participants noted how the East African student teaching program influenced their beliefs. All preservice participants noted an appreciation or empathy for second-language learners as a result of having to work with learners who spoke a different kind of English. All preservice participants felt that the hands-on approach to teaching in East Africa prepared them for chaotic situations in their U.S. classrooms. All preservice participants continued to maintain ties to students, staff, and coordinators of the East African student teaching program. Finally, all preservice participants came away from the East African student teaching experience thinking differently about education—although this part of their experience is something they continue to process and

understand over time and experience as educators. Thus the East African student teaching program did influence preservice teacher beliefs regarding (a) culturally relevant instruction, (b) overall preparedness to teach, and (c) the global context of education.

Conclusion

Although this study provided detailed information about participants' student teaching experiences in East Africa, it was in no way meant to be comprehensive. This preliminary examination focused mostly on the four student teacher participants and their interviews and blog writings. There are limitations related to both study results and the implications derived from these results.

Limitations

The interviews conducted with student participants were done after they had returned from East Africa. This was due to timing of the initiation of the study. By the time approval was granted, student teachers had already finished their 10-week programs. Future studies could examine beliefs of these teachers before and after their return and/or conduct field observations of their student teaching within East Africa.

Participants of this study came from various background experiences and perspectives. All student teaching participants who agreed to take part in this study, however, were White, middle-class individuals. This provided certain kinds of reflections, particularly when referencing how they felt about their status as outsiders in East Africa. Future studies could examine how participants from nondominant backgrounds in the United States are able to conceptualize their experiences in East Africa.

This study was also conducted using a priori themes gathered from the theoretical framework. This meant that questions were structured around a particular lens. Codes and themes may have emerged differently if this study had used a different methodological approach. Research positionality meant that previous experiences of the researchers shaped the construction of this study and the kinds of information presented. Additionally, finding emergent themes within the broader themes presented has the risk of using codes that "lose their sensitizing aspect" (Glaser & Strauss, 1967, p. 242). The broader themes of beliefs about culturally relevant pedagogy and preparation to teach sometimes blended together in this study. This was partially due to the nature of the theoretical framework, which used culturally relevant pedagogy (Ladson-Billings, 1995) to view the data as a whole. Some of the emergent themes of preparation, such as teaching on your toes, also included excerpts, which may have suggested use of culturally relevant pedagogy.

It is also important to note that none of the students made explicit connec-

tions to the colonial history of East Africa and the ways in which this may have influenced the structure of the educational system there. Kay and Nystrom (1971) suggested that the relationship between education and colonialism is complex. There is a risk of adopting a deficit perspective toward the structure of schooling in East Africa while negating the historical context through which this educational system gained fruition. Understanding the historical implications of colonialism as it relates to their field placements could serve as an opportunity for developing critical consciousness among teachers.

Implications

Although this study has focused on four preservice teachers who student-taught in East Africa, their reflections have provided several implications for the East African student teaching program at large. It is important to note that some of the participants indicated that their interviews were the first real opportunity they had had, after returning to the United States, to deconstruct their experiences and beliefs. Some of these interviews occurred between a few months to almost 6 months after their return. Opportunities to engage in deep reflection after the 8 weeks may be critical to shaping teacher beliefs (Jacob, Swensen, Hite, Erickson, & Tuttle, 2010). Therefore, the East African student teaching program would benefit from more opportunities to engage preservice teacher participants in activities that promote deep reflection.

Second, individuals continued to cite financial hardship as an issue both in participating in the program and also in rushing to find employment after completing their certification program. Many of the teachers had very little time to process their experiences because they were concerned about obtaining employment. Financial hardship also limited the number and demographics of individuals who were able to participate in the experience. It is essential for programs to begin offering more financial assistance to students to diversify the kinds of applicants who participate in international student teaching programs. Additional programmatic grants might also make this possible.

Next, some intercultural student teaching programs have benefitted from instruction on language (Longview Foundation, 2008). The East African student teaching program, perhaps for sake of convenience[2] and the national language of the East African country being English, decided not to include such a component. Some prior knowledge of the local village language may have proved useful for the preservice teachers in their early days of teaching. Building in information about how the English spoken at the East African student teaching site differed from standard American English might also have been useful for participants prior to their departure.

Furthermore, it is important to consider the ethical implications of sending preservice teachers to a remote village in East Africa without language and historical/

sociopolitical context prior to their trip. During the first two cohorts of the student teaching program, very little context was given, and some participants returned with deficit-based views of the East African village's educational system as well as their role in educating youths from the East African country. It is an important consideration for any preservice student teaching program. Specifically, teachers must engage in discussions of culture and history prior to beginning to teach. Ongoing discussion would be critical to supporting beliefs that capitalize on strengths rather than engage in deficits.

Despite these suggestions, however, the East African student teaching program did build on previous intercultural student teaching programs in terms of its ability to challenge preservice teachers to learn from context. No other programs to date have utilized a student teaching component in a rural East African village. Literature around other intercultural student teaching programs that expose preservice teachers to completely new cultures and environments provided some long-term benefits to teachers in terms of their learning, beliefs, and teaching (Mahan & Stachowski, 1990).

The level of engagement with the East African village students is also something that separates this student teaching program from other programs described in the literature (Cushner & Brennan, 2007). Each preservice teacher remarked how he or she continued to sustain contact with the students and teachers with whom he or she had worked in East Africa, even months after the preservice teacher's return. This suggests some level of program commitment to encouraging participants to continue to engage with the East African village school and, for some, that the experience was impactful in their lives.

For these reasons, with cautious optimism, wider funding for programs like the East African student teaching program is recommended. Funding might provide more preservice teachers with access to the intercultural student teaching experience. While the question remains of how to engage students in ways that prevent deficit-based thinking about other cultures, wider funding might enable more opportunities for conversations both before and after the intercultural experience.

Overall, this article has presented the perspectives of four participants who student-taught in East Africa for 8 weeks as part of their student teaching requirement at a Western university. Each of the participants had unique and valuable experiences that shaped the ways in which he or she worked to become an educator in a rural East African community. Curricular negotiations, the visibility of White privilege, and their need to be resourceful all provided challenges, which showcased their different perspectives and abilities to meet these challenges. It is important to note that experiences build over time. Although working within a completely new context and culture influenced each of the participants' teaching and ways of thinking, it did not necessarily transform them all into culturally relevant, global educators. The program did, however, shape their beliefs about teaching and continues to be an experience they reflect on in their lives. As Ethan

suggested in his blog, "when the road is bumpy and you're not driving, all you can do is hang on for the ride."

Notes

[1] Pseudonyms were utilized to protect the identities of all participants.

[2] Several local languages are spoken by rural communities in the East African country in which the student teaching program took place.

References

Artiles, A. J., Kozleski, E. B., Waitoller, F., & Lukinbeal, C. (2011). Inclusive education and the interlocking of ability and race in the U.S. In A. J. Artiles, E. B. Kozleski, & F. Waitoller (Eds.), *Inclusive education: Examining equity on five continents* (pp. 8–10). Cambridge, MA: Harvard Education Press.

Bal, A., Khang, H. J., Kulkarni, S., & Mbeseha, M. (2011, Spring). Promising practices for ELs with learning disabilities. *AccELLerate, 3*, 13–14.

Bates, R. (2008). Teacher education in a global context: Towards a defensible theory of teacher education. *Journal of Education for Teaching, 34*(4), 277–293.

Bryan, S. L., & Sprague, M. M. (1997). The effect of overseas internships on early teaching experiences. *The Clearing House: A Journal of Educational Strategies, Issues, and Ideas, 70*(4), 199–201.

Burant, T. A., & Kirby, D. (2002). Beyond classroom-based early field experiences: Understanding an "educative practicum" in an urban school and community. *Teaching and Teacher Education, 18*, 561–575.

Creswell, J. W. (2008). *Research design: Qualitative, quantitative, and mixed methods approaches*. Thousand Oaks, CA: Sage.

Cushner, K., & Brennan, S. (2007). *Intercultural student teaching: A bridge to global competence*. Lanham, MD: Rowman & Littlefield Education.

Essed, P. (1991). *Understanding everyday racism: An interdisciplinary theory*. Newbury Park, CA: Sage.

Fanon, F. (1968). *The wretched of the earth: The handbook for the black revolution that is changing the shape of the world*. New York: Grove Press.

Freire, P. (1970). *Pedagogy of the oppressed* (M. B. Ramos, Trans.). New York: Herder & Herder.

Galtung, J. (1969). Violence, peace, and peace research. *Journal of Peace Research, 6(*3), 167–191.

Giroux, H. A., & McLaren, P. (1986). Teacher education and the politics of engagement: The case for democratic schooling. *Harvard Educational Review, 56*(3), 213–239.

Glaser, B. G., & Strauss, A. L. (1967). *The discovery of grounded theory: Strategies for qualiatative research*. New Brunswick, NJ: Aldine Transaction.

Goodwin, L. A. (2010). Globalization and the preparation of quality teachers: Rethinking knowledge domains for teaching. *Teacher Education, 21*, 19–32.

Haskins, R., Greenberg, M., & Fremstad, S. (2004). *Federal policy for immigrant children: Room for common ground?* Washington, DC: Brookings Institution.

Hayden, M. C., & Thompson, J. J. (1998). *International education: Principles and practice*. London, UK: Korgan Page.

Jacob, W. J., Swensen, D. L., Hite, J. M., Erickson, L. B., & Tuttle, M. (2010). Pre-service teacher preparation in international contexts: A case-study examination of the international student teacher programs. *Excellence in Higher Education, 1*, 46–56.

Kabwegyere, T. B. (1972). The dynamics of colonial violence: The inductive system in Uganda. *Journal of Research, 9*(4), 303–314.

Kay, S., & Nystrom, B. (1971). Education and colonialism in East Africa: An annotated bibliography. *Comparative Education Review, 15*, 240–259.

Ladson-Billings, G. (1995). Towards a theory of culturally relevant pedagogy. *American Education Research Journal, 32*, 465–491.

Longview Foundation. (2008, September). *Teacher preparation for the global age: The imperative for change*. Silver Spring, MD: Author.

Mahan, J. M., & Stachowski, L. (1990). New horizons: Student teaching abroad to enrich understanding of diversity. *Action in Teacher Education, 12*(3), 13–21.

Mahon, J., & Cushner, K. (2002). The overseas student teaching experience: Creating optimal culture learning. *Multicultural Perspectives, 4*(3), 3–8.

Marx, H., & Moss, D. M. (2012). Please mind the cultural gap: Intercultural development during a teacher education study abroad program. *Journal of Teacher Education, 62*, 35–47.

McAllister, G., & Irvine, J. J. (2000). Cross cultural competency and multicultural teacher education. *Review of Educational Research, 70*(1), 3–24.

McLaren, P., & Farahmandpur, R. (2001). Teaching against globalization and the new imperialism: Toward a revolutionary pedagogy. *Journal of Teacher Education, 52*(2), 136–150.

No Child Left Behind Act of 2001. Retrieved from http://www.ed.gov/legislation/ESEA02/107–110.pdf

Quezada, R. L. (2005). Beyond educational tourism: Lessons learned while student teaching abroad. *International Education Journal, 5*, 458–465.

Quezada, R. L., & Alfaro, C. (2007). Biliteracy teachers' self-reflections of their accounts while student teaching abroad: Speaking from the "other" side. *Teacher Education Quarterly, 34*(1), 95–113.

Roberts, A. (2007). Global dimensions of schooling: Implications for internationalizing teacher education. *Teacher Education Quarterly, 34*, 9–26.

Schmoker, M., & Marzano, R. J. (1999). Realizing the promise of standards-based education. *Educational Leadership, 56*, 17–21.

Stachowski, L. L., Richardson, J. W., & Henderson, M. (2003). Student teachers report on the influence of cultural values on classroom practice and community involvement: Perspectives from the Navajo reservation and from abroad. *The Teacher Educator, 39*(1), 52–63.

Stake, R. E. (1995). *The art of case study research*. Thousand Oaks, CA: Sage.

Suarez-Orozco, M. (2001). Globalization, immigration, and education: The research agenda. *Harvard Educational Review, 71*(3), 345–366.

Thomas, G., & Loxley, A. (2001). *Deconstructing special education and constructing inclusion*. Buckingham, UK: Open University Press.

U.S. Census Bureau. (2010). *School enrollment*. Washington, DC: Government Printing Office.

Van Damme, D. (2001). Quality issues in the internationalization of higher education. *Higher Education, 41*, 415–448.

Zhao, Y., Meyers, L., & Meyers, B. (2009). Cross-cultural immersion in China: Preparing pre- service elementary teachers to work with diverse student populations in the United States. *Asia-Pacific Journal of Teacher Education, 37*(3), 295–317.

Appendix

Q1: So maybe we can just start by talking a little bit about your background. What got you interested in teaching?
Q2: Are you working in a classroom now? If so, what age level or grade level?
Q3: What kinds of experiences are you provided with in your teacher education program? Would you say it's well rounded in terms of the information you felt you needed as a teacher? Was there something you feel was missing?
Q4: How did you hear about the student teaching opportunity in Africa?
Q5: What made you decide to take part in this program?
Q6: How long were you there for?
Q7: Of your time in Africa, how much of your time was spent in classrooms as a student teacher? What was the school/environment like where you worked?
Q8: Describe your experience in Africa and what it has meant to you as a teacher.
Q9: What was the best part of the experience, and what would you hope to improve?
Q10: Did you receive any predeparture orientation through your university? Describe that process and what information you were given before you left.
Q11: Did you, through your own research or information provided, have knowledge of the political and social structure of the region in which you would teach? How do you feel your perspective on education, globally, has changed, if at all?
Q12: What would you say was the total time you spent preparing for your student teaching opportunity before leaving for Africa? Where was the most time being allocated?
Q13: What kind of preparations were you involved in for student teaching in Africa? How did you access the materials you needed?
Q14: Was there an evaluation process, and how did this occur?
Q15: If you had to reflect on your teaching in Africa, how would you evaluate your performance as a teacher?
Q16: I saw that you had kept a blog while you were over in Africa. Were there any other ways in which you documented your experience? Journaling/assignments?
Q17: Can you describe what it felt like to work in a country in which you were not part of the majority culture? How was the adjustment for you?
Q18: Now let's talk about the trip back home. What did you notice about yourself and your teaching that you felt changed the most after your experience?
Q19: How did this experience impact your practice in the United States?
Q20: Would you recommend this experience to other educators?
Q21: Is there anything else you would like to add that I have not asked you about?

Issues in Teacher Education Subscription Form

Issues in Teacher Education is a scholarly publication focused on the education of teachers from initial preparation through induction and ongoing professional growth. *Issues* examines teaching from a practical stance, inviting commentary, discussion, and analysis on the nature and quality of the profession from a variety of perspectives. The journal is sponsored by the California Council on Teacher Education and published each Spring and Fall. The co-editors of *Issues in Teacher Education* are Bradley J. Porfilio of California State University, East Bay, and Richard Kahn of Antioch University, Los Angeles.

To subscribe to future issues of *Issues in Teacher Education*, please use this form:

Name _____

Address _____

_____ (include ZIP)

E-mail address _____

Please enter my subscription to *Issues in Teacher Education* for the
next year (next two issues) at ❑ $50 (individuals)
or ❑ $100 (institutions & libraries)
(add $30 for subscriptions outside the United States)

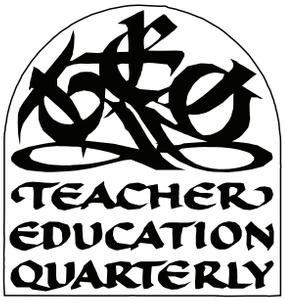
❑ Check enclosed payable to Caddo Gap Press or
❑ Charge to ❑ VISA or ❑ MasterCard

Card Number _____

Expiration date of card _____

Signature authorizing charge _____

Mail form and check or charge information to:
Caddo Gap Press, 3145 Geary Boulevard, PMB 275,
San Francisco, California 94118 U.S.A.
T 415/666-3012; E info@caddogap.com; W www.caddogap.com



Mathematics Teacher Educators Focusing on Equity:
Potential Challenges and Resolutions

By Eugenia Vomvoridi-Ivanovic & Laura McLeman

Teacher education is critical in preparing teachers to implement equitable instructional practices and thus contributes to improving educational and social conditions for underserved children and youths (Jacobsen, Mistele, & Srirman, 2012; Zeichner, 2009). Although the preparation of teachers to work with diverse student populations has been the subject of a growing body of research (e.g., Cochran-Smith, Fieman-Nemser, McIntyre, & Demers, 2008; Cochran-Smith & Zeichner, 2005), few studies to date have explored conditions under which mathematics teacher educators (MTEs) can help teachers[1] develop equitable mathematics pedagogy (McLeman & Vomvoridi-Ivanovic, 2012; Strutchens et al., 2012).

Although this literature illuminates important instructional practices of MTEs who teach through an equity lens, a systematic and broad-scale examination of these practices, including potential challenges, could inform mathematics teacher education by unpacking commonalities and differences in ways that MTEs address equity in their courses. Furthermore, by gaining insight into possible patterns regarding different resolution strategies, the field can begin to develop structures to prepare and support teacher educators who choose to make equity a priority in their practice.

Eugenia Vomvoridi-Ivanovic is an assistant professor of mathematics in the Teaching and Learning Department of the College of Education at the University of South Florida, Tampa, Florida. Laura McLeman is an assistant professor in the Department of Mathematics at the University of Michigan-Flint, Flint, Michigan. eugeniav@usf.edu & lauramcl@umflint.edu

In this article, we discuss findings from a qualitative study of 23 MTEs who self-reported challenges and resolutions they encountered when teaching mathematics methods courses with a focus on equity. Our research questions are as follows:

1. What challenges do MTEs who make equity a priority in their instructional practice face when teaching mathematics methods courses?

2. How do these MTEs work toward resolving these challenges?

In what follows, we overview relevant literature regarding conceptions of equity, challenges MTEs face as they teach through a lens of equity, and some resolution strategies. We then describe our study's conceptual framework, methodology, and findings. We conclude by discussing our findings and implications for practice and future research, framing both in ways relevant to teacher educators of all disciplines, while highlighting unique components to mathematics teacher education as appropriate.

Equity in Teacher Education

Conceptions of Equity

Nieto (2010) built on earlier conceptions of equity (Banks & Banks, 1995; Ladson-Billings, 1995) and argued that teacher educators can alter the inequities in U.S. schools by inviting teacher education students to critically analyze why and how schools are unjust for some students. This analysis, Villegas (2007) pointed out, will prepare teachers to help all students "participate equitably in the economic and political life of [a] country" (p. 372). Although some researchers (e.g., Butin, 2007) have argued that the concept of social justice is not well defined, *democratic participation* is one of the core principles of equity within teacher education across the globe, with researchers documenting its use in such places as Japan (Gordon, 2006) and England and South Africa (Harber & Serf, 2006).

Equitable education is also viewed through the lens of *access*, meaning all students have equal opportunities to study and learn (Flores, 2007; Murphy & Hallinger, 1989). This notion of equity is common in mathematics teacher education, with organizations such as the National Council of Teachers of Mathematics (2000) making access a cornerstone of their equity principles, suggesting that "all students, regardless of their personal characteristics, backgrounds, or physical challenges, must have *opportunities* to study—and support to learn—mathematics" (emphasis added). However, despite acknowledging the importance of access as a component of equity, some MTEs have argued that viewing equity solely through this lens supports deficit models of thinking because access focuses on what students lack relative to a normalized majority (e.g., Gutiérrez, 2008).

Gutstein et al. (2005) proposed that having multiple presentations of equity is not necessarily problematic, because they serve specific and sometimes different

purposes. In the context of teacher education, equity means providing opportunities and support for teachers to learn rich content that focuses on meaning making, fosters and empowers decision making, and critiques and transforms injustices (Aguirre, 2009). Similarly, Gutstein (2006) suggested that equitable teaching should position teachers to "examine [their] own lives and other's [sic] lives in relationship to sociopolitical and cultural-historical contexts" (p. 5). Furman and Shields (2005) cautioned, though, that equity is a process and an ideal construct that may never be fully realized.

Challenges and Resolutions

The challenges MTEs face when attempting to engage preservice teachers (PSTs) around issues of equity are well documented and often consistent with those that other teacher educators face. One major challenge is resistance (e.g., Aguirre, 2009; Ensign, 2005; Gillespie, Ashbaugh, & DeFiore, 2002; Han et al., 2014; Herbel-Eisenmann et al., 2013; Landsman, 2011; Rodriguez, 1998). Han et al. (2014), for example, noted that PSTs can resist the discussion of issues related to race or power if they perceive an instructor has an "agenda," especially if the instructor is not a member of the dominant culture. Furthermore, Herbel-Eisenmann et al. (2013) have discussed how PSTs from the dominant culture can exercise passive resistance by simply agreeing with their instructors about issues of equity, making it challenging to engage PSTs deeply with these issues.

Aguirre (2009), Han et al. (2014), and Kitchen (2005) have provided valuable insight into the power of building positive relationships as a means to resolve challenges regarding resistance. Kitchen (2005), for example, begins each semester sharing his personal narrative. This practice helps build meaningful relationships within a respectful and trusting community of learners. However, institutional barriers, such as traditional course structures in higher education, do not allow teacher educators sufficient time and space to build meaningful relationships with students to enable difficult issues to be discussed in important ways (Han et al., 2014). Systematic program development and collaborative planning across courses has helped teacher educators work toward overcoming institutional barriers (Han et al., 2014), but such work is often difficult to accomplish when few institutional colleagues share the mission of incorporating equity in teacher education (Ladson-Billings, 2005). Nevertheless, Han et al. suggested that belonging to professional organizations, making "critical friends," and engaging in scholarship might also serve as avenues to build competency in incorporating equity in instruction.

Although some challenges are similar across all disciplines, MTEs also face unique and subject specific challenges. For example, PSTs may perceive mathematics as not "real" if the mathematics does not match their prior educational experiences (Ensign, 2005). Many times these prior experiences focused on procedural fluency (Guilaume & Kirtman, 2010), with mathematical concepts and teaching viewed as

politically neutral (Felton, 2010; Gutstein & Peterson, 2005). Additionally, some MTEs (e.g., Aguirre, 2009; Bartell, 2011; Gutiérrez, 2009) have discussed the challenge of teaching with an acceptable balance of mathematical concepts and nonmathematical concepts. Although these MTEs have not offered specific suggestions for resolving these challenges, Gutiérrez (2009) suggested that instructors should embrace the tension of "teaching mathematics and not teaching mathematics" because "it is in embracing the tension (not choosing between the two) that allows teachers to develop their own authentic practices and political clarity around issues of equity" (p. 14).

Conceptual Framework

For this study, we framed each challenge and resolution as having two components: a locus and a nature. Locus refers to the *source* of the challenge or resolution; nature refers to the *characteristics* that are necessary for the challenges and resolutions to hold meaning. Both the locus and nature can be either external or internal to an individual, where internal is dependent on the motivation or actions of an individual.

We believe PSTs must develop certain processes to teach mathematics through a lens of equity; while developing or facilitating classroom activities, MTEs might support PSTs to acquire knowledge, scrutinize their beliefs and emotions, and develop interpersonal communication. Therefore, to understand the nature of internal challenges and resolutions, we developed a framework that focuses on the cognitive, affective, and social domains of learning. The *cognitive domain* focuses on intellectual skills through the acquisition of different forms of knowledge: factual, conceptual, procedural, and metacognitive. Within these different dimensions of knowledge, individuals come to know the specifics of a discipline, including terminology; how basic elements are intertwined within a larger structure; discipline-specific skills and algorithms; and appropriate contextual, conditional, and self-knowledge (Krathwohl, 2002). For example, the development of specific forms of knowledge through reading about theories of learning is a cognitive aspect of learning. The affective domain represents the emotional processes within learning, including beliefs, values, motivations, attitudes, dispositions, and a willingness to participate (Jagger, 2013). For example, grappling with beliefs about particular learners is of an affective nature. The social domain concerns the interpersonal functions necessary in public environments, such as communicating, participating, negotiating, and collaborating (Dettner, 2006), all of which are central to the development of equitable teaching practices.

In no way were we interested in classifying participants' statements in a hierarchal manner, as is so often associated with these domains. Instead, we sought only to discern if there was a pattern to the challenges some MTEs face while making equity a focus of their work. Likewise, our goal was similar with the resolutions

the participants shared—what patterns could we uncover regarding participants' resolution strategies?

Methods

The purpose of this qualitative study was to generate understandings across MTEs' self-reports about the challenges they encountered and the resolutions they implemented when teaching mathematics methods courses through a lens of equity.

Participant Recruitment and Selection

We identified and contacted university-based MTEs who make equity a priority in their work by searching for MTEs with at least one equity-related publication and/or presentation at an Association of Mathematics Teacher Educators conference within the last decade. We also searched for MTEs who had worked at National Science Foundation–funded Centers of Learning and Teaching that focused on equity in mathematics education.

Data Collection

Based on our search, we sent an e-mail to 80 MTEs and invited them to participate in an online survey if they currently were teaching or had at some point taught a mathematics methods course. Twenty-three MTEs completed the survey, which asked them to upload a current methods course syllabus and respond to the following four prompts:

1. Please describe what concept of equity guides your instructional practice.

2. Please describe how you address equity in your class that is not reflected in your course syllabus.

3. Please describe the top 3 or 4 challenges/tensions you face as you incorporate issues of equity in your methods course.

4. For the challenges/tensions you described above, what are some of the steps you take to resolve them?

Data Analysis

Using a constant comparative method (Glaser & Strauss, 1967), we first used open coding to look for broad themes and categories. We compared our themes and categories and jointly analyzed our participants' survey responses regarding their conceptualizations of equity. Next we coded the types of challenges and the ways participants resolved these challenges by considering each response as a collection of separate statements comprising a list of challenges and resolutions from that

participant. Finally, we analyzed the challenges to identify the locus of each. We did not, however, analyze the resolutions for a locus, assuming that the source of the resolution would be the participants themselves. A comparison of codes showed a 92% agreement. All discrepancies were resolved through consensus.

We then utilized the domains of learning specified in our conceptual framework (i.e., cognitive, affective, social) to code for the nature of the challenges and resolutions considered internal to a specific individual. Statements that focused on the acquisition of knowledge about equity issues, such as "students have limited knowledge . . . to engage in these conversations" (Participant 12), were coded as *cognitive*. Statements focused on emotions related to issues of equity were coded as *affective* and included statements such as "prospective teachers often feel uncomfortable and/or incompetent about the idea of teaching mathematics for understanding" (Participant 4). Challenges that described the interactions between and among individuals, such as the statement "particular students dominate class discussions" (Participant 5), were coded as *social*. A comparison of these codes showed an 81% agreement. All discrepancies were again resolved through consensus.

Findings

In this section, we first detail how participants conceptualized equity. We then present findings related to the participants' major challenges while focusing on equity within a mathematics methods course as well as MTEs' primary resolution strategies.

Conceptions of Equity

Participants' responses to the first survey prompt showed they had varied and, at times, multiple views of equity. This lends credence to our sample being representative of MTEs who have published or presented scholarly work on equity within teacher preparation. Specifically, 10 of the 23 participants shared more than one conception of equity that guides their practice, which resulted in 40 distinct statements. Nearly half of these statements (17 out of 40) indicated that equity must provide all students access to high-quality mathematics instruction and resources. As Participant 13 noted, equitable mathematics instruction utilizes "instructional strategies that allow for all to participate." The remaining 23 statements showcased a range of viewpoints, though a few MTEs noted that they prefer the term *social justice* rather than *equity*. Their vision is for students to learn to "use mathematics to understand, analyze, critique, and address issues of social justice" (Participant 4).

Challenges

Participants identified the top three or four challenges or tensions they face as they incorporate issues of equity within their mathematics methods courses. From the 23 participants, 75 separate challenges were identified.

The loci of challenges. The loci of the 75 challenges were characterized into three main categories: (a) 29 focused on a challenge involving PST(s), (b) 21 focused on a challenge within an MTE, and (c) 25 were external to an individual and focused on issues within society.

Challenges related to PSTs. PSTs' *willingness* or *ability level* to attend to issues of equity within mathematics and the lack of a *critical lens* through which PSTs discuss issues of equity were the top challenges noted (18 of 29 statements). Some participants noted how PSTs are not comfortable "openly discussing issues of equity" (Participant 10), while others shared that some PSTs "have never [before] experienced [this] kind of pedagogy" (Participant 4) in a mathematics class, having perhaps focused more on procedures and facts rather than critiquing real-world scenarios. This lack of critical thought by PSTs morphs into a challenge for MTEs as it becomes hard to engage PSTs with "the complexity of thinking about and teaching for equity and social justice" and can lead to "overly critical perspectives [that] might serve to shut down efforts (i.e., this is so hard, so we just won't bother doing it)" (Participant 9).

Challenges internal to MTEs. There were 21 challenges whose locus was identified as internal to MTEs, 16 of which were specific to instructional practice. Whereas some participants noted being challenged by PSTs' lack of critical thought, others were challenged by their own thinking regarding issues of equity. One participant noted a challenge related to "[the MTE's] own confidence/knowledge in presenting issues of equity," further explaining that "at times when students raise important counterpoints to a given topic, sometimes I am at a loss for what to say" (Participant 6). Participants also shared difficulties in providing experiences to engage PSTs with equity. Consider the following statements:

- "Providing PSTs with real classroom examples of equitable math teaching and teaching math for social justice" (Participant 7).
- "Creating concrete experiences that allow teachers to reflect in-depth issues of equity" (Participant 15).

Both of these statements show how MTEs struggle with something internal to their own practice: What can they as instructors do to create or provide what is needed by PSTs to fully engage with equity-related issues?

Challenges related to society. The remaining 25 challenges were ones with a locus within society at large and not internal to any one individual. Of these, 12 focused on the lack of time in a given class, semester, or program. For example, Participant 11 shared that "students cannot develop the knowledge and competencies they need in 1 semester." The locus here is external, because these participants were speaking to time limitations based on programmatic structure as opposed to internal struggles with time (e.g., time management). Participants also expressed

challenges regarding the *realities of schooling*, such as "high stakes accountability and scripted curriculum" (Participant 7) and "the way this (reality) positions teachers and students" (Participant 2).

Nature of the challenges. For the challenges whose locus was internal to a PST or an MTE, we applied our conceptual framework by determining whether the challenge was of a cognitive, affective, or social nature (see Table 1).

Nature of PST challenges. Of the 29 statements focused on PSTs, 18 were of an affective nature. For example, Participant 17 reported that "not all students are convinced that equity is a primary goal," whereas Participant 4 shared, "Prospective teachers often enter my class thinking of mathematics as 'neutral,' 'culture-free,' 'language-free,' 'values-free,' etc." As these statements demonstrate, beliefs about the relevance of issues of equity to mathematics teaching and learning are a shared property among some challenges faced by our participants. For Participant 1, this belief manifested in a challenge where "prospective teachers . . . see issues of language as only being relevant to English learners." Because PSTs tend to see issues of equity as not applicable to all students, Participant 1's comment elucidates how PSTs may not see the relevance of language issues in a mathematics methods course.

Of the remaining 11 statements, 3 were cognitive and 4 were social. The cognitive statements focused on the type of knowledge possessed by PSTs, such as how PSTs interpret the word *language*: "Prospective teachers . . . interpret 'language' or 'register' to mean mainly vocabulary" (Participant 1). The challenge here is that PSTs have a simplistic notion of mathematical language and therefore do not understand the language demands that are present in mathematics classrooms. Statements of a social nature focused on how PSTs demonstrate engagement in class, such as "particular students defer to other students' ideas during class discussions" (Participant 5). Here the challenge is that, in social situations, PSTs do not assert their own views or opinions when discussing issues of equity.

Table 1
Nature of Challenges Related to Preservice Teachers and Mathematics Teacher Educators

	Locus, no. (%)	
Nature	*PST*	*MTE*
Cognitive	3 (10)	11 (52)
Affective	18 (62)	5 (24)
Social	4 (14)	3 (14)
Unable to determine	4 (14)	2 (10)
Total	29 (100)	21 (100)

Note. MTE = mathematics teacher educator; PST = preservice teacher.

Nature of MTE challenges. Although the challenges involving PSTs primarily captured elements within the affective domain of learning, the majority of the challenges associated with MTEs were of a cognitive nature. For example, one participant noted that a challenge is one's "own . . . knowledge in presenting issues of equity" (Participant 6), that is, one's own level of cognition in terms of knowledge needed to discuss issues of equity within a mathematical context. Participants also found developing specific activities for the methods class a challenge. As Participant 23 noted, "It can be a challenge to select materials that PSTs will understand and make sure that math goals are met as well," suggesting that it can be cognitively challenging to select materials to help PSTs develop understandings of both equity and mathematical concepts.

Affective challenges dealt with value-laden issues, such as a participants' beliefs and assumptions, for example, "it is hard to have other perspectives surface without making assumptions about my preservice teachers" (Participant 9). Challenges of a social nature were ones that detailed participants' interactions with individuals as sometimes being "too raw in discussing the needs of diverse learners" so that PSTs become "intimidated and even fearful of teaching diverse populations" (Participant 8). The challenge for this participant seems to be how best to approach discussions about issues of equity so that PSTs are encouraged, rather than discouraged, about teaching diverse student populations.

Nature of external challenges. The overwhelming majority (23 out of 25 statements) of challenges external to a particular individual were ones associated with participants' programs, institutions, or society in general and are thus of a *structural* nature. Several participants, including Participant 21, who noted the challenge of "[going] against the dominant traffic pattern," expressed challenges in intentionally going against many societal norms, such as possibly combating the notion that mathematics content and teaching are context free. Helping PSTs develop an understanding of how they can work against normalized structures that do not represent equitable practice in mathematics is intensified when PSTs are in field placements that "despite their [the MTE's] best efforts, reinforce stereotypes that our student-teachers may already have and make it actually harder to demonstrate ways to teach mathematics equitably" (Participant 22).

Participants also noted that mathematics teacher education programs are not structured in ways that allow for authentic discussions around equity to take place in the depth and to the extent needed, as expressed in the following comment:

> Issues of diversity are uncomfortable to discuss, and having enough time throughout the semester to talk about instances of racism or sexism, for example, in a safe space, proves difficult. By enough time, I mean it takes a great deal of trust, in my opinion, to gain access to the deep places where we all hold racist and sexist beliefs, for example. A 3-hour course meeting once a week with multiple topics to cover does not always allow the time and consistency to have those authentic conversations. (Participant 22)

Because the methods course is most likely alone in addressing issues related to equity, several participants believed that attention to these concerns within their program was insufficient. As Participant 17 expressed, "Some students have commented that they wish they had learned some of these ideas in other classes," whereas Participant 20 wrote, "In reality, every class that our students take ought to address the inequities we see in schools." These comments speak to programmatic issues many MTEs face that make it challenging or even impossible to address issues of equity meaningfully in teacher education.

Resolutions

The 23 participants identified 57 distinct resolutions.

Loci of resolutions. As noted earlier, the locus of every resolution was assumed to be the participants (MTEs) themselves. The majority of resolutions referred to the use of specific instructional strategies, specifically counternarratives through mediums such as data, readings, and videos to contradict normalized narratives. For example, Participant 1 uses "LOTS of video of young learners and adolescents doing math" to counter the idea that specific children cannot engage in mathematics in particular ways. Participants also resolved some challenges by working to better themselves as educators, such as joining "professional development groups within the university that can support my teaching" (Participant 15).

Nature of the resolutions. As with the challenges, the nature of the resolutions was examined, and as seen in Table 2, the relative majority of statements (27 of 57) were of a social nature. In other words, many participants resolved their challenges through social interactions, as seen in the following statements:

- "I make a huge effort to encourage diverse students to make contributions to class discussions" (Participant 5).
- "[I] try to work with some of the other methods instructors/program[s] to make equity at the forefront of the PST preparation" (Participant 17).

Table 2
Nature of Participants' Resolutions to Challenges

Nature	*Resolutions, no. (%)*
Cognitive	14 (24.5)
Affective	6 (11)
Social	27 (47)
Unable to determine	10 (17.5)
Structural	0 (0)
Total	57 (100)

• "My PTs are encouraged to challenge my and others' viewpoints in a respectful manner" (Participant 23).

Each statement shows how participants utilize social interactions as mechanisms to resolve challenges, specifically by encouraging dialogue around issues of equity.

Resolutions of a cognitive nature illustrate participants' efforts to become more knowledgeable by, for example, "reading and getting resources from other instructors" (Participant 15). Statements of a cognitive nature also illustrate participants' attempts to help PSTs become more knowledgeable about issues related to equity in teaching and learning mathematics, by, for example, using "data to convince [PSTs that] these students are at risk" (Participant 8) or by drawing PSTs' "attention to the mathematical and statistical literacies needed to understand current events" (Participant 2).

Resolutions of an affective nature predominantly focused on two ideas. The first was about how to begin discussions regarding issues of equity. Participant 10 noted that it is helpful to begin "with less controversial issues (e.g., math ability) as a springboard to more difficult topics," in acknowledgment of PSTs' emerging beliefs, attitudes, or values. The second idea involved the use of instructional strategies that challenge the lens in which PSTs view the world. Participant 7 phrased this resolution strategy as "[putting PSTs] in the shoes of the other."

Comparison of Nature of Challenges and Resolutions

There seems to be a mismatch between the nature of participants' challenges and the nature of their resolutions (see Table 3). Specifically, the majority of the challenges were of an affective or structural nature, whereas the majority of the resolutions were of a social one.

Participants were not asked to pair challenges with resolutions, so it was not possible to determine specific patterns of action, such as whether challenges related to PSTs' lack of critical thought were resolved through discussions or readings. However, the number of structural resolutions makes sense given that the structural challenges noted seem to lie beyond the influence of the instructor (e.g., having more time to teach).

Table 3
Comparison of the Nature of Challenges and Resolutions

Nature	*Challenges, no. (%)*	*Resolutions, no. (%)*
Cognitive	14 (19)	14 (24.5)
Affective	23 (31)	6 (11)
Social	7 (9)	27 (47)
Structural	23 (31)	0 (0)
Unable to determine	8 (11)	10 (17.5)
Total	75 (100)	57 (100)

Discussion

This study provided a space for MTEs to consider the challenges they face and the ways in which they resolve challenges as they focus on equity within their own practice. The following sections contextualize these self-reported challenges and resolutions using prior research and provide some possible interpretations for patterns that emerged from the data.

Loci of Challenges

The MTEs who participated in this study have all published or presented scholarly work on helping teachers develop equitable mathematics pedagogy. They have all thought at length about equity, in both their instructional practice and their scholarly work. They also all acknowledge how much more there is to learn, suggesting how challenging it is to learn to teach equity to and for PSTs. As a consequence, the loci identified in this study and the breakdown of the specific challenges within each locus category demonstrated a strong correlation to those identified in other studies (e.g., Aguirre, 2009; Herbel-Eisenmann et al., 2013).

Across the data, MTEs only identified internal loci (i.e., themselves or their PSTs); no other specific individuals, such as a department chair or other administrator, challenged the MTEs' beliefs toward the importance of focusing on equity within a mathematics methods course. This lack of focus on other individuals may be due to any number of reasons. It is possible that such a challenge does not exist or is not a top challenge for these MTEs. Perhaps, though, the MTEs are isolated in their teaching, with a department chair not knowing what occurs in the MTE's practice unless a PST complains. Alternatively, it is possible that MTEs generalized the challenge to an institutional or programmatic one instead of targeting one individual, making it easier for the MTEs to conceptualize their challenges based on their position within a power relationship—either themselves as the person with the power (as the instructor of a class) or as the ones powerless (when they answer to higher authorities and/or policies and procedures). When reality demonstrates a lack of power in a relationship, it might be easier for an individual to ascribe a challenge to a broader structure, again speaking to the possible solitude and isolation of MTEs in their instructional practice.

Nature of Challenges

That a majority of PST challenges are associated with the affective learning domain is consistent with the focus on the examination of PSTs' beliefs and attitudes in teacher education literature, including mathematics teacher education. Indeed, beliefs and attitudes are such prominent areas of study in mathematics education that an entire chapter in the most recent compilation of research on mathematics teaching and learning is focused on this topic (Philipp, 2007). For teacher educators,

in particular, ones who focus on equity, beliefs and related constructs are essential to consider. Raymond (1997) found that teacher education programs are more likely to influence a teacher's beliefs rather than directly impacting the specific strategies and instructional moves a teacher enacts in the classroom.

Likewise, that a majority of challenges with the locus internal to MTEs were of a cognitive nature is also consistent with previously reported literature. As Furman and Shields (2005) noted, equity is a process working toward an ideal state. Thus, as MTEs learn more, they realize they need to learn even more. Additionally, teacher educators who make equity a priority in their practice assumedly have already grappled with their beliefs and values regarding this work, and as such, beliefs and values would not constitute challenges for them.

Nature of Resolutions

Although the challenges external to MTEs were all structural in nature, there were no structural resolutions noted. Instead, the majority of the resolutions were of a social nature. Perhaps MTEs feel that grassroots movements that lead to social action (e.g., to seek out colleagues within the institution to interact with around these concepts) must occur before programmatic or systemic changes will. There may also be a perception that structural challenges do not have a long-term resolution in the foreseeable future so that MTEs may be finding ways to navigate creatively within these structures or, as Gutiérrez (2013) framed it, "find[ing] loopholes in policies or interpret[ing] rules and/or procedures in ways that allow them to advocate for historically underserved and/or marginalized students" (p. 14).

Comparison of the Nature of Challenges and Resolutions

In this study, a majority of the resolutions were of a social nature, even though the majority of the challenges were not. This difference in focus is an important consideration when helping PSTs develop pedagogical theories and strategies focused on equity. Our participants, and perhaps teacher educators in general, may see learning as a social endeavor (Vygotsky, 1978) and therefore tend to resolve affective challenges through social interactions. However, Brophy (1999) argued that a match must exist between a learner's perception of self and that of the learning opportunities. In other words, the PSTs need to see the relevance of an authentic learning opportunity to their own personal agendas. To do so, they need to develop

> relatively elaborated schemas that include motivational as well as cognitive components before they can engage in abstract and complex learning activities with appreciation . . . and can experience some of the satisfaction or other intrinsic reward potential that the learning opportunity offers. (p. 81)

For PSTs who are learning to develop equitable pedagogy, focused attention on the development of productive insights, values, and dispositions regarding equitable

pedagogy is necessary to appreciate other, more complex activities, including ones social in nature. When PSTs are grappling with their beliefs and values about teaching mathematics through a lens of equity, and especially considering that many believe that mathematics is neutral or culture-free (Felton, 2010; Gutstein & Peterson, 2005), it is possible that they will not be able to appreciate the nuanced features of using students' thinking as a way to empower their students to be agents of change.

Additionally, PSTs may see (either consciously or subconsciously) the activities that are focused on more cognitive and social components as ways to avoid dealing with their beliefs or values and instead will focus on other components of the activities. Thus having resolutions that are social or cognitive in nature to combat challenges that are affective in nature may not have the desired effect.

Implications

The MTEs in our study have been active in bringing issues of equity to the forefront of mathematics teacher preparation, specifically within mathematics methods course work. As our findings show, these MTEs have varied and, at times, multiple conceptions of equity. This is an important consideration, as there may be other teacher educators who desire to teach with such a focus yet may feel that their notion(s) of equity are incorrect or incomplete. Even some of the MTEs in our study, who have expertise in this area, felt they did not know enough about issues of equity. As reflected in our findings and in the literature, there is not one way to conceive of equity. Thus those who are new to this work should embrace the complex, varying, and evolving definitions of equity while moving forward to make equity a priority in their instructional practice. Further consideration should be given to how teacher educators, in particular, MTEs, are prepared to do this work in doctoral programs to build capacity in this area (Taylor & Kitchen, 2008).

As our findings show, it is a challenge to help PSTs develop productive insights, values, dispositions, and so on, regarding equitable pedagogy. Yet many of the resolutions are focused on the social domain, not the affective. It may be beneficial to engage PSTs in ways that target the affective domain, such as Brady's (2005) use of contemplative pedagogy as a way for students to center themselves and become in tune with their feelings and emotions. For teacher education, contemplative pedagogy offers a path to challenge PSTs' apathy and resistance by helping them to become mindful toward their beliefs regarding issues of access, advocacy, democratic participation, and other equity-related topics.

Despite recommendations that equity should be integrated throughout teacher education programs (e.g., Zeichner, 2009), our findings demonstrate this is not yet occurring. Specifically, our participants noted a lack of time to work with PSTs, a crucial factor in helping PSTs develop a rich and nuanced framing of equitable pedagogy. For MTEs, this means helping PSTs understand that mathematics teach-

ing is not neutral and free from context (Felton, 2010; Gutstein & Peterson, 2005) and, as such, that equity is not taught divorced from content.

Although making programmatic changes (e.g., increasing the number of required credit hours) may be difficult due to state or university mandates, it is imperative to enhance communication and the development of relationships across programs in ways that value the contributions and expertise of different faculty (Musanti, Marshall, Ceballos, & Celdón-Pattichis, 2011). This enhanced communication must focus on developing genuine and shared understandings (Musanti et al., 2011) and common language about how to model, as well as help PSTs develop, equitable pedagogy. For example, MTEs and mathematicians might come together to learn from each other about how mathematics can be taught in ways that put decision making and the critiquing and transforming of injustices at the forefront of learning mathematics (Aguirre, 2009).

Undertaking this focus on equity needs support. At the institutional level, teacher educators need support from administrators to ensure that this work is valued within a teacher educator's workload. Across institutions, teacher educators need to share more resources that can be used within courses, including examples from expert teachers who integrate equity within their practice (e.g., Quintos, Civil, & Torres, 2011). Finally, more efforts from individual institutions that have transformed and enhanced programs of teacher preparation, such as those described by Brisk (2008) and Darling-Hammond (2006), should be disseminated.

Directions for Future Research

To gain a thorough understanding of the challenges faced by MTEs who teach through a lens of equity and how they resolve various challenges to such a stance, an in-depth examination of these MTEs' instructional practices is warranted. In addition, studies that consider MTEs' characteristics (e.g. seniority status; gender, race, cultural, and/or linguistic backgrounds; geographic locations; institutional focus [research intensive vs. teaching]) and how those characteristics may pose different challenges and resolution strategies are needed. Future studies might also consider similarities and differences in the challenges and resolutions faced by teacher educators across disciplines. We encourage continued dialogue and research in these areas.

Note

[1] We use the term teachers to refer to both practicing teachers of mathematics and those individuals preparing to become mathematics teachers.

References

Aguirre, J. M. (2009). Privileging mathematics and equity in teacher education: Framework, counter-resistance strategies, and reflections from a Latina mathematics educator. In B.

Greer, S. Mukhopadhyay, A. B. Powell, & S. Nelson-Barber (Eds.), *Culturally responsive mathematics education* (pp. 295–319). New York: Routledge.

Banks, C. A. M., & Banks, J. A. (1995). Equity pedagogy: As essential component of multicultural education. *Theory Into Practice, 34*, 152–158. doi:10.1080/00405849509543674

Bartell, T. G. (2011). Learning to teach mathematics for social justice: Negotiating social justice and mathematical goals. *Journal for Research in Mathematics Education, 41*, 5–35. Retrieved from http://www.nctm.org/publications/toc.aspx?jrnl=JRME&mn=6&y=2010

Brady, R. (2005). *Learning to stop, stopping to learn: Embarking on the contemplative learning path*. Retrieved from http://www.mindfuled.org/articles/

Brisk, M. E. (2008). Program and faculty transformation: Enhancing teacher preparation. In M. E. Brisk (Ed.), *Language, culture, and community in teacher education* (pp. 249–266). New York: Routledge.

Brophy, J. (1999). Toward a model of the value of aspects of motivation in education: Developing appreciation for. . *Educational Psychologist, 34*, 75–85. doi:10.1207/s15326985ep3402_1

Butin, D. W. (2007). Justice-learning: Service-learning as justice-oriented education. *Equity and Excellence in Education, 40*, 177–183. doi:10.1080/10665680701246492

Cochran-Smith, M., Fieman-Nemser, S., McIntyre, D. J., & Demers, K. E. (Eds.). (2008). *Handbook of research on teacher education: Enduring questions in changing contexts* (3rd ed.). New York: Routledge.

Cochran-Smith, M., & Zeichner, K. M. (Eds.). (2005). *Studying teacher education: The report of the AERA panel on research and teacher education*. Mahwah, NJ: Lawrence Erlbaum Associates.

Darling-Hammond, L. (Ed.). (2006). *Powerful teacher education: Lessons from exemplary programs*. San Francisco: Jossey-Bass.

Dettner, P. (2006). New Blooms in established fields: Four domains of learning and doing. *Roeper Review, 28*(2), 70–78. doi:10.1080/02783190609554341

Ensign, J. (2005). Helping teachers use students' home cultures in mathematics lessons: Developmental stages of becoming effective teachers of diverse students' diversity. In A. J. Rodriguez & R. S. Kitchen (Eds.), *Preparing mathematics and science teachers for diverse classrooms* (pp. 225–242). Mahwah, NJ: Lawrence Erlbaum Associates.

Felton, M. D. (2010). Is math politically neutral? *Teaching Children Mathematics, 17*(2), 60–63. Retrieved from http://www.jstor.org/stable/41199594

Flores, A. (2007). Examining disparities in mathematics education: Achievement gap or opportunity gap? *The High School Journal, 91*, 29–42. doi:10.1353/hsj.2007.0022

Furman, G. C., & Shields, C. M. (2005). How can educational leaders promote and support social justice and democratic community in schools? In W. A. Firestone & C. Riehl (Eds.), *A new agenda for research in educational leadership* (pp. 119–137). New York: Teachers College Press.

Gillespie, D., Ashbaugh, L., & DeFiore, J. (2002). White women teaching White women about White privilege, race cognizance, and social action: Toward a pedagogical pragmatics. *Race, Ethnicity, and Education, 5*, 237–253. doi:10.1080/1361332022000004841

Glaser, B. G., & Strauss, A. L. (1967). *The discovery of grounded theory: Strategies for qualitative research*. Chicago, IL: Aldine.

Gordon, J. A. (2006). Assigned to the margins: Teachers for minority and immigrant communities in Japan. *Teaching and Teacher Education, 22*, 766–776. doi:10.1016/j.tate.2006.04.028

Guilaume, A. M., & Kirtman, L. (2010). Mathematics stories: Preservice teachers'

images and experiences as learners of mathematics. *Issues in Teacher Education, 19*, 121–143. Retrieved from http://www1.chapman.edu/ITE/public_html/ITESpring10/14guillaume&kirtman.pdf

Gutiérrez, R. (2008). A "gap-gazing" fetish in mathematics education? Problematizing research on the achievement gap. *Journal for Research in Mathematics Education, 39*, 357–364. Retrieved from http://www.jstor.org/stable/40539302

Gutiérrez, R. (2009). Embracing the inherent tensions in teaching mathematics from an equity stance. *Democracy and Education, 18*(3), 9–16. Retrieved from ERIC database. (EJ 856292)

Gutiérrez, R. (2013). Why (urban) mathematics teachers need political knowledge. *Journal of Urban Mathematics Education, 6*(2), 7–19. Retrieved from http://ed-osprey.gsu.edu/ojs/index.php/JUME/article/view/223/148

Gutstein, E. (2006). *Reading and writing the world with mathematics: Toward a pedagogy for social justice*. New York: Routledge.

Gutstein, E., Middleton, J. A., Fey, J. T., Larson, M., Heid, M. K., Dougherty, B., . . . Tunis, T. (2005). Equity in school mathematics education: How can research contribute? *Journal for Research in Mathematics Education, 36*, 92–100. Retrieved from http://www.jstor.org/pss/30034826

Gutstein, E., & Peterson, B. (2005). Introduction. In E. Gutstein & B. Peterson (Eds.), *Rethinking mathematics: Teaching social justice by the numbers* (pp. 1–6). Milwaukee, WI: Rethinking Schools.

Han, H. S., Vomvoridi-Ivanovic, E., Jacobs, J., Karanxha, Z., Lypka, A., & Feldman, A. (2014). Culturally responsive teaching in higher education: A collaborative self-study. *Studying Teacher Education, 10*, 290–312. doi:10.1080/17425964.2014.958072

Harber, C., & Serf, J. (2006). Teacher education for a democratic society in England and South Africa. *Teaching and Teacher Education, 22*, 986–997. doi:10.1016/j.tate.2006.04.018

Herbel-Eisenmann, B., Bartell, T. G., Breyfogle, M. L., Bieda, K., Crespo S., Dominguez, H., & Drake, C. (2013). Strong is the silence: Challenging interlocking systems of privilege and oppression in mathematics teacher education. *Journal of Urban Mathematics Education, 6*(1). Retrieved from http://ed-osprey.gsu.edu/ojs/index.php/JUME/article/view/212

Jacobsen, L. J., Mistele, J., & Srirman, B. (Eds.). (2012). *Mathematics teacher education in the public interest: Equity and social justice*. Charlotte, NC: Information Age.

Jagger, S. (2013). Affective learning and the classroom debate. *Innovations in Education and Teaching International, 50*, 38–50. doi:10.1080/14703297.2012.746515

Kitchen, R. S. (2005). Making equity and multiculturalism explicit to transform mathematics education. In A. J. Rodriguez & R. S. Kitchen (Eds.), *Preparing mathematics and science teachers for diverse classrooms* (pp. 33–60). Mahwah, NJ: Lawrence Erlbaum Associates.

Krathwohl, D. R. (2002). A revision of Bloom's taxonomy: An overview. *Theory Into Practice, 41*(4), 212–218. doi:10.1207/s15430421tip4104_2

Ladson-Billings, G. (1995). But that's just good teaching! The case for culturally relevant pedagogy. *Theory Into Practice, 34*, 159–165. doi:10.1080/00405849509543675

Ladson-Billings, G. (2005). Is the team all right? Diversity and teacher education. *Journal of Teacher Education, 56*, 229–234. doi:10.1177/0022487105275917

Landsman, J. (2011). Being White: Invisible privileges of a New England prep school girl. In J. Landsman & C. W. Lewis (Eds.), *White teachers/diverse classrooms: Creating inclusive schools, building on students' diversity, and providing true educational equity* (pp. 11–23). Sterling, VA: Stylus.

McLeman, L., & Vomvoridi-Ivanovic, E. (2012). Understanding the practices of mathematics

teacher educators who focus on issues of equity. *Journal of Research in Mathematics Education, 1*(3), 278–300. doi:10.447/redimat

Moll, L., Amanti, C., Neff, D., & González, N. (1992). Funds of knowledge for teaching: Using a qualitative approach to connect homes and classrooms. *Theory Into Practice, 31*, 132–141. doi:10.1080/00405849209543534

Murphy, J., & Hallinger, P. (1989). Equity as access to learning: Curricular and instructional treatment differences. *Journal of Curriculum Studies, 21*, 129–149. doi:10.1080/0022027890210203

Musanti, S. I., Marshall, M. E., Ceballos, K., & Celdón-Pattichis, S. (2011). Situating mathematics professional development: A bilingual teacher and researchers' collaboration. In K. Téllez, J. Moschkovich, & M. Civil (Eds.), *Latinos and mathematics education: Research on learning and teaching in classrooms and communities* (pp. 215–232). Greenwich, CT: Information Age.

National Council of Teachers of Mathematics. (2000). *Principles and standards for school mathematics* (3rd ed.). Reston, VA: National Council of Teachers of Mathematics.

Nieto, S. (2010). *Language, culture, and teaching: Critical perspectives*. New York: Routledge.

Philipp, R. A. (2007). Mathematics teachers' beliefs and affect. In F. K. Lester Jr. (Ed.), *Second handbook of research on mathematics teaching and learning* (pp. 357–218). Reston, VA: National Council of Teachers of Mathematics.

Quintos, B., & Civil, M., with Torres, O. (2011). Mathematics teaching with a vision of social justice: Using the lens of communities of practice. In K. Téllez, J. Moschkovich, & M. Civil (Eds.), *Latinos and mathematics education: Research on learning and teaching in classrooms and communities* (pp. 233–257). Greenwich, CT: Information Age.

Raymond, A. (1997). Inconsistency between a beginning elementary school teacher's mathematics beliefs and teaching practice. *Journal for Research in Mathematics Education, 28*, 550–576. Retrieved from http://www.jstor.org/stable/749691

Rodriguez, A. J. (1998). Strategies for counterresistance: Toward sociotransformative constructivism and learning to teach science for diversity and for understanding. *Journal of Research in Science Teaching, 35*, 589–622. doi:10.1002/(SICI)1098-2736(199808)35:6<589::AID-TEA2>3.0.CO;2-I

Strutchens, M., Bay-Williams, J., Civil, M., Chval, K., Malloy, C. E., White, D. Y., . . . Berry, R. Q. (2012). Foregrounding equity in mathematics teacher education. *Journal of Mathematics Teacher Education, 15*, 1–7. doi:10.1007/s10857-011-9202-z

Taylor, E., & Kitchen, R. S. (2008). Doctoral programs in mathematics education: Diversity and equity. In R. Reys & J. Dossey (Eds.), *U.S. doctorates in mathematics education: Developing stewards of the discipline* (pp. 111–116). Washington, DC: Conference Board of the Mathematical Sciences.

Villegas, A. M. (2007). Dispositions in teacher education: A look at social justice. *Journal of Teacher Education, 58*, 370–380. doi:10.1177/0022487107308419

Villegas, A. M., & Lucas, T. (2002). *Educating culturally responsive teachers: A coherent approach*. Albany, NY: State University of New York Press.

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.

Zeichner, K. M. (2009). *Teacher education and the struggle for social justice*. New York: Routledge.

Information on the California Council on Teacher Education

Founded in 1945, the California Council on the Education of Teachers (now the California Council on Teacher Education as of July 2001) is a non-profit organization devoted to stimulating the improvement of the preservice and inservice education of teachers and administrators. The Council attends to this general goal with the support of a community of teacher educators, drawn from diverse constituencies, who seek to be informed, reflective, and active regarding significant research, sound practice, and current public educational issues.

Membership in the California Council on Teacher Education can be either institutional or individual. Colleges and universities with credential programs, professional organizations with interests in the preparation of teachers, school districts and public agencies in the field of education, and individuals involved in or concerned about the field are encouraged to join. Membership entitles one to participation in semi-annual spring and fall conferences, subscription to *Teacher Education Quarterly* and *Issues in Teacher Education*, newsletters on timely issues, an informal network for sharing sound practices in teacher education, and involvement in annual awards and recognitions in the field.

The semi-annual conferences of the California Council on Teacher Education, rotated each year between sites in northern and southern California, feature significant themes in the field of education, highlight prominent speakers, afford opportunities for presentation of research and discussion of promising practices, and consider current and future policy issues in the field.

For information about or membership in the California Council on Teacher Education, please contact: Alan H. Jones, Executive Secretary, California Council on Teacher Education, Caddo Gap Press, 3145 Geary Boulevard, PMB 275, San Francisco, California 94118; telephone 415/666-3012; email <caddogap@aol.com>; website <www.ccte.org>.

The next semi-annual conference of the California Council on Teacher Education will be:

March 31-April 2, 2016, Sainte Claire Hotel, San Jose

Officers of the California Council on Teacher Education

Elected Officers

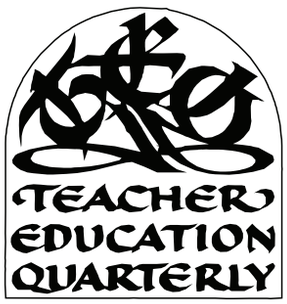
President - Juan Flores, California State University, Stanislaus (2016)
President-Elect - Sharon Russell, CalStateTEACH (2016)
Vice-President for AACTE - Lettie Ramirez, California State University, East Bay (2016)
Vice President for ATE - Deborah Hamm, California State University, Long Beach (2016)
Past President - Cynthia Grutzik, California State University, Long Beach (2016)

Elected Members of the Board of Directors

Eric Engdahl, California State University, East Bay (2017)
Cynthia Geary, California State Polytechnic University, Pomona (2018)
Keith Howard, Chapman University (2016)
Virginia Kennedy, California State University, Northridge (2017)
Karen Lafferty, Claremont Graduate University & San Diego State University (2018)
Zaida McCall-Perez, Holy Names University (2016)
Lyn Scott, Humboldt State University (2017)
Jared Stallones, California State University, Long Beach (2018)
Mona Thompson, California State University, Channel Islands (2017)

Editors and Staff

Editor of *CCNews* - Jo Birdsell, National University
Co-Editors of *Issues in Teacher Education* - Bradley Porfilio, California State University, East Bay & Richard Kahn, Antioch University Los Angeles
Editor of *Teacher Education Quarterly* - Kip Tellez, University of California, Santa Cruz
Executive Secretary - Alan H. Jones, Caddo Gap Press



Published by Caddo Gap Press for the California Council on Teacher Education each winter, spring, summer, and fall.

Now in its fourth decade of publication, ***Teacher Education Quarterly*** has emerged as the leading scholarly publication in the teacher education field. Each volume focuses on a major current topic in the preparation, study, and training of education professionals, in articles written by the top researchers and practitioners in their fields from across the country.

Teacher Education Quarterly
Subscription Form

❑ Please enter my subscription to ***Teacher Education Quarterly*** ($100 for individuals; $200 for institutions; $50 for students) for the next four issues (if outside U.S., add $60 postage)

Name _____

Address _____ City/State/Zip _____

E-mail address _____

❑ Check enclosed (Payable to Caddo Gap Press)

Charge to: ❑ Visa ❑ Mastercard

Card # _____ Exp. Date _____

Signature _____

Mail Completed form to **Caddo Gap Press**
3145 Geary Boulevard, PMB 275, San Francisco, California 94118, U.S.A.
P 415/666-3012; E info@caddogap.com; W www.caddogap.com

Subscriptions may also be ordered on line via the website above.