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Editors

A Message from the Editors...

The Fall 2012 issue of The Ohio Journal of Teacher Education has an open theme. The articles cover a range of topics of interest to teacher educators such as family empowerment, inquiry-based mathematics, curricular conversations, the achievement gap, reflective responses and action in mathematics instruction.

The first article by Murray, Dimling, Straka and Arton-Titus examined how Project SPEAK aimed to empower families with children with exceptionalities by providing opportunities for them to present their stories to pre-service educators, network, and mentor other parents. Themes from trained participant focus groups are presented and implications for teacher preparation are discussed.

The second article by Douglass explored inquiry-based teaching that is affirmed in the new Common Core State Standards (CCSS, 2011) in mathematics through the eight Standards of Mathematical Practice. As suggested in this article, this pedagogical change looks like: promoting high student expectations, encouraging student justification of their mathematics thinking, using good questions techniques, and implementing rich problems that, in their nature, incorporate multi-standards and clusters. Using inquiry-based mathematics will not only help the teachers understand their students better, it will also help the students understand how mathematics is used outside the classroom.

The next article by Bender-Slack, Miller, Imwalle and Stokes discussed the intersection of curriculum as conversation and critical literacy, we discuss a methods course where preservice teachers were encouraged to consider critical literacy as a way to open up spaces in their classrooms for dynamic and transformative classroom talk.

The fourth article by Johnson and Hollins detailed the academic standards-based and culturally responsive teaching research have shown that educators can no longer tolerate low achievement scores, student and teacher boredom, high dropout rates, and apathy toward learning and school by many students. Highly effective teachers communicate with and understand their students by creating contexts and classroom environments in which power is shared with students. This investigation employed: (1) thematic content analysis of national level documents; and (2) interviews with parents, school personnel and students to identify, describe, and provide insight into classroom and school practices that accompany high pass rates on state mandated proficiency tests. In addition, conclusions and implications for high quality educators wishing to improve their students' achievement and close the achievement gaps are provided.

The following article by McCormack focused on two groups of teacher candidates within multiple diverse field experiences and to what extent did the teacher candidates' comments and responses change or remain consistent during their successive field experiences. Results of this study revealed that immersion in a culturally and linguistically diverse field placement provided a window into the complex nature of teacher candidates learning processes and expanded current perceptions of teaching in a diverse educational setting.

The final article by Rice and McKeny investigate mathematics instruction through action research and year-long professional development in Better Mathematics Through Literacy. Early childhood teachers from thirty-three Appalachian Ohio counties became more integrated, contextual, and constructivist in their mathematics instruction. Action research offers a conduit for teacher change because it is the lived example that hands-on, story-rich, experiential, learner-centered, multiple-ways-to-find-a-solution mathematics instruction works.

We hope you enjoy this issue of the journal, and we hope you find these articles and book review to be informative and helpful in your various roles preparing teacher educators.

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Editorial Board

Family Empowerment: Engaging Pre-Service Teachers

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Lisa M. Dimling, Ph.D. *Tabatha Arton-Titus, M.Ed.*

Introduction

The arrival of a new baby is one full of expectation, hope, and excitement for parents. It is the day they may have dreamed about for years. Will the baby be an engineer? Who will the baby look like? Will he/she play sports? Be a dancer? A doctor? Visions for this new baby are endless. In a quick moment, when parents are told that the perfect baby that they dreamed about has a disability, their world is changed forever. Parents are never fully prepared for the journey that is to follow. Parents describe this feeling as one of helplessness and despair (Murray & Curran, 2008). In order for parents to move beyond these feelings, navigate the system, and meet the needs of their child with a disability they require supports, strategies to access resources, advocacy skills, and empowerment. For a parent of a child with a disability, being "empowered" means that the parent can take control of his or her life, develop a plan and then put the plan into place to access and effectively utilize services to achieve the desired outcomes for their family and their children (Zhang & Bennett, 2003). In order to define the construct, attention is given to the characteristics that make up empowerment. These characteristics across disciplines include but are not limited to: (a) having access to information and resources (choice), (b) having decision-making power, (c) having hope, (d) seeing things differently and learning to think critically, (e) feeling part of a group, (f) effecting change in one's life and one's community, and (g) increasing one's positive self-image (Dunst, 2002; Murray, Christensen, Umbarger, Rade, Aldridge, & Niemeyer, 2007; Murray, Curran, & Zellers, 2008; Murray &

Curran, 2008; Summers, Hoffman, Marquis, Turnbull, Poston, & Nelson, 2005).

To provide opportunities for parents to grow and become empowered, Bowling Green State University (BGSU) faculty in the School of Intervention Services wrote and received a Parent Empowerment grant ($15,000) from Lucas County Board of Developmental Disabilities LCBDD). The grant met LCBDD's mission of providing opportunities for parent empowerment, BGSU's objective to teach candidates in the College of Education and Human Development the importance of parent/professional partnerships and the grant was aligned with Ohio's Family and Children First (OFCF) Family Engagement Committee's goal to further family engagement in advocacy, and the utilization of resources. The grant was a win-win endeavor on many levels.

The grant was titled Project SPEAK (Supporting Parents through Empowerment, Advocacy, and Knowledge) and had three components. The first empowerment component was for family members to participate on a panel and tell their story to university students studying in the field of teacher education. The family story provided details about parenting a child with a disability and the impact on their family. Since this activity could be a difficult task for parents, they were asked to attend an orientation workshop to discuss strategies and ideas on how to present their family stories to the students. The purpose of the family panel was to provide insight into the family's experience and to relate families' inclusion experiences both at home and in the school settings. The parent orientation workshop also included information on successful parent-

professional partnerships and characteristics of families as partners. In order to help parents construct their presentation for the panel, parents were provided with a presentation outline. The outline included components that asked parents to describe their child and family, diagnosis experience, process of locating supports, brief history of educational experiences, decision-making process, examples of good partnerships and characteristics of exemplary teachers, strategies for forming partnerships with professionals, goals for child, and family approach to improving child's quality of life.

The second component of the project included the opportunity for community parents to facilitate and participate in six parent-to-parent support and networking sessions across the urban county. The sessions targeted un-served or under-served parents of children with special needs and were held in community centers. In order to recruit for the sessions, flyers in both Spanish and English were disseminated to all county public and community schools, faith-based schools, community agencies, and private providers including the County Children Services Board. Interpreters and Spanish and Arabic speaking individuals were available as needs were identified. The informal 90-minute sessions consisted of a keynote speaker informally discussing a session topic, followed by the dissemination of resources and fellowship among parents. Topics addressed in the sessions were identified by parent survey and included the following: (a) finding community resources; (b) special education law; (c) advocacy; (d) children's programming; (e) dealing with difficult behaviors; and (f) visioning and preparing for your child's future.

Finally, the third component was mentorship for the parents which was provided at the parent-to-parent support and networking sessions by trained parent mentors who work for LCBDD. Project SPEAK parents informally mingled with attendees to assist in identifying parent needs and to direct them to appropriate resources, thereby increasing parent access to valuable local resources. These parent partners served as direct liaisons to the county disability agency and provided information about eligibility, services, and supports to individuals attending the sessions.

Literature Review

While there is limited recent research that encompasses all aspects of what makes parents feel empowered, several researchers have attempted to discuss individual aspects of empowerment. For instance, the value of hope in the psychological well being of parents of a child with a disability is demonstrated by parents who perceive goals as attainable and who find alternative routes to attaining those goals had more positive hope agency (Lloyd & Hastings, 2009). As such, parents with high hope agency had children with less negative behaviors and increased family well-being overall (Lloyd & Hastings, 2009). This gives insight into the notion that parents who have a strong knowledge base for making choices in decision-making feel more in control, thus more empowered. Furthermore, parents who participate in decision-making gain strength and confidence in power sharing between parents and professionals, providing parents with a greater sense of control and direction over their child's health and education (Pinkus, 2005; van Haren & Fielder, 2008).

Hearing the personal experiences by parents of children with exceptionalities can enable future teachers to gain essential insight on the importance of parent participation within the context of special education (Murray & Curran, 2008). These stories can have the power to impact pre-service teachers beyond the classroom by building bridges between parents and professionals (Forlin & Hopewell, 2006;Murray & Curran, 2008). Sharing stories not only builds parental confidence and self-image, but also allows them to become change agents in their community (Giovacco-Johnson, 2009).

Family empowerment can also be supporting through opportunities for networking with other parent, providing avenues for information exchange. When parents and caregivers possess the information needed to make decisions, they are more able to provide and seek out the services and supports to their children need (Turnbull, Turnbull, Erwin, & Soodak, 2006). Thus, networking among families can enhance critical thinking, and a feeling of being part of a group (Kirby, Edwards & Hughes, 2008). Often parents of children with disabilities feel alone, undervalued, and misunderstood (Hodge & Runswick-Cole, 2008; Pinkus, 2005). In addition, Brett (2004) suggests that by perceiving parents as experts and allowing them a voice we can "legitimize their perspective," (p. 13) and help parents to take steps towards locating options for assistance and support. Furthermore, when parents of children with exceptionalities are viewed as "service providers" because of the valuable information they possess about their child, they are

able to provide each other and professionals with knowledge and support (Brett, 2004). Therefore, giving parents the opportunity to gain information, share experiences, and support each other enhances overall parent empowerment (Brett, 2004; Giovacco-Johnson, 2009; Kirby et al., 2008).

Given the need for parent empowerment and the positive effects it can have on parents, pre-service teachers, and ultimately students, the Ohio's Family and Children First (OFCF) council set their fundamental responsibility to engage and empower families. This agency is responsible for coordinating and streamlining government services for Ohio's families. The partnership involves state and local agencies, communities, and families, operates at the state level and in each of Ohio's 88 counties. Each local council includes at least three family representatives who do not work for any council agencies. In 2009, the OFCF established a Family Engagement Steering Committee, charged with statewide strategic planning to further family engagement in advocacy, utilization of resources, dialogue with the OFCF, and systems change. The Steering Committee's research revealed Ohio's strengths in resource provision are masked by the families' lack of awareness of how to navigate services and supports available (Ohio Family and Children First, 2010). Recommendations of the Steering Committee centered on five areas (1) networking parent advocacy; (2) improving communication; (3) creating leadership opportunity; (4) improving parent-professional relationship; and, (5) increasing participation in policy decisions.

The process described by OFCF of empowerment refers to a continuum of experiences that offer the individual opportunities to utilize their own competencies and learn new information and skills in order to develop new competencies (Summers, Hoffman, Marquis, Turnbull, Poston, & Nelson, 2005). Given the recommendations of the OFCF for engaging and empowering parents, and the research on parent empowerment, the researchers of this study set forth to investigate three different strategies for potential parent empowerment. This study investigated the impact of the following strategies related to empowerment for parents of children with disabilities: (a) parents telling their family story to pre-service teacher education students; (b) parents participating in local social networking opportunities; and, (c) parents providing support to other parents of children with disabilities in the community.

Method

Twenty-six different parents of children with disabilities participated in panels. Each panel consisted of 3-4 parents of children with differing disabilities. During the academic year, parent panels presented to a total of 17-teacher preparation courses (both graduate and undergraduate), including students in special education, general education, school psychology, administration, and physical education. Each panel had a faculty facilitator who had worked with the parents in the orientation workshop. The panels lasted for 60-90 minutes and were provided at the request of each university professor. After each panel, students were afforded time for questions and comments.

Prior to each of the focuIn order to assess the effectiveness of the three foci of Project SPEAK, two focus groups were conducted after the conclusion of the academic year and all parent panels had been completed. Both focus groups took place at a community agency and consisted of a one-hour

Participants

The parents involved in this group discussions, each participant was asked to complete a short demographics questionnaire. A total of 17 participants took part in the discussion, the majority of which were female (n=15). Participants ranged in age from 26 to over 56, with the average range of 41-50 years. Most of the participants were Caucasian (n=14), with one identifying as African American, one as Hispanic, and one not reporting an ethnicity. All participants were either married or had a partner. The average estimated total household income was reported at $40,000.

The parents involved in this focus group had spoken on a total of 17 panels during the year. In addition, parents had been given the opportunity to facilitate or attend the parent-to-parent support and networking sessions throughout the year. Over 70 parents of children with disabilities from across the county attended these sessions All participants (n=17) had at least one child with a disability and some had more than one (n=3). Ages of children with a disability ranged from 3.5 years to 30 years, with a mean age of 10.5 years. There were a variety of disabilities represented, including: Autism (n=5); ADHD (n=5); Down Syndrome (n=4); Oppositional

Defiant Disorder (n=3); Multi-handicapped (n=2); Anorexia (n=1); Bipolar Disorder (n=1); Obsessive Compulsive Disorder (n=1); Pervasive Developmental Disorder-Not Otherwise Specified (n=1); Occupational Therapy (n=1); Processing Disorder (n=1); Sensory (n=1); Speech-Language Pathology (n=1); and, Williams Syndrome (n=1). The majority (n=15) of parents also had at least one additional child who did not have any reported disability.

Results

The thematic analysis for each of the two focus group sessions resulted in two common themes between the two groups of parents. Themes related to parent empowerment included: (a) building positive relationships with pre-service teachers; and (b) gathering knowledge and resources from other parents' experiences.

Theme One: Relationship-Building with Pre-Service Teachers

Parents described the opportunity that panels provided as building bridges between parents and emerging professionals. Many parents had experience with teachers in the past in which educators did not seem to understand the parents' perspectives. The desire to provide a personal connection to pre-service educators and to positively influence perceptions of families of children with disabilities was a motivating factor for Project SPEAK parents. Panelists believed that their story helped educators as future partners. "*And the opportunity to make a difference with future teachers was, to me, tremendous.*"

> *I think that was the big thing for us is that I wanted them to know that we were not there to fight them [teachers], that we wanted it to work, that we wanted to be successful for our kids and the teachers and for it to be a positive experience for everyone and we have so much to offer we know a lot about our kids and we have these strategies.*

Some parents reported that it was not easy to tell their family story, but that the manner with which their story was received by university students made the experience worthwhile. Parents stated that they felt empowered because of the generative nature of relating their family story. Their hope was that future educators may approach parent-professional partnership in a different manner once they had heard stories from the families' perspectives.

> *To be able to get out there and share some of my horror stories in the hope that it would be changing that in the future. That maybe the road will be a bit easier for the next family coming through and that these teachers will hopefully have a better understanding and some skills and some tools to hopefully make their job easier.*

As parent panelists expressed their own perceptions of teachers, participants commonly related characteristics of exceptional teachers that met or exceeded expectations.

> *I thought it was really cool how we got to share with these teachers to be our experiences with the teachers that did the right thing - what made an exceptional teacher. Maybe they never knew that it was that little thing.*

When describing a professional with whom she had a well-functioning partnership, one parent stated, "*I just don't think teachers know how much we appreciate those extra 10 minutes that they give us here or there and what a difference that can make to a parent.*"

Parent participants cited positive changes in pre-service teacher perceptions as a result of the panels, illuminating the importance of relating their story and connecting in a positive manner. One parent reflected on the success of panel presentations in altering student perceptions of families stating, "*... just to have that chance to get in there and try to open doors for future generations was the big reason why I wanted to do this was changing hearts and minds and I think we did.*" The university students provided parent panelists with immediate feedback after sessions; focus groups revealed that parents sensed great student appreciation at having the chance to hear first-hand accounts of family stories.

> *I felt like I was baring my soul to these people...it's really hard to do that and I felt very vulnerable while I was doing it but afterwards when you see these comments come back, it's so worthwhile...you put yourself out there and then to see it be well received, I mean that's what it's really about at the end of the day.*

Theme Two: Gaining Knowledge and Resources from Other Parents

Another consistent theme that emerged from focus groups was parent knowledge gained from other family members through panel presentations, social networking opportunities, and informal conversations. When asked about increased access to resources, one parent replied, *"Learning from other parents helped me to get additional services for my son that I didn't know existed until I talked to another mom."* This sentiment was echoed by several parents who described gaining specific strategies from interactions with other parents and the empowerment that results from new knowledge.

Parents found that their own awareness of useful community resources as well as successful interventions increased as a result of the project, contributing to their sense of empowerment. Because Project SPEAK parents of children with disabilities lived within the same county, their children were often eligible for access to common resources, practitioners, and supports. A few parents shared the significance of locating qualified and understanding practitioners and the value of other parents' opinions in selecting professional partners. *"...somebody [another parent] already has an idea or somebody can tell you to try this doctor or don't try that doctor and that's priceless."* Beyond informal sharing that occurred among participating parents, Project SPEAK networking activities were designed to circulate local service materials. Focus groups revealed that these flyers and brochures not only aided new parents in locating services, but increased awareness among Project SPEAK families as well. *"There was a table of information and resources [at Parent Networking sessions] for all the parents or people attending to take home. Every time it was a different speaker so that in itself was a resource."*

A sense of community between parents helped them to recognize the power of connecting with other parents who share similar experiences. One parent describes the personal benefit of participation in panel presentations as awareness of other parents as resources for advice.

> *As far as it has helped me personally... it's the different social things we've had, the connection of talking to other parents, and not being alone in this. I don't ever get the sense that it was my child is worse than yours. It's more this*

> *is my issue today, can you talk me through it and the collective idea that somebody's been there, done that.*

Although most parents' panel stories reflected that a support system of family or friends was available to the family, Project SPEAK interactions illuminated the value of parent-to-parent support. The counsel offered through this type of communication is unique in many parents' eyes, as it provides a means for connecting on issues only experienced by other parents of a child with a disability. As focus group participants discussed sensing group cohesion among parent, one described this unique connection.

> *I don't think anybody understands you better than another parent of a child with a disability. You can talk to your friends or you can talk to your family about different things that you are going through and they just don't quite understand as much as another parent of a child with a disability does.*

Many parents also reported the empowerment that came through having opportunities to share with parents who are new to locating resources for their child with a disability. Initially, Project SPEAK parents felt empowered by working to locate families for participation in the Networking sessions. *"We were inviting people in from the area, the neighborhoods, found a lot of parents hadn't been connected, hadn't known about a lot of services that existed."* The parent-to-parent support efforts empowered SPEAK parents as prior experiences allowed them to guide parents who were newer to parenting a child with a disability. *"I have learned some new things...how to get resources and then to share that with others was a really big deal to me."* Parents appeared to feel more empowered when information they gathered may be shared with other parents. A parent story from a parent-to-parent support interaction nicely illustrates this notion.

> *There was one mom that showed up who was just starting to go...Her daughter was like 4, and showing some obsessive compulsive, pretty severe behaviors and she didn't know where to go or where to start. And within the matter of 5 minutes, everyone was just spewing stuff at her left and right and somebody finally just started taking*

notes and gave her a notebook page sheet filled with, "Here's where to go; here's what to do; you're not alone." It was empowering just for me to see what we were there to deliver…

Discussion

The focus group findings clearly describe parents' sense of empowerment gained through participation in Project SPEAK. Parent panels became an outlet for parents to relate their family story, which contributed to parental sense of connection with future educators. Parents realized that pre-service educators were interested in the family's story as a means of better acknowledging the family perspective in future interactions with families of students with disabilities. As parents sat on panels, university students provided positive feedback and asked clarifying questions, which allowed parents to produce change in student perceptions. The impact of parental interaction with pre-service teachers allowed parents to have hope that these students would graduate better equipped to work with families. In order to present their story in a positive approach, parents were also encouraged to think critically about their story, often reframing past experiences in a manner, which encouraged reflection in their audience. The relationships formed with both university students and other parents' increased parental self-confidence.

Networking events and informal interactions with other knowledgeable parents also had great impact on parent empowerment. SPEAK provided parents with access to information and resources, and as parents became aware of more community services, the family was presented with new choices. As decision-making power increased in relation to which services the family pursued, empowerment also increased. A sense of community existed among parents immediately, as participants reported that no parent understands like another parent raising a child with a disability. This camaraderie grew as parents shared resources and worked together to impact un-served and under-served parents in their community. Finally, the parent-to-parent support that SPEAK families provided was instrumental in their sense of empowerment. Trained parents were able to informally meet with attendees of Parent Network sessions and transfer valuable information. This built a sense of community among parents, whether they were new to raising a child with a disability or not. The help that Project SPEAK parents were able to extend to Network parents was invaluable in providing increased choice, hope, and change to the new families. This assistance, in turn, provided SPEAK parents with empowerment through increased positive self-image and hope for the future of other parents in their community.

Implications for Parents

In light of the Ohio Family and Children First Council's dedication to family engagement, Project SPEAK proved to be an avenue for empowering families. OFCFs findings reveal that Ohio is rich in services to families but families often struggle to navigate various systems (Ohio Family and Children First, 2010). By equipping parents with skills to support other parents and providing networking opportunities for parent advocacy, Project SPEAK increased family knowledge of resources. The parent-to-parent support component of SPEAK created a leadership opportunity for parents as trained parent partners, providing direct support to other family members of children with disabilities. Communication among parents and pre-service and actively serving professionals was increased through the parent panels and community networking events of SPEAK.

Overall, participants of Project SPEAK reported a sense of empowerment through positive interactions with pre-service teachers and by gathering new knowledge and resources from other parents. These findings are relevant to current statewide policies as OFCF organizations seek to find ways of educating parents to advocate for themselves and to advocate for other families (Ohio Family and Children First, 2010). The education that Project SPEAK parents received on trust-building and positive parent-professional partnerships may contribute to OFCFs strategic planning priority of family training in the area of partnering with professionals.

Implications for Professionals

The significance of parent/professional partnerships in education is clear in the laws, policies and professional guidelines for teachers. The Individuals with Disabilities Education Act (IDEA) as well as No Child Left Behind Act (NCLB) and various other government policies in the United States provide directives for parent involvement and parent/professional partnerships. Professional organizations such as The Council for Exceptional Children, and The National Association of Young Children as well as the

as well as the National Council for Accreditation of teacher Education (NCATE) emphasizes the need for strategies for parent professional partnerships to increase student academic success (Forlin & Hopewell, 2006).

Parent/professional partnerships have been credited with improving outcomes for children and contributing to a feeling of satisfaction for both parents and professionals (Forlin & Hopewell, 2006). Preservice candidates who have had opportunities to interact with families have greater chances of developing effective parent/professional partnerships and collaboration skills and are more likely to generalize these skills while in their teaching positions (Sheldon & Van Voorhis, 2004). When parents and professionals partner the outcomes for children with exceptionalities can be infinite (Turnbull, et.al.2006).

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Tabatha Arton-Titus, M.Ed. - Tabatha has over 15 years experience working with children and their families in the field of early childhood education. She also holds a Certificate in Autism Spectrum Disorders and she is also a parent of a child with an exceptionality.

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Inquiry-based Mathematics into Middle Grade Classrooms

Lisa Douglass, Ph.D

Research has shown that when teachers move towards an inquiry-based practice, a practice based on children's learning of mathematics with understanding, they are opening themselves to learning and growth in their own practice. The new Common Core State Standards (CCSS, 2011) in mathematics very much affirms inquiry-based teaching through the eight Standards of Mathematical Practice. The CCSS highly encourages teachers to think through pedagogical Standards while they are teaching the newly revised mathematical content. It requires both teachers and students to think differently about the nature of mathematics (Lampert, 1990). This inquiry type of teaching calls for an understanding of where each individual child is functioning at any given time (Ball, Hill & Bass, 2005; Beswick, 2006; Hiebert, 1997; NCTM, 2000). For teachers this pedagogy includes expertise in knowledge of mathematical ideas, skills of mathematical reasoning and communication, fluency with examples and terms, and thoughtfulness about the nature of mathematical proficiency (Ball, Hill, & Bass, 2005). This article includes a description of inquiry-based mathematics in middle grades, as well as four suggested applications of inquiry-based mathematics.

Why Inquiry-Based Mathematics?

The Association for Middle Level Education's asserts that middle grade curriculum should be challenging, exploratory, integrative, and relevant (AMLE, 2010). Inquiry-based teaching in the mathematics classroom follows the framework of AMLE, being student-centered in its nature, and allowing students to construct their own mathematical meaning through exploration, justification, and social interaction. Inquiry-based teaching is formed in constructivist principals. A constructivist approach is based on the premise that learning is most effective when "the learner is actively engaged in creating his or her own knowledge and understanding by connecting what is being learned with prior knowledge and experiences" (McCombs & Whisler, 1997). Many educators believe that people do not learn by having information transmitted to them, but by creating their own knowledge. While some are able to do this by listening to a lecture or reading a textbook, many others must have direct experiences and opportunities to talk about their ideas in order to understand what they learn. Therefore, when referring to inquiry-based teaching, the authors are referencing AMLE's framework and working within a constructivist approach.

There are different conceptions of what a positive middle grade classroom environment could look like. Is the ideal classroom one in which students are quiet and remain in their seats, following directions or listening to the teacher talk? Or, does it look more like a gathering of children who are actively engaged in learning, talking together, doing mathematics, and perhaps even having fun? The latter example is nontraditional, but it is the type of classroom advocated by mathematics standards, as well as current learning theories and cognitive research (Stepanek, 2000). In order for middle grade teachers to assist individual students in this inquiry-based process of learning, they need to have a good model of cognitive development in mathematics so they can understand each learner's conceptions (Booker, 1996; Association for Middle Level Education, 2011). Focusing on individual's

thinking may be unfamiliar to middle school teachers, yet focusing on children's thinking can cause teachers to re-conceptualize what they 'know' about children (Miller & Davis, 1992). Beswick (2006) states "it is perhaps not surprising that some teachers appear to believe that not all students can learn mathematics and thus place the responsibility for learning firmly with the students" (p. 18). Yet, this traditional pedagogy of "give and tell" leaves little room for student thought. When called upon in traditional classrooms, children are expected to tell the class what the teacher wanted them to learn rather than express their own thinking (Voigt, 1995). Additionally, administrators and school board members, if preoccupied with test scores, pressure teachers to emphasize basic skills such as rote computation and fact memorization.

National standards such as the National Council of Teachers of Mathematic's (NCTM) Principles and Standards for School Mathematics (2000) and the Common Core State Standards Initiative (CCSSI, 2010) maintain that teachers should encourage students to construct their own knowledge about mathematics. They clearly advocate for middle grade mathematics students to learn in a challenging, social, inquiry-based setting. "In such a community, the teacher helps the students learn from each other .... in addition, [the teacher] encourages them to raise questions, make conjectures, and validate their solutions" (NCTM, 2000). For middle grade mathematics pre-service teachers, this can be implemented in their education methods course. But what about the middle grade mathematics inservice teachers, for whom this might be quite a pedagogical change?

From past reform movements it is evident that teachers do not change their beliefs simply because it has been recommended; a powerful reason for change must be present for change to occur (Pajares, 1992; Gregoire, 2003). Research indicates that teachers' beliefs do not change much from the time they begin and complete pre-service education training programs. These beliefs are generally not influenced by readings or by being asked to apply findings of educational research (Stipek et al., 2001). Changing beliefs is difficult and occurs over long periods of time. Pajares (1992) commented, "People are adept at using evidence that would appear contradictory to a belief to support that same belief" (p. 307). Michele Gregoire's (2003) research helps to clarify this phenomenon. Her Cognitive-Affective Model of Conceptual Change begins with a presentation of a reform

message; in other words, teachers are presented with a strong message about mathematical reform, such as the NCTM's Standards for Mathematical Practice. For those who are traditional instructors, this message may be difficult to hear because it suggests that traditional mathematics instruction may be detrimental to students' comprehension. This threat is not necessarily adverse, as Gregoire stated, "For many traditional instructors, the message received threatens their professional identity and such a threat can motivate attitude change to occur" (p. 164). Additionally, Gregoire commented that the absence of this threat could lead to no change. If teachers believe they are not threatened, for example, they believe they are already implementing the standards, then there is no need to process the new information any further and they stop any future change in beliefs. Therefore, implementing inquiry-based teaching into middle school mathematics cannot be a one-day professional development suggesting change; rather, it is an ongoing, job-embedded learning process that takes place over a lifetime.

An important cognitive factor in most models of conceptual change is that, "some level of metacognitive awareness seems to be necessary for change" (Patrick & Pintrich, 2001, p. 130). Woolfolk Hoy, et al. (2006) state that beliefs are changed in the same way that conceptual change is induced - through cognitive dissonance. It is suggested, therefore, that professional development aimed at changing beliefs should be geared toward creating dissonance by offering experiences where the teachers' new understandings, from a teachers' perspective, conflict with their experiences as a student. The same should be applied to Hoy, et al. (2006) state that beliefs are changed in the same way that conceptual change is induced - through cognitive dissonance. It is suggested, therefore, that professional development aimed at changing beliefs should be geared toward creating dissonance by offering experiences where the teachers' new understandings, from a teachers' perspective, conflict with their experiences as a student. The same should be applied to preservice teachers; their coursework could be aimed more at creating conflict within themselves by offering experiences that may differ from their own experiences as students. Gregoire (2003) stated that in order for belief change to occur, researchers and institutions cannot just look at changing practices alone: To understand the process of change in teachers' subject-matter beliefs and practices, researchers must take into account teachers' emotional

and affective reactions when presented with messages that contradict their preexisting subject-matter beliefs (p. 150).

Fennema and Carpenter (1996) reported on studies that encouraged teachers to develop mathematical knowledge and a constructivist pedagogy by having them participate in workshops that reflected such principles. As the teachers learned these new constructivist pedagogies and learned the mathematics at a deeper level, they were better able to understand children's thinking. This new knowledge also led them to reflect more on their own teaching and learning processes. This work indicates, "As teachers learned mathematics, they changed their beliefs about the importance of making instructional decisions based on children's understanding and concurrently changed their instructional practices to more adequately reflect constructivist principles" (Fennema & Carpenter, 1996, p. 403). Next, the author suggests four ways in which these aspects of inquiry-based mathematics can be applied in middle schools, through: high expectations, justifications, good questioning techniques, and using "rich" problems.

Implementing Inquiry-Based Mathematics
1. High Expectations

In inquiry-based mathematics, the teacher must clearly communicate student roles and classroom expectations. Problems can be presented without an explanation of how to do them, and solutions may not be what was expected. In order for the classroom environment to create high-level thinkers, teachers must communicate clear expectations about what students will learn, how they will learn it, and what qualifies as good work (Resnick & Hall, 2003). Without this bigger picture of classroom culture, students become dependent on someone else to tell them what is good or not, and what to do next. "Only when children know what is expected and are able to assess their progress toward a set goal can they take responsibility for their own learning" (Resnick & Hall, 2003, p. 17). The Common Core State Standards advocate for teachers to have high expectations as they define their new Mathematics Standards to "Include rigorous content and application of knowledge through high-order skills" (Common Core State Standards Initiative, 2011).
2. Justifications

Many middle school students have little experience in an inquiry-based classroom; it is important

for teachers to guide to the students in communicating their justifications and to learn to talk mathematically. CCSSI's Standards for Mathematical Practice (2010) describe varieties of expertise that mathematics educators at all levels should seek to develop in their students. This includes, "Students explaining to themselves the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt" (Common Core State Standards Initiative, 2011).

Additionally, in an inquiry-based mathematics classroom, teachers are guiding their students to understand and use stated assumptions, definitions, and previously established results in constructing arguments. The students should be able to make conjectures and build a logical progression of statements to explore the truth of their conjectures. They should also justify their conclusions, communicate them to others, and respond to the arguments of others. As many have experienced, explaining a concept to others helps to solidify that knowledge for themselves.

Good Questioning Techniques

Ongoing feedback is necessary in supporting high expectations and challenging activities (Stepanek, 2000). When students are working on complex tasks and when they are responsible for determining the methods they use, they may feel uncertain or anxious. While some amount of uncertainty is necessary, students may also need occasional reassurance. For example, teachers might want to let students know that they are on the right track. At other times, teachers can redirect or refocus students by asking questions. Helping students to discover their own mistakes is much more effective than simply telling them what they have done wrong or the pieces they are missing (Stepanek).

Instead of giving all the mathematical knowledge, teachers pose questions, such as, "Who can explain Johnny's thinking?" or "Why would it make sense to do that?" This is a way of modeling thinking from the teacher, so that the students may eventually follow suit and share their thinking. Teachers are often co-learners with their students. Rather than presenting students with information and procedures, they should be appreciative and investigative audiences for students' ideas. In discussions, teachers should the students opportunities to talk to each other and to ask

each other questions rather than controlling the flow of conversation (Stepanek, 2000).

Mathematics teaching practice is not all about what the teacher knows or does not know about the content; it is on the teaching practice itself: being able to hear and interpret what the students are saying, being able to skillfully probe when the student is not clear, designing and posing a question, or pointing out a connection (Ball, Lubienski, & Mewborn, 2001). Teaching practice means planning and reflecting, as well as the moment-to-moment work of enactment in class.

4. Using "Rich" Problems

A way to integrate high expectations, justifications and good questioning into middle school mathematics teacher's practice is to use "rich" problems. That is, problems that will encourage a range of student thinking and questioning. One definition of these types of problems states, "Rich problems have multiple entry points, force students to think outside the box, may have more than one solution, and open the way to new territory for further exploration" (Middle School Portal for Math and Science Teachers, 2011). Lampert (1990) adds, "The most important criteria in picking a problem is that it be the sort of problem that would have the capacity of engaging all of the students in the class in making and testing mathematical hypotheses … setting the stage for the kind of zigzag between inductive observation and deductive generalization" (p. 38).

One example of how a rich problem can be implemented is as follows. A sixth grade mathematics teacher is working on the concept of area. This problem is found in the math book, "Calculate the area of the following rectangle." In order to require more than recall of a fact or reproduction of a skill, the teacher might change the problem to the following, "I want to make my garden in the shape of a rectangle. I have 30 meters of fence for my garden. What might be the area of my garden?" Several different approaches can be utilized to solve this problem. Several answers will also be attained by the students. The problem can be worked in small groups, partners, or alone. After an answer is reached, the students can share their approach with groups or with the class.

As the example shows, rich problems are structured problems requiring productive thinking. They are not problems that students can simply solve with an algorithm, although one may be discovered along the way. They are problems that allow for multiple routes to a solution or multiple solutions. It is the strategies that are used and the justifications that are discussed, rather than the answers, which provide the mathematical growth. "It is these strategies that reveal assumptions a student is making about how mathematics works" (Lampert, 1990, p. 40). The content of the lesson are the arguments that support or reject the solution strategy; it is not the teacher giving mathematical knowledge to the recipient students. Teachers who have been successful in implementing rich problems and student inquiry into their mathematics classroom have beliefs that are characterized by the acceptance of the idea that children can solve problems without direct instruction and that the mathematics should be based on children's abilities (Fennema & Carpenter, 1996). Additionally, if posed properly, rich problems can cover a great deal of curriculum; often these problems cover unintended curriculum. A real challenge for teachers is to integrate rigor of content, through rich problems, with high-level thinking. Not only do they want to incorporate rich problems in the mathematics class because that is the way that real learning takes place, but also because of time (Resnick & Hall, 2000).

In traditional classrooms, children are expected to tell the class what the teacher wanted them to learn rather than expressing their own thinking (Voigt, 1995). In a classroom where rich problems are explored and followed by children sharing their thinking in class discussions, the intention is that children are reconstructing their solutions and justifying them to others. This creates opportunities for learning in which children not only express their mathematical thoughts but also listen to strategies and justifications of solutions of others. "These settings would provide opportunities for children to reflect on their activity and reorganize their current conceptual level of thinking" (Wood, Cobb, & Yackel, 1991, p. 599). The next section will clarify how a rich problem works in an inquiry-based classroom.Inquiry-Based Mathematics in Action

Here is a look into an inquiry-based middle school mathematics classroom. Mrs. Smith wants to work on multiplication in her fourth grade class. She simply poses this question to her class, "15x4. Using any of the tools I've provided, graph paper, 1 inch colored tiles, calculators, pencil and paper, show what fifteen times four means in at least 4 different ways."

Mrs. Smith has thoughtfully and purposefully grouped students, paying attention to potential

behavior issues between students or mixing groups of different or similar abilities. She is rotating from group to group, encouraging all to participate. She is offering feedback if a student or group seems "stuck"; she is allowing plenty of time for students to think outside the box and come up with multiple solutions. She also probes groups and individuals with questions, such as, "Prove that 60 is the correct answer," or "Could you find a pattern in what you are dong?" Mrs. Smith has a pedagogical approach which allows her to put extra time in before the lesson even begins, such as grouping students, developing a rich problem, thinking of tools that might be needed by individuals, but then gives her time to work with small groups or individuals during the lesson.

After group work, Mrs. Smith returns to a whole group setting to share answers, strategies, and justifications. The students communicate their answers, hear different answers and approaches, and display their connection of patterning to other areas of mathematics, depending on which strategies and content were discussed during group work. For example, one student's strategy is to order 15 tiles across with 4 rows going down. The group next to them orders 4 tiles across with 15 rows going down. The discussion leads to the Commutative Property of Multiplication and why it always applies. Another group who used graph paper states, "We knew that 15 was really three 5's [three groups of 5], so we shaded three rows of five, four times, which gave us 60 boxes." By allowing the groups to share their strategies, the entire class has now been exposed to multiples, arrays, factors, and the commutative property.

Along with the class experiencing benefits of a rich problem in an inquiry-based setting (group work, communication skill, problem solving, connecting mathematics, reasoning), the teacher has also implemented interventions which allowed her to differentiate with individual students. Mrs. Smith's universal interventions of providing feedback, reinforcement, chunking material, pacing the lesson, asking good questions, and focusing the learner's attention applied to most of her learners. "If every teacher in a school system would put universal research-based strategies in place, the number of students who appear to be 'at risk' would drop dramatically. Intervention plans built on these universal designs will not only help the student in question but also benefit other students in the class at the same time" (Searle, 2007, p. 67).

If more targeted differentiation is needed, Mrs. Smith might observe a student more closely and make a list of academic and/or behavior concerns. This might mean collecting samples of student work, making anecdotal notes of student participation in group work, talking to the parents, or working with other teachers.In reference to the rich "15 x 4" multiplication problem, Mrs. Smith may realize she needs to implement some targeted interventions. Because of the nature of this type of pedagogical approach to teaching mathematics, she has the time to apply these interventions. For example, she has noted that Abby gets angry easily with Chloe. She purposefully does not group them together. Mrs. Smith has also noted that Abby needs to be encouraged when she makes good choices; praising and being a helper have worked in the past, while time-out and scolding has not worked. Mrs. Smith sits with Abby's group a bit longer than most, and purposefully praises Abby when she contributes to the group. She also noted that Brandon struggles with multiplication. This might place a road block in his thinking about multiple approaches to the problem, which will then lead to truly understanding multiplication. She provides Brandon with a multiplication chart, which may alleviate his stress and may also help him to see alternative approaches. These targeted interventions can be applied in this inquiry-based mathematics classroom simply because of the nature of the teaching approach.

Discussion

Researchers of mathematics education (i.e. Ball, Hill & Bass, 2005; Beswick, 2006) as well as professional organizations (i.e. AMLE, 2010; NCTM, 2000; CCCSI, 2010) advocate for student-centered, inquiry-based teaching and learning in middle grade mathematics classrooms. Yet, research on teacher change (i.e. Gregoire, 2003; Woolfolk Hoy, Davis & Pape, 2006), such as changing from traditional mathematics teaching to inquiry-based, standards-based teaching, assert that this change is not easy or quick. Teachers need time to reflect more on their own teaching and learning processes of middle grade students. And then, as the research presented has shown, teachers can change their beliefs about the importance of making instructional decisions based on children's understanding and concurrently change their instructional practices to more adequately reflect constructivist principles.

As suggested in this article, this pedagogical

change looks like: promoting high student expectations, encouraging student justification of their mathematics thinking, using good questions techniques, and implementing rich problems that, in their nature, incorporate multi-standards and clusters.   Examples such as the "garden area problem" (changing a question in order to require deeper thinking than simply recalling a formula) or the "15x4" problem (asking one question that allows for multiple approaches as opposed to 25 fill-in-the-blank answers), illustrate this type of inquiry-based approach. Using inquiry-based mathematics will not only help the teachers understand their students better, it will also help the students understand how mathematics is used outside the classroom. The Standards for Mathematical Practice in the Common Core State Standards certainly advocate for such teaching pedagogies. And as AMLE suggests, this approach allows the middle grade students to be at the center of the learning process, playing a major role in their own mathematical learning.

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Critical Curricular Conversations: Merging Curriculum Theory and Critical Literacy with Preservice Teachers

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Educators of young adolescents understand the primacy of talk in classroom settings and the significance of the social nature of literacy. Through an exploration and study of social constructivism (Vygotsky, 1978), reader response theory (Rosenblatt, 1995), and discourse theory (Gee, 1999), our understanding of talk has deepened; as a result, we have worked consciously to provide students, whether they are preservice teachers or young adolescents, with ample and varied opportunities to share their ideas with others. We recognize that, as students explore new ideas and concepts in a social context, that active participation in discussion enriches, deepens, and expands both their individual knowledge and their collective understandings. Furthermore, we have come to believe that, when preservice teachers understand the critical role of context in shaping and framing talk that leads to knowledge, it highlights the importance of planning for both the talk and the context.

Clearly talk is not just talk. Talk can be studied, examined, and analyzed. Talk can also be represented by various terms such as discourse, dialogue, conversation, and exchange. Talk is always contextualized, and rarely can talk be considered outside of the context in which it occurs. Gee (1996), for example, differentiates between our traditional notion of discourse as communication with words and Discourses (with a capital "D"), which he defines as the ways in which humans integrate language with actions, principles, beliefs, attitudes, gestures, glances, and body positions. Consequently, Discourse is something much broader than just speech and integrates the social basis of literacy. Using Discourses, people build *social languages*, i.e., styles of language that are enacted and recognized as different and distinct identities in various settings (Gee, 1999). These identities are determined not just through language but through language in combination with other behaviors and beliefs. Furthermore, people who participate in the same Discourse use common symbols, props, and tools to enact that particular Discourse, and, therefore, are able to understand both the explicit and implicit rules and importance of the Discourse they share. In other words, Discourse is generated by a socially-situated speaker engaging in a socially-situated activity or context (Gee, 2005).

The implications of Gee's (2005) concept of Discourse are far-reaching, especially when we consider issues of fairness, impartiality, and equality. "The fact that people have differential access to different identities and activities, connected to different sorts of status and social goods, is a root source of inequality in society" (Gee, 2005, p. 22). Discourses, then, have the potential to be empowering (or disempowering) in many ways. When a person is recognized as being a member of the dominant Discourse, for example, that person has access to social power and resources. According to Fairclough (1995), "Discourse in modern as opposed to pre-modern societies is characterized by having the distinctive and more important role in the constitution and reproduction of power relations and social identities which this entails" (p. 136). Gee (2005), too, indicates that "intervening in such matters [of dominant Discourse] can be a contribution to social justice" (p. 22) Thus, the talk that educators foster and encourage in the classroom, and through their curricular planning, has

very real consequences.

As Gallas and Smagorinsky (2002) have noted that the consumption and production of texts, response activities, and all subsequent conversations are socially situated. Thus, the types of pedagogical practices, including the talk that is undertaken by the teacher and her students will either encourage or discourage the various connections that students will make to the content and the texts.

> "Classroom conversations gain their educational power because they
> take place in a context shaped by the larger discourse communities
> of which they are a part. In entering a classroom conversation,
> participants are learning the rules of discourse of the larger community
> as well (Applebee, 1997, p. 27).

For that reason, we emphasize that talk in classrooms has to be purposefully *planned*, yet flexible enough to allow space for it to be dynamic, transformative, and collaborative.

Critical Literacy

Critical literacy may be one way to engage in dynamic, transformative, and collaborative talk. Critical theorists, for example, customarily question unequal relations between individuals and groups of people both in and out of school, and then act to offset them (Kanpol, 1994). Likewise, critical literacy links the pedagogical with the political through the texts that are consumed and produced. Although there are many ways critical literacy has been defined, we embrace Shor's (1999) definition of critical literacy:

> [T]hough language is fateful in teaching us what kind of people to become and what kind
> of society to make, discourse is not destiny....This is where critical literacy begins, for
> questioning power relations, discourses, and identities in a world not yet finished, just, or
> humane (p. 1)

In this way, English Language Arts (ELA) educators who strive to develop students' critical literacy can provide a basis for creating very real social change. Through the literacy practices they embrace and the conversations they encourage in the classroom context, students are given opportunities to explore, discuss, and even address the inequalities

they perceive in their own lives. Critical literacy is "a politics of thinking from the margins, of possessing integral perspectives on the world" (Lankshear & McLaren, 1993, p. 27).

Lewison, Leland, and Harste (2008) offer an instructional model for critical literacy that consists of the following components:

- •Being Situated in Specific Contexts: Culture and norms of school can support or hinder moves to develop critical practice
- •Drawing on Personal and Cultural Resources: What students and teachers draw on to create the content of the curriculum as well as how people must see themselves in literacy to become literate
- Engaging in Critical Social Practices: Disrupting the common place, interrogating multiple viewpoints, focusing on sociopolitical issues, and taking action and promoting social justice
- Taking a Critical Stance: Attitudes and dispositions we take on that enable us to become critically literate beings with four dimensions (consciously engaging, entertaining alternate ways of being, taking responsibility to inquire, and being reflexive)
- Moving between the Personal and the Social: Complicates the ways we envision the curriculum; there are always social, political, cultural, and economic dimensions to any event or issue we first describe as personal

Consequently, through critical literacy practices in the classroom, ELA educators and their students can understand the world both through who they are and what they know. With a Freirean way of perceiving, people can approach the historical and cultural world as a transformable reality, continuously shaped by humans. This transformation can be initiated and implemented through talk.

Curriculum as Conversation

While there are multiple ways of conceiving of curriculum, we chose to utilize Applebee's (1996) theory of "curriculum as conversation" because of the manner in which the theory keeps "talk" at the center of curricular planning. Curriculum, as we use it here, is the sense of purpose and direction that is established

by teachers around which all texts, classroom discussions, and pedagogical activities are centered (Applebee, 1994, 2002).

Applebee's (1996) conception of curriculum is useful in that he identifies five curricular structures. These are organized on a continuum according to the extent to which they encourage or discourage the expansion of disciplinary conversation. The structures include: catalog, collection, sequential, episodic, and integrated curricula.

The most inclusive and comprehensive curricular structure is the integrated curriculum. Such a curriculum is comprised of "independent but interacting experiences," (Applebee, 1996, p. 77) that allow for students to not only explore the overarching topic itself, but to reflect perspectives that the newly introduced elements provide. Integrated curricula allow for continuing conversations that allow students opportunities to "revisit earlier material in the light of new understandings" (p. 77). Consequently, students' understanding is both broadened and deepened simultaneously, encouraging disciplinary conversations that are personally, culturally, and pedagogically significant to both the teacher and her students.

Applebee (1996) argued that conceiving of curriculum as "domains for culturally significant conversations" can provide a way of conceiving of curriculum as more than just what is learned, but how it is learned as well. Classrooms themselves, along with the pedagogical practices that are embraced and implemented within them, define what are acceptable or unacceptable ways of knowing and doing for the content being taught (Gallas & Smagorinsky, 2002). Applebee (1994) has argued that successful teachers are effective because they "have a sense of where they are going and why, and they create within their classrooms a sense of coherence and direction that students recognize" (p. 46). Additionally, these teachers maintain the flexibility necessary for students to enter into and contribute to the ongoing and dynamic conversation. Student input may influence the direction, the tempo, and the content of these curricular conversations.

Synthesis of Critical Literacy with Curriculum as Conversation

The use of talk is crucial to the intersection of curriculum as conversation and critical literacy. For example, Lewison, Leland, and Harste (2008) theorize that there are attitudes and dispositions we adopt that enable us to become critically literate beings. Taking a critical stance shapes language, even as the talk in which we engage defines and explicates our critical position. "We are what we say and do. The way we speak and are spoken to help shape us into the people we become...." (Shor, 1999, p. 1). Language is also the means by which we bridge the personal and the social. A simple example of movement between the personal and social is expression of our wants and needs. Our needs, which can be described as personal, are made social when we verbalize them. Thus, talk plays a decisive role in the implementation and mediation of critical literacy within the classroom context.

Likewise, language is the crux of developing and implementing a curriculum of conversation, not only in the discourse encouraged within the classroom context, but also in the language of texts chosen to represent that curriculum. Language makes up the texts students consume and those they produce. In fact, curricula are dependent on the very tool necessary for engaging in a critical literacy—the tool of language.

In the following section, we briefly introduce a methods course where preservice teachers were taught through and with a curriculum as conversation and encouraged to consider critical literacy as a way to open up spaces in their own classrooms for critical and transformative conversations. Next, we share preservice teacher work in order to demonstrate an assignment where the questions produced by the preservice teachers were viewed as a starting point so that their middle school students would be afforded an opportunity to take some control of the conversations in which they are engaging and guide its direction. Finally, the preservice teachers reflect on that experience.

The Course

Recognizing our intention that conversations are political and transformative in nature, as well as wide in scope, the overarching question we used to frame the semester-long courses was: *How might we best foster critical classrooms of conversation?* Moreover, in order to model for preservice educators how individual lessons can be tied to the broader question though an integrated curriculum, each class period also began with a question based on the assigned reading and was related to the overarching question. The bifurcated purpose of using these open-ended questions was to model the inquiry-based experience *and* to initiate the conversations we intended to promote as

part of curricular planning. Examples of these lesson-specific questions were: What is your understanding of curriculum? and What is knowledge?

Adhering to the integrated structure, these questions allowed preservice teachers to not only reflect on the newly introduced elements, but to also revisit earlier material in light of their new understandings. Thus, the course was designed to produce talk which was integrated, according to Applebee's (1996) curricular continuum.

The Critical Conversation Curriculum Chart

The Critical Conversation Curriculum Chart (CCCC) that we proposed and utilized in the context of our methods courses was different from curriculum mapping but could be used in tandem with that process. Specifically, the CCCC provided an external structure while traditional curriculum maps suggest an internal structure that often begins with a graded course of study, a content standard, or a specific learning objective. With the purpose of providing measurable improvement in targeted student performance areas and as a process of ongoing curriculum and assessment review, traditional curriculum mapping collects curricular operational data in order to examine its relationship to student assessment (Jacobs, 2004). Additionally, traditional curriculum mapping is often associated with skills and content that often remains disconnected from students' areas of interest, concern, and background knowledge.

Conversely, the CCCC, modeled after Applebee's conceptions of an integrated curriculum and knowledge-in-action, required preservice teachers to consider three distinct requisites: 1) to design a year-long conversation, sub-divided into conversational domains by way of overarching questions or conversation starters; 2) to choose texts that students are to engage with via reading and writing as part of that conversation; and 3) to consider smaller units of instruction. Such instruction, including classroom discussion, utilization of overarching and lesson-specific inquiry, and assignments that focus on curricular conversations within disciplinary domains, created spaces for the preservice educators, to explore, investigate, and consider all manner of interpretive possibility.

For example, Stephen produced a CCCC entitled "How Was the West Won and Where Did it Get Us?" In the four-part plan, he intended to explore students' prior knowledge regarding the Old West, examine how the West was won, analyze the consequences of winning, and then reflect on how westward expansion is justified today. Through a critical literacy lens,

he was ultimately interested in examining how the portrayal of a group of people affects our perception of them (Table 1).

Another example was Jeannette, who based her CCCC on the overarching question "What Does it Mean to be Normal?" Jeannette planned to deconstruct the notion of normal with her students by reading biographies of great historical figures who were once viewed as eccentric, through poetry writing, and by examining movie clips of characters who challenged others regarding the idea of normalcy and all of its related assumptions (Table 2).

The key to the CCCC assignment was that the questions produced by the preservice teachers were simply viewed as starting points so that their students would be provided an opportunity to take some control of the conversations in which they would engage. It was the hope and belief of the preservice teachers that, once implemented, the students themselves would guide the direction of the classroom conversation. Whereas curricular mapping includes essential questions, content, skills, assessments, activities, and resources designed and implemented by the teacher with a clear trajectory and ultimate destination, the syntheses of curricular conversation theory and critical literacy pedagogy through the CCCC was intended to simply lay the foundation for a dynamic, transformative, and collaborative curricular conversation. In essence, the curriculum, though it would be initiated by the teacher through the overarching question, was meant to be driven by the students in the class, the participants in the ever-changing, ever-evolving curricular "talk." Indeed, the curriculum gains momentum precisely because the conversations are "real, [and, thus,] they…create a meaningful context for what we ask students to read and write and talk about" (Applebee, 1994, p. 50).

As Burroughs (1999), too, has indicated, it is insufficient to simply call into question or modify the types of texts we expect students to consume and produce in our ELA classrooms. To truly transform the distilled nature of instruction, teachers "must challenge conventional talk about texts" (p. 137) and find new ways to invite students into an ongoing and engaging conversation in the same way those conversations may occur outside of the classroom context within broader disciplinary boundaries. Burroughs argues that, perhaps even more important than the texts themselves, chosen to represent the teacher's idea of what constitutes appropriate literature and necessary

Table 1
Conversation Starters and Assignments

Quarter	Conversation Starters	Assignments
First	What do you know about traditional Westerns? 　White hats & Black hats 　Cowboys and Indians 　Buffalo Bill's Wild West Show 　The "Noble Savage" (reference Huxley's 　　Brave New World character)	*Western Collage/Homage* Students use various print sources to create a collage of the many different depictions of the idealized American West. Items may include ads, such as the ubiquitous "Marlboro Man" as compared to "Red Man" tobacco/Cigar Store "Indians," as well as action figures (G.I. Joe, etc.), movie posters, comic books, etc. *Native Perspective* Students react to excerpts from The Lone Ranger and Tonto Fist Fight in Heaven by Sherman Alexie in their journal. Debrief with students participating in a Literature Circle.
Second	How was the West "Won"? 　Cultural re-education 　Broken Treaties 　Eradication of Bison 　Alcohol & Disease 　Expulsion 　Railroad stitches 　War of Conquest	*Entreaty* Students write a treaty to resolve a conflict between the land rights of Native Americans vs. that of the encroaching Settlers. This treaty should consider both perspectives and draw upon previous examples. *Comparison* Students compare the outcomes of the Battle of Little Big Horn (1876) and the massacre at Wounded Knee (1890). Newspaper articles from the time period are reviewed and discussed **Texts:** Treaty of Greenville (1795) 　　Indian Citizenship Act (1924) Writing workshops will assist development
Third	What were the consequences of "winning the West"? 　Genocide 　Territorial Expansion 　Reservations 　Settlement	*Multigenre paper* Students can incorporate photographs, poetry, speeches, treaties, maps, and other evidence to support their conclusion about the outcome of Westward Expansion and the concept of the "Manifest Destiny."
Fourth	How is the Westward expansion justified today? 　Stereotypes 　Disputed Medal of Honors (the most ever 　　awarded were for the Massacre at 　　Wounded Knee) 　Edward Curtis' portrayal 　Sports Logos	*Letter and follow up Email campaign* Students consider the social justice aspects of how groups like Native Americans have been victimized in the past and are still being marginalized today. After composing a letter to an organization (i.e. the Cleveland "Indians"), the students follow up with an email to their sponsors.

Table 2
What Does it Mean to be Normal?

What is considered a normal life?	Why do we value normalcy?	Where will being normal actually get me in life?	How can we redefine normal?
This is the introductory quarter, where the students and I will discuss what a normal life is. **Books:** These books will show alternate ways of life, and we will discuss whether or not the characters should be classified as normal. -Dahl, R. <u>Charlie and the Chocolate Factory</u>—A young boy wins a chance to see the inside of a private chocolate factory owned by an eccentric man. -George, J.C. <u>Julie of the Wolves</u>—A young Inuit girl runs away from home to live in the wilderness. **Alternate Materials:** Music Normal Life by July for Kings **Activity:** Quote Hunt: Students will find quotes about normality in books, movies, songs, bumper sticker, online, etc., to bring to class. They will be analyzed for meaning. As a class, we will try to create our own quote that explains "normal".	This section deals with the value that society places on being normal. **Books:** These books are about what society deems normal and how life is for those who do not fit the stereotype. -Voigt, C. <u>Izzy, Willy-Nilly</u>—A girl has to deal with being crippled after car crash caused by the drunk driver. -Lowry, L. <u>Number the Stars</u>—A family helps and hides their Jewish friends during WWII. **Poetry:** -Sones, S. <u>What My Mother Doesn't Know</u>—A book of collected free verse poems by a girl learning about relationships. -Students will read works from famous poets who led seemingly abnormal lives, i.e. E. Dickinson, R. W. Emerson. **Activity:** Poetry book: Students will create different types of poetry about what normality means to them. They will be collected into a poetry book that will be displayed in the classroom.	For this quarter, students will study the people who did not conform to the idea of normality and how it affected their lives. **Books:** These books will depict the lives of historical figures who changed the world by not being "normal". -Biographies: inventors, athletes, revolutionaries, etc. **Alternate Material:** These other forms of media will show what the results of trying to be normal. Movie clips: -Mean Girls—High school girl cliques -How to Eat Fried Worms—Grade school boy bullies -Speak—girl ostracized in school for calling the cops at a party. **Activity:** Students will read biographies on a historical figure of their choice, write a book report on it, and then form groups based on their person and give an oral report of their accomplishments and how they changed what was "normal".	During this quarter, the students and I will try to find a way to redefine the word normal to mean more about being true to oneself rather than a set standard. **Books:** These books are about how people have had to change the way they look at the world and live "normally". -Peters, J.A. <u>Define Normal</u>—Two girls reluctantly share problems through peer counseling and they begin to see that no one has a perfectly normal life. -Klise, K. <u>Deliver Us from Normal</u>—A boy has to find a way to deal with his family and his secret power which are considered abnormal in his town **Activity:** "Everyone's a little abnormal" Student will create a self-portrait in any way they wish, i.e. student autobiographies, collages, pictures, etc., as long as it has meaning and can be explained. They will be displayed on the board so that the class can see how everyone in the class is different, but still normal.

content knowledge, is the *conversation* in which those texts are nested. Burroughs states that the "curricular conversations within which a text is embedded affects how it is understood, experienced, and appreciated by students" (p. 154). The CCCC assignment was effective for preservice educators because it helped them consider the types of integrated and transformative curricular conversations they could and would initiate in order to support not only knowledge acquisition, but also critical thinking, literate behavior, and a call to action for social justice. Its effectiveness during implementation in a classroom is outside the scope of this article, and will be investigated more fully in a study that is currently underway.

Preservice Teachers' Reflections

As a way of listening to the "talk" in our own courses, it is important to allow students to be heard. The following are reflections from both Stephen and Jeannette, two preservice teachers and co-authors of this manuscript.

Stephen

What emerged over the course of the semester was a sense that curriculum is an ongoing conversation—something that not only connects lessons to one another, but drives them as well as investigating students to continue to ask about the world around them and consider alternate view points before making decisions or drawing conclusions. My final project for this course calls to mind questions regarding the nature of knowledge. As Creating Critical Classrooms, one of our texts aptly states, "education is never neutral" (Lewison, 2004, p. xxvii). I wanted to raise this point with students by creating a conversation that addressed the way in which Native Americans are portrayed and how that portrayal affects our perception of them as a group of people. By considering the "Wild West," my aim was to call into question the myth that is the American West and how it was "won."

As I mentioned earlier, while the study of critical literacy is invaluable to my teacher education, it has not been without pain. I was forced to re-

consider the type of student I wanted to inspire. This in turn led me to question the very motives behind my teaching aspirations as well as personal philosophy of education. Like shock waves, everything I thought I knew about education and my role in it was affected. The end result of this tumult is that what I have come to value even more than a reflective student is one that is called to action. Fostering a sense of social justice has become the driving force in my thinking. My ultimate objective in creating this CCCC became the creation of lessons that encouraged students to be better informed on an issue and, more importantly, to feel called to respond.

This course reinforced the importance of putting together lessons as a cohesive unit. Each lesson is designed to share a common thread that re-echoes the central, motivating question. This overarching question helped me stay focused on the components of each quarter and how they might build toward a final activity. While I have not yet had the opportunity to use this particular lesson with a class, I am looking forward to presenting and refining it. I plan on developing more units of study based on similar understandings I have of the underlying principles of critical literacy. In so doing, I hope to make room for new voices for change in our country, voices that will bring about healing through actions that demonstrate concern and mutual respect for all.

Jeannette

I loved having the opportunity to plan out a yearlong curriculum conversation that focused on concerns that the students actually have. It gave us a chance to see how the current and popular culture can have a place in the classroom, without losing the academic integrity of classic novels. These conversations showed us how to connect the actual concerns of students and the content

involved in their learning. During my practicum, I have been able to incorporate some of the ideas of this course into my teaching, and these concepts have created the possibility for change in both my education style and my classroom.While planning my CCCC, it was really important to me that the initial question was one that many students have had experience with or difficulty understanding. Especially in middle school, adolescents are defining themselves according to the images and examples that they see in the media, as well as by the people around them.

Many have trouble fully developing their personality and character because society and the media's "puppet theatre" is telling them that everyone has to be the same way. It is difficult for kids to understand that it is okay to be different and that they do not need to conform to the ideas of society to be happy.

The question "What does it meant to be normal?" gives the students a chance to look at the world around them differently and question the deeply rooted, and often inaccurate, assumptions that society has about what an average, functioning person is supposed to be. It lets them delve into the problems of society while still focusing on things that truly affect their lives and bodies. It is especially hard for young girls that are going through hormonal and body changes when the "idols" of society are tiny, gorgeous model/actresses. This umbrella question gives the students a chance to explore the possibilities of life, and it can help develop their understanding of both themselves and others.

Critical literacy and curricula are deeply linked, because in order to form an effective classroom, both need to be included in the planning and execution of learning. Both can survive without the other, but it is through the combination of the two that a truly efficient classroom is achieved. It is so important to set up a successful curriculum. Even the best coaches, the greatest generals, and the most experienced teachers need a plan. Sometimes this is simply the daily activities and sometimes it is a larger unit that allows the students to develop understanding over

a period of time, but a plan is always necessary. Critical literacy should be the driving force behind effective lessons that teach students how to think and ask questions about both the material and how the world works. Lessons based on critical literacy give the students some control over their education and allows them to approach problems in an individual way.

Conclusion

In conclusion, we emphasize that talk in classrooms has to be *purposefully planned*, yet flexible and spatial enough for it to be dynamic, transformative, and collaborative. We believe that, as students are provided opportunities to investigate ideas and concepts in a social classroom context, the participation in the curricular conversation deepens and develops both their individual knowledge of the content and their shared understandings. When preservice teachers understand the critical role of environment in shaping and framing talk that leads to knowledge, it highlights the significance of planning. Due to the strict limitations and processes of designing curriculum maps (Jacobs, 2004), we believe that curricular mapping does not achieve the goal of long-term curricular planning. Linking curriculum as conversation theory with critical literacy pedagogy, however, may, especially through the creation of a Critical Conversation Curriculum Chart. The intersection of curriculum theory and critical literacy provides a space to engage in the possibilities and complexities of hope and possibility through and with language. Curriculum as a conversation with a critical literacy stance evokes images of what should be happening in the classroom as opposed to what teachers and students experience in their daily practice; thus, it can be transformative.

The challenge, according to Greene (1998), is that few enter literacy courses with an inclination to problematize, question cultural assumptions and ideologies, or examine feelings of boredom or shame. Consequently, we argue that in order to meet the needs of adolescents, help students engage with texts, and create students who employ critical practices, this problematizing and questioning must be initiated with preservice teachers. By scaffolding the use of the CCCC throughout methods courses, a vibrant and collective dialogue can be achieved; hopefully, once these preservice teachers enter the teaching field this animated and cooperative dialogue may be maintained to the benefit of the adolescent student.

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Measures and Strategies Educators Used to Produce High Stakes Testing Success

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For decades, the public believed students in America's education system lack knowledge of basic skills and technology. This resulted in wide-spread studies on effective teaching that measured student achievement. The *No Child Left behind Act of 2001and The Race to the Top Legislation of 2010*, which reauthorized the Elementary and Secondary Education Act, recommends the use of "scientifically-based research" as the foundation for many education programs and for classroom instruction (U. S. Department of Education, n.d.; U. S. Department of Education, 2010). The major impetus behind the No Child Left Behind and Race to the Top legislation is the concern that many students cannot pass state mandated proficiency examinations, the achievement gap must close and the perception that many teachers are unqualified for their positions.

As today's world becomes more complex and the nation's public school classrooms become more diverse, educators must find better ways to provide a meaningful and empowering education for all children (Armento, 2001; Hollins, 1997). The fact that urban students cannot pass state mandated proficiency examinations are problematic to many. High student achievement and passing proficiency test scores are a must for today's classroom teachers. Are there ways teachers can develop culturally responsive classrooms that promote maximum learning and personal growth for all students?

Academic standards-based research has shown that educators can no longer tolerate low achievement scores, student and teacher boredom, high dropout rates, and general apathy toward learning and school by many students (Hollins, 1997; King, Hollins, & Hayman, 1997). Students from poor and culturally diverse backgrounds are entitled to an excellent education and to the full development of their academic and personal potential, as are all students (Armento, 2001; Hollins, 1997; Johnson & Smith, 1993).

On most indicators of academic achievement, the performance of African American, Hispanic and Native American students lag those of behind white and Asian students. The school's failure to produce high achieving African American, Hispanic, and Native American students has been documented (Irvine, 2001; Sheets & Hollins, 1999). This diverse student population brings a range of learning preferences and life experiences that may be different from the teacher's knowledge, beliefs, and views. In order to achieve the goals of equity and excellence in education, teachers must think in certain ways about students and about themselves as teachers (Armento, 2001; Roberts et al., 1994; Sheets & Hollins, 1999).

Using research about how students learn with the belief that all students a top-notch education can lead to meeting the needs of all students and towards establishing a truly democratic society (Hollins, 1996; OERI, 2002). Judging from the results of many state mandated proficiency tests, large percentages of culturally and linguistically diverse students are not being adequately prepared in school (OERI, 2002). According to Irvine (2001):

> Psychologists believe that students of color suffer from psychological discomfort and low achievement when they perceive that the school

setting is hostile and incongruous. When there is a cultural mismatch or cultural incompatibility between students and their school, the inevitable occurs - miscommunication; confrontations between the student, the teacher, and the home; hostility; alienation; diminished self-esteem; and eventual school failure (p. 7).

Highly effective teachers are able to communicate with and understand their students by creating contexts in which power is shared by students and teachers (King et al., 1997; Orenstein & Levine, 2003). These high achieving teachers must link schools to the students' worlds and experiences, provide engaging curriculum, and challenge the students to perform at high levels. Bartolome stated in *The Diversity Kit* (OERI, 2002) that,

> This power sharing and valuing of students' lives and cultures may provide a positive counterforce to the negative sociocultural experiences of students; it can enable them to see themselves as empowered within the context of school and allow them to retain pride in their cultural heritages (p. 27).

Roberts et al. (1994) and Gollnick and Chinn (2002) posit that students have individual differences, even though they may appear to be from the same cultural group. These differences extend far beyond intellectual and physical abilities as the students bring to class different historical backgrounds, religious beliefs, and daily living patterns. They state that these experiences guide the students' behavior and mirror the school's culture. King et al. (1997) believe that the differences between the home and school cultures will cause dissonance unless teachers are willing to integrate the student's culture into the curriculum and develop a supportive environment for learning.

If teachers fail to understand how the cultural, intellectual and physical factors affect student learning and behavior, it will be impossible for them to assist students in learning (Kohn & Knight, 1994; King et al., 1997). As teachers become students of their students' cultural backgrounds and learning styles, they will gain more knowledge and understanding of the students. This can then assist teachers in knowing how to proceed in getting students to comprehend the relevance of schooling (Hollins, 1996; OERI, 2002). Effective teachers reflect upon their own schooling experiences and use it as the basis for understanding the cultural assumptions, and in some cases, biases they bring to their students (Hollins, 1996; OERI, 2002). Once teachers empathize with their students, there is a freer exchange of knowledge because the teachers no longer devalue the cultural background of their students (Hollins, 1996; OERI, 2002).

The Conceptual Framework

Carter (2000), Jerald (2001) and the Office of Educational Research and Improvement's (2002) national reports provide criteria, examples and activities that educators can use to bring academic success to students. These reports describe successful measures and strategies that high poverty schools can use to achieve high success rates on state proficiency examinations. These publications are particularly relevant to teacher education although they have not been widely tapped nor adequately used.

We investigated a mid-western high school, located in a metropolitan area with a population approaching one million people. This city has been rated among the 10 worst in the nation in concentrated poverty (30%) and child poverty (41%). The school was selected because 99% of the students pass the state's proficiency test, which is required for high school graduation. The city's other high schools struggle with low proficiency test scores and passage rates.

We hypothesized that the practices must be consistent with strategies and measures advocated for high poverty, high performing schools. This investigation provides insights into classroom and school practices that accompany the school's high graduation tests passage rate. Of particular importance and interest were the criteria and strategies used by the educators in this school.

The state's proficiency testing system is an ongoing assessment process in which students must demonstrate knowledge and content mastery. The question guiding this investigation is: What are the factors or criteria that facilitate high academic achievement and can lead to student success on proficiency tests? This investigation used: (1) thematic content analysis of national level documents; and (2) interviews with key individuals to identify, describe, and provide insight into classroom and school practices that accompany high pass rates on proficiency tests. Through careful documentation, the criteria or factors that influence high academic performance for low-

at the high school emerged. In addition, a summary and implications for high school educators wishing to improve their students' achievement are provided.

Methodology

Participants

The initial task of gaining access and entrance into the school was not difficult because the school district has a partnership with the investigators' university which is a member of the National Network for Educational Renewal (NNER). The high school has been a partner with the university for more than 10 years. Forty-six teachers were employed at the 800-student high school and an invitation to participate in the investigation was sent to all teachers, parents, students and administrative staff.

Materials and Procedure

Those returning the consent forms were interviewed; over a two-month period, 48 informants were interviewed. The participants consisted of 11 school personnel, 13 parents/guardians and 24 students. The chief and co investigators interviewed the school personnel and the graduate assistants interviewed the parents and students.

Data collection consisted of structured and semi-structured interviews with key stakeholders (e.g., school personnel, students, and parents). Additional data and insights were gained through on-site observations, examination of selected artifacts and documents related to the school, and proficiency test related data. The school personnel, students and parents' responses were recorded and after the data analysis, participants were allowed to review their responses for accuracy. The investigation's results/ findings and a discussion of how the school utilized the criteria that facilitate high academic achievement follow.

Results

We investigated and were interested in learning, "What are the factors or criteria that facilitate high academic achievement and can lead to student success on proficiency tests?" At the beginning of the school year, all teachers at the high school are required to attend district wide in-services and workshops. Training the teachers in curricular materials usage was one of the responsibilities of the district curricular specialists. More in-depth training in curricular materials usage was also provided at the school. The teachers were expected to be knowledgeable of the state curricular requirements and to go online to examine the content of older proficiency tests that are no longer used by the state.

By using state standards extensively to design curriculum and instruction, assess student work, and evaluate teachers, the school offers regular mechanisms for teachers to analyze student work against state standards. The principal and assistant principal commented that:

"Students who do not pass portions of the proficiency examination are placed in the Disadvantage Pupil Impact Aid (DPIA) program. Students who have failed portions of the proficiency examination are placed in these labs. Two long-term substitute teachers teach courses in the lab. One teacher is responsible for teaching citizenship and science while the other teacher is responsible for teaching reading and writing. The program did not have a math teacher this year."

The teachers increased the instructional time in reading and math in order to help students meet academic standards was met. The English and Math teachers devote five minutes daily on information relating to the proficiency test and the end of the year district tests. The English teacher said:

"Our team leaders requested that we give the students a little information on different areas of the Proficiency exam daily. We want the students to know how the information is linked and that it is important… This is very helpful to us teachers [sic] as well."

The administrators devoted a larger proportion of funds to support professional development focused on changing instructional practice was in place. All of the teachers and administrators have bachelor's degrees, are certified and teach within their disciplines. Nine of them earned Master's degrees while two have educational specialist's degrees. The teachers are given opportunities to attend conferences and serve on district level committees. The English teacher said:

"I attended a (curricular) meeting the other day and I heard some distressing news. Our school district is the poorest system in the state. I wanted to know the source for this data. This made me more determined than ever to make

sure I look at strategies and resources to interest my students in developing their language skills. They have to learn the proper mechanics of speech in order to succeed in this world."

The educators implemented comprehensive systems school wide to monitor individual student progress and provide extra support to students as soon as it is needed. The principal and teachers discussed some of the ways the students are given extra support. Responses included:

"The DPIA program is one way we assist our deficient students."

"Since we don't have a math teacher in the DPIA program this year, the math teachers give the student supplementary materials and work with them after school."

The school personnel focused their efforts to involve parents with helping students meet the curricular standards. The guardian/ parent respondents' educational backgrounds ranged from high school graduate to college graduate. These respondents discussed how the principal and staff involved them in their students' education. Most were very satisfied with the quality of the curriculum and the teaching staff. Some parental responses were:

"I check her grades periodically because she wants to go to college so we have to keep those grades up."

"…I liked the principal because he kept me posted on what my grandson was doing in school."

"I stress education because I am a single black mother who works a labor job."

There are state or district accountability systems in place that have real consequences for adults in the school. The principal and assistant principal communicate graduation expectations to the students, parents and the teachers. The state has adopted a "Report Card" method of reporting proficiency test scores for each school within each district. Both administrators and teachers understand the implications behind the test scores and that failure is not an option. The administrators said:

"The students are told that in order for them to graduate they must successfully complete the proficiency exam."

"The teachers in the building really care about the students and communicate this to the students. Parents and students want to have proficiency test success, but it is the teachers who put in the extra effort and make things work."

All of the stakeholder groups understand that each has a part in ensuring that the students are successful in passing the state proficiency tests. According to Sheets and Hollins (1999), when given opportunities to engage in challenging curricula, students often show that they can perform at high levels and teachers need to develop the knowledge and skills to teach cross-culturally. This will occur as teachers get to know their students and connect the students' cultural experiences with the academic content standards. The aforementioned are factors or criteria that facilitate high academic achievement and can lead to student success on proficiency tests. A discussion of teachers being able to connect with the students' cultural experiences is discussed in the next section.

Discussion

The question guiding this investigation was: "What are the factors or criteria that facilitate high academic achievement and can lead to student success on proficiency tests?" Carter (2000) suggests that schools connect with the students' cultural experiences to produce highly successful students.

The principal and assistant principal at the school are free to make sure each faculty is knowledgeable of the state and school district's curricula. Whereas some school systems personnel are hired the school district's central office level, the school's principal and assistant principal are free to hire their own staff. Even on a shoestring budget, the administrators increase the school's operation by allowing the teachers the opportunity to be innovative.

The teachers strive to use the best teaching practices. Although the teachers use the district-wide curricular materials and resources, they are given the latitude to teach as they see fit and to develop curricular activities that are consistent with the state and district standards. A grandmother's response summarizes the parental responses about the helpfulness of the administrative staff.

"I think the principal is good because he took the time to find out what I could do to help her (the respondent's

granddaughter) out. He gave me ideas and his views."

The school's principal uses measurable goals to establish a culture of achievement and sets a clear vision for the school that is based upon the school district's improvement plan and every teacher is held personally accountable for knowing and enforcing it. Students are expected to respect each other, the teaching staff and the school's administrators. The students are expected to come to class prepared and ready to learn; and they must give their best. The school communicates this vision to the students and parents. A military father commented −

"I've met the teachers. I like how they do [sic] one-on-one with the students. When I did meet them, they tell it like it is… They don't send you around the bush they just tell you straight forward what's going on."

A student commented –

"You know from day one that you have to pass the proficiency test in order to graduate from this school. You have no one to blame if you fall behind."

The teachers bring out the best in the school and say their belief that all students can learn is the key to the students' academic success. Working with the students after school and over several weekends each semester is another key to their students' success. The teachers believe that quality, not seniority, is the key. The school's teachers often head peer evaluation teams, lead team teaching, devise internal assessment measures, and keep the mission of the school focused on academic achievement. The teachers attended in-services, workshops and conferences and then took the lead in teaching others how to teach more effectively. A biology teacher commented:

"I attended a computer course at the Media center on creating PowerPoint slides and editing video. The slides will be a great visual tool for my students. It will assist in their visual development. This will be a good and different tool in assisting my students in understanding."

Administrators and teachers view testing as a diagnostic tool that best enforces the school's goals lead to continuous student achievement. There is an annual year-end test in grades 9 through 12 and in all disciplines that ensure that the teaching and learning of the prescribed curriculum are taking place in every classroom. The teachers know that they are tested each time they test their students. In fact, an algebra teacher said:

"I feel that the examinations, especially the students' performance on the District's test of final mastery, are a measure of my teaching abilities. My concern is that if students are absent, they also have to take the test. What if they were absent during a particular unit and did not come to the make-up sessions?"

Administrators and teachers use student achievement as the key to discipline to create lasting opportunities with lifelong rewards. The school's faculty and staff clearly teach by example that self-control, self-reliance, and self-esteem are essential for the students' successful achievement. These traits and character education are the means to success, and the school's own success inspires confidence, order, and discipline in its students. Several teachers stated:

"In order to assist the students in continued interest in making good grades, we've formed a high achiever's group for honor roll students. These students are taken to an upscale restaurant for dinner. The idea is to assist the students in sustaining the dream. 'You can be successful.'"

Student comments include:

"The teachers here at our school are okay. There are many teachers that you can tell who really care if we learn. I've had a chance to go to dinner at J. Alexander Restaurant."

"There was a girl who was being picked on and the teachers talked with us about treating everyone well."

The school's principals extend the mission of the school into the home with parents to support the children's efforts to learn and to make the home a center of learning. Each student is held accountable for his or her own success. One parent explained that her child transferred to this school because of the high academic standards.

"At the other school, she was very unhappy and the teachers did not care about the students. In fact the teachers

were absent more than the students. A friend told us about this school and since I moved her here, she has really blossomed. She is a different person. She has more friends and we even saw a couple of this school's teachers at the mall."

Student comments include:

"I attend church with the biology and math teachers."

"I can stop by Mr. Job's class after school if I have a question about something covered in class and he will help me."

The administrators, teachers and students at the school understand that teaching is hard work and that effort creates ability. The administrative staff and teachers demand that their students work hard. All realize that time on task is the key to progressing to the next grade level and no student is advanced without a clear demonstration of mastery. The school's administrative staff and teachers reject the notion that teaching is an 8:00 a.m. to 3:00 p.m. job. The counselor said: "The math and science teachers come to school early and remain after school tutoring students."

The administrators and teachers believe their students can learn. Of course, this belief system reflects a way of teaching that requires teachers to seek the best for the students and the community. The principal said:

"Mr. Joe Stoner and faculty from our partnership university have worked on Saturdays tutoring and preparing the students for not only the state proficiency examinations, but also the ACT and SAT examinations."

The teachers and students at the school have found success that is not through state mandated reports. This success is derived from a willingness of the teachers to value the students' lives both inside and outside of the classroom. As these learners in urban classrooms feel proud of their growth and success, they become curious about the world and aggressive about their learning academic achievement (Armento, 2001; Sheets & Hollins, 1999). The next sections discuss the study's limitations and conclusions.

Limitations and Conclusions

This investigation explored how students in an urban high school in a mid-western public school district have a high pass rate on the state proficiency test. The small size of the study's participants was a limitation and the participants' responses may be due to the Hawthorne effect.

In keeping with the research on successfully teaching urban students, there is an U.S. urban high school in a mid-western state that has a high proficiency test pass rate. The question guiding this investigation was: "What are the factors or criteria that facilitate high academic achievement and can lead to student success on proficiency tests?" It was discovered that this high poverty school was successful because the teachers used academic content standards and found ways to promote maximum learning and personal growth for their students. The educators empathized with their students and put them first by believing that all of their students can learn.

A possible explanation for the improvement in proficiency test scores among the students in the high school is related to the strategies the teachers use and the various student support systems. The teachers' instructional practices are consistent with strategies and criteria used by urban or high poverty educators seeking academic success for their students. The teachers worked hard and communicated clear standards for their students' behavior and academic performance. The administrators explained that a committed, trusted staff is a must if the school is to perform at high levels. The teachers and parents discussed administrators who have compassion – not only for some, but for all stakeholders at the school. The administrators, teachers and parents work as a team to ensure the students' success.

These educators not only imagine classrooms where all students could feel a sense of caring, security, trust, and genuine values, but also classrooms where each student is treated with dignity and are expected to demonstrate outstanding performance. Unfortunately, some educators will not participate in an educational environment such as this unless they value the students' background knowledge, culture and life experiences (McLaren, 1989; Roberts et al., 1994; Wagner,1993). Unless educators utilize the two reports' criteria, develop intercultural awareness and examine their own cultural baggage, inequity and low academic performance will continue to flourish in urban classrooms (Hollins, 1997; Roberts et al., 1994). Effective educators produce high performing students in all settings.

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Effects of Multiple Diverse Field Placements on Teacher Candidates' Reflective Responses

Virginia McCormack, Ed. D.

Field experiences provide a means to bridge theory and practice in a real-world context that allows teacher candidates to apply and test their knowledge, skills and dispositions. Allsopp, De Marie, Alvarez-Mc Hatton and Doone (2006) reported that field based assignments and activities should be aligned with the theoretical and evidence-based teaching procedures taught in education courses in order to foster meaningful field-based teaching experiences. As teacher candidates put inquiry into practice, they oftentimes confront their own personal beliefs, exposing conceptions and misconceptions that are not well aligned with evidence-based or theoretically grounded classroom practices (Fetters, Czerniak, Fish & Shawberry, 2002). It is important that teacher education programs offer teacher candidates' opportunities for reflection and prepare them to differentiate instruction in ways that allow diverse learners to be successful in school. Often, through a shared experience in a culturally and linguistically diverse field setting, teacher candidates negotiate meaning by sorting out ideas, giving and seeking advice, scaffolding each other's thinking, providing alternative perspectives, and collectively developing their knowledge and skill bases (Rogers & Rogers, 2007).

A constructivist approach was taken for this study, emphasizing the premise that by reflecting on personal experiences, meaning can be constructed. One of the advantages of this approach is that it fosters close collaboration between the researcher and the participant that gives direction and structure and enables participants to tell their stories (Crabtree & Miller, 1999). Through these stories the participants are able to describe their views of reality, enabling the researcher to better understand the participants' actions by using theory to organize and interpret the data received (Lather, 1992).

As teacher educators prepare teachers to meet the needs of diverse populations of students in the nation's schools, they are increasingly aware of the complexities faced by teachers of English language learners (Daniel, 2008). Multiple field experiences in diverse placements can assist teacher candidates to examine their commitment to teaching, clarify learning objectives, and gain a more realistic picture of life in the classroom. Actual experiences with diverse groups of children are much more likely to lead to enhanced teacher sensitivity and effectiveness (Shippen, Crites, Houchins, Ramsey, & Simon, 2005), especially when practice is linked to reflections on teachers' attitudes, beliefs, and comfort levels regarding everyday classroom dilemmas. Jetton and Savage-Davis (2005) noted that teacher candidates who participated in a diverse educational setting increased their sensitivity to and knowledge about those who are different from them, helping them to realize that although people have many differences, they also share many similarities. Some teacher education programs address this situation by transforming their curricula, creating opportunities for faculty and teacher candidates to work with culturally and linguistically diverse students. Liggett and Finley (2009) suggested that one program goal should be to instill a sense of openness by providing a venue for processing information that leads to individual reflection on personal identity factors

that influence teaching and learning.

Method

The purpose of this study was to examine two groups of teacher candidates within the context of multiple experiences in culturally and linguistically diverse settings. The research question that guided this study was "To what extents did teacher candidates' comments and responses change or remain consistent during their successive cultural and linguistic field experiences?"

Study Participants

The participants were selected by purposeful sampling for this case study; specifically, criterion-based sampling was conducted (Creswell, 2007, Merriam, 1998). The initial criterion for judgment involved the teacher candidates in the study never having participated in a field experience in a culturally and linguistically diverse school. Secondly, the researcher was the professor who taught both of the reading classes in which study participants were enrolled. The participants were informed orally in class about the study and volunteered. The participants were 35 university students in two consecutive reading field placements from the Early Childhood and Special Education programs. They were sophomores, juniors and seniors in the age range from 20 to 42, of various races, ethnicities, backgrounds, and 98% were female.

Setting

The field experience placements were determined by the researcher (professor) in order to give the teacher candidates an opportunity for experience and reflection in culturally and linguistically diverse field placements. The teacher candidates' field experiences were in two different elementary, urban charter schools that were created by the Somali community to provide a safe environment for students to learn, while getting one-on-one attention and extensive English language support. The majority of the population was comprised of Somali refugee and native-born Somali students with various levels of English proficiency. All of the students were Muslim; however, the school is not an Islamic religious school and is open to students of all beliefs. Arabic is also offered as an elective in one school and required for study in the other charter school.

Procedures
Data Collection and Analysis

The case study method was used to gather information, including reflective prompts during the field experience, semi-structured interview questions at the beginning and end of the field placement, and a debriefing session at the conclusion of the semester-long course. With the use of semi-structured questions, the participants had the freedom to elaborate on their ideas and provide a much richer description of their thoughts and perceptions in response to each question (Cresswell, 2003). Methodological triangulation, using more than one method to gather data, such as reflective prompts, semi-structured interview questions, and debriefing sessions was also employed. The reflective prompts gave rise to a series of open-ended questions that defined the focus of the study. The semi-structured interview questions involved establishing an Individual Level of Knowledge, Skills and Dispositions about Culturally and Linguistically Diverse Learners, prior and subsequent to the field experience in order to better comprehend the effects of a culturally and linguistically diverse field placement on teacher candidate development. At the culmination of the field placement, the debriefing discussion supplied further data, this time in a group setting for the 35 participants.

Data Analysis Process

The first portion of data analysis began with the organization of the data. Three questions guided the organization and analysis of the teacher candidates' responses to prompts including the following: (1) What assumptions did you have before you went to this culturally and linguistically diverse field placement?; (2) What discoveries did you make during your observation of teaching and learning activities?, and (3) What did you learn about diversity, community service and tutoring during your initial visit?

The semi-structured interview included four statements related to knowledge, skills and dispositions. The teacher candidates individually responded and then specifically addressed the issue of having no opportunity, low opportunity, medium opportunity, or high opportunity to foster knowledge, skill or dispositions for each of the four statements. These targeted questions explicitly asked the teacher candidates whether they explored learning opportunities and participated in discussion and reflection about culturally appropriate methods of collaboration, teaching and intervention; engaged in learning opportunities, discussion and reflection about the skills needed to

instruct English Language Learners; honored the dignity and integrity of diverse people; and developed and engaged students in activities.

At the outset, the teacher candidates viewed a map of Somalia, expanded their purview of Somali culture through a slide presentation that underscored the history, culture, geography, religion, language, economics, arts, cuisine, and clothing of that country. Lastly, the class discussed culturally responsive teaching. Subsequently, the teacher candidates participated in an orientation by the principal and ESL teacher at the host school where the teacher candidates were allowed to ask questions. There were also observations and participation by teacher candidates embedded in the context of the classrooms and shared classroom experiences. This was followed by teacher candidate reflections whereby a majority of their original assumptions were challenged. The teacher candidates began to see things differently through the interactions with the students, cooperating teachers and staff at the Somali charter school. At the beginning of the field placement and towards the end of the field placement, the teacher candidates completed semi-structured interviews regarding their individual levels of knowledge, skills and dispositions for working with culturally and linguistically diverse learners. The concluding step was the collective debriefing session during the reading class after the field experience was completed.

The data were analyzed from all of the culturally and linguistically diverse field experiences to determine to what extent the teacher candidates' comments and responses changed or remained consistent during their second field experience. The semi-structured interviews began with a fairly open framework which allowed for focused, conversational questions. The interview questions were written down and additional probes were listed to obtain more in-depth answers, if and when necessary. Coding took place in multiple stages, over time. The initial coding process was an open one whereby the transcripts were closely read and annotated. Subsequent coding continuously compared the current transcripts with prior ones to acknowledge the emergence of themes. The data was organized around certain key themes and examined to see the match or lack of a match to the expected categories. The major themes were identified. After a process of revising and refining the initial themes, four themes emerged from the first experience and three themes from the second experience, which best re-

flected the students' reported thoughts and experiences through the field placement (Clandinin & Connelly, 2000).

Results and Discussion

Below are results from the data analyses as they speak to the three research questions. Four findings of specific import emerged from this first culturally and linguistically diverse field experience: (1) Teacher candidates were very worried about communicating with Somali students; (2) Teacher candidates were surprised that many of the Somali students spoke English to varying degrees; (3) Teacher candidates indicated a greater understanding and appreciation for diversity and the challenges of meeting the needs of diverse learners; and (4) Teacher candidates felt untrained and unprepared to work with culturally and linguistically diverse learners. Each theme is described below using appropriate anecdotes from the teacher candidate participants to best illustrate their own thinking and actions. Selected anecdotes include:

1. *Teacher candidates were very worried about communicating with the Somali students.* (a) I am terrified of ESL students and not being able to communicate with them.

2. *Teacher candidates were surprised that many of the Somali students spoke English in varying degrees.* (a) Some of the children do need a lot of work, but many are also doing better than I expected.

3. *Teacher candidates indicated a greater understanding and appreciation for diversity and the challenges of meeting the needs of diverse learners while gaining greater confidence in exploring learning opportunities for culturally appropriate methods of collaboration, teaching and intervention.* (a) Kids are kids! I was a little nervous to be working with Somali children. I did not know if the differences in our cultures would make things more difficult, but as soon as I started talking to the children and observing their actions, I realized that it was really no different than working with any other child.

4. Teacher candidates became more aware, recognized, respected and honored student diversity and differing approaches to cultural influences on learning but felt untrained and unprepared to work with culturally and linguistically diverse learners. Selected anecdotes include (a) I found that the children really demanded a lot of attention and get jealous when I am helping another student.

Three themes emerged from the teacher candidates in the second linguistic and cultural minority diverse field experience: (1) Teacher candidates knew what to expect in terms of structure and discipline in the learning environment and felt more confident working with the culturally and linguistically diverse students; (2) Teacher candidates recognized students' diversity and differing approaches to cultural influences on learning; and (3) Teacher candidates gained knowledge of and skills in scaffolding instruction in a culturally and linguistically diverse classroom that helped them respond successfully to linguistic and cultural differences in the classroom and promote academic achievement for all learners. Selected anecdotes were chosen and grouped by themes. The anecdotes were positive and those most cited were used to illustrate the collective understanding of the data's meanings. Numerous responses indicated this stance and it is illustrated by many of the anecdotes:

1. *Teacher candidates became more comfortable within a diverse field setting.* "I wanted to return because I saw that these students were in need; I thought they had great potential and I am not afraid anymore."

2. *There are multiple ways to teach and learn.* "I have noticed that the linguistic diversity makes literacy assessments a little more challenging because of the accent that alters the sounds of the words but I am I learning new strategies that will help."

3. *The process of using reflection is helpful to refine and adapt teaching practices.* "I will need to learn some of their language terms because some of the children know so little English and I think this will help me to modify my lessons. "Venturing from the conventional field experience appeared to provide an opportunity for the teacher candidates to expand their knowledge, skills and dispositions in understanding the facets of English language

learner education and strengthen the teacher candidates' commitment to developing effective and suitable strategies for teaching English language learners.

Limitations

One of the limitations of the case study was the small sample size. The 35 participants volunteered when asked by the researcher (professor) who was teaching the two reading classes. All students in the two reading classes volunteered to participate. The fact that the participants were at various points in their program of study and enrolled in different education program areas was a second limitation. The researcher did not have immediate access to teacher candidate records to analyze data nor was the researcher focused on evaluating the teacher candidate volunteer's program of study. Data containing the various ages, races, ethnicities, backgrounds, and gender were recorded.

No information beyond the various ages, races, ethnicities, backgrounds, and gender was provided for the teacher candidate volunteers for the study. Other data that might have been important to include were teacher candidates' prior field placements, socio-economic status, the number of required education courses fulfilled, demarcation by program level, and prior employment experience. The researcher concentrated on the nature of candidate responses and answering the research question posed rather than on enlarging the study to increase the generalizability of the findings.

Conclusion

The findings support the premise that teacher candidate's comments, responses and dispositions change with exposure in a diverse field placement and seem to be positively affected toward teaching in a culturally and linguistically diverse school. Tracing the shift through multiple culturally and linguistically diverse field experiences demonstrates how the teacher candidates' experiences informed their preparation and mind set. Each field experience was 16 weeks and change came gradually for the majority of the students. For a high proportion of the teacher candidates, the point at which the attitudes might have begun to shift was by the end of the first semester, in the first culturally and linguistically divers field placement. Teacher candidates' transposed introspective inquiry to outward self-action as time progressed in each field experience. Also, the study suggests that the methodology has potential but much work remains for

researchers to explore the knowledge, skills and dispositions of teacher candidates. The immersion into these multiple and diverse field experiences was just the first step for the teacher candidates to examine their own beliefs and to be actively engaged in diverse educational settings.

It is critical to have appropriate dispositions, perceptions, and professional development to teach effectively in diverse classrooms. Culturally and linguistically diverse field experiences attempt to furnish teacher candidates with the foundational knowledge and insight necessary to teach in highly diverse classrooms. Teacher candidates do recognize the importance of being prepared for diverse educational settings and communities in which they must value cultural and linguistic differences. Therefore, it is important to examine the impact of these experiences on teaching and learning and the implications for teacher preparation programs and professional development initiatives. There is a continuing need to explore and expand culturally and linguistically diverse field placements as well as to advocate for approaches that build on culturally responsive teaching and well-established pedagogical principles.

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Action Research as a Conduit for Teacher Change in Elementary Mathematics Instruction

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Introduction

Nearly every day in elementary mathematics classrooms across the United States, a similar scene unfolds: A teacher with the very best of intentions stands at the front of a classroom to begin a mathematics lesson. As the direct instruction progresses, the students, who at one time sat in wide-eyed and rapt attention wanting to know and learn about the world around them, now sit with dazed expressions on their faces—their engagement waning with the passing ticks of the clock. With their textbooks open to the correct page, young children sit in rows of desks while the teacher demonstrates the necessary steps to complete a mathematical procedure that they will unquestioningly accept as the only way to arrive at a correct answer while completing their homework worksheet.

Regardless of our own personal histories and our own experiences as mathematics learners, chances are that each of us recognizes glimmers of reality in this scenario. Yet in contrast, the on-going conversation between mathematics educators and our educational partners about the critical importance of teaching and learning mathematics with understanding, especially in the elementary grades, (National Council of Teachers of Mathematics [NCTM], 2007, 2001; National Mathematics Advisory Panel [NMAP], 2008; National Research Council [NRC], 2008; 2001) highlights the disconnect between what should happen and what does happen in elementary mathematics. It is these early and formative learning experiences that establish the purpose and the expectations for what it means to know and to do mathematics.

Advocates for reform in the approach to mathematics education at all grade levels consistently call for using student-centered, or constructivist, approaches to mathematics that encourage the learning of mathematics ideas and concepts through discovery and inquiry and the use of structured classroom discourse and reasoning to communicate mathematical thinking and sense-making between members of a classroom community. Yet, a majority of in-service teachers and intervention specialists in the United States do not have an adequate understanding of mathematics and are not equipped to effectively support and structure the pedagogical approaches advocated within these reform documents (Ball, Hill, & Bass, 2005; Ma, 1999). Further, many feel they lack the pedagogical skills to successfully implement mathematics instruction that falls outside the predominant tell-show-do framework that reflects their own mathematical past. As a result, without professional development that adequately addresses the conceptual and integrated foundation for learning mathematics that is predicated on purposeful problem-solving, reasoning, and communication, teachers often default to approaches that rely heavily on memorization of isolated facts, the repeated replication of algorithms that have no inherent meaning, and leave students to work in silence (Boaler, 2008).

The Better Mathematics through Literacy (BMTL) project has been designed as a one-year professional development experience for inservice early childhood teachers and intervention specialists within a small section of Appalachia. The main goals of the project are to strengthen teachers' con-

ceptual mathematical content knowledge and to examine holistic approaches to mathematics through engaging, learner-centered activities, structured classroom discourse, the infusion of the NCTM Process Standards (2001) and mathematical practices for the Common Core State Standards Initiative (CCSSI, 2011), and the literary devices of writing, reading, and communicating (Burns, 1995; Kenney, 2005; O'Connell, 2005; Storeygard, 2009). The designers of this professional development experience anticipated that BMTL would be a conduit for teacher change and used the teacher-participants' engagement in the action research process to track this change. The purpose of this article is to provide illustrative evidence for how the action research component of BMTL was a vehicle to structure and support the teacher-participants' reflection about their own mathematics instruction and to make the change process visible.

The Role of Professional Development, Reflection, and Action Research

Research surrounding the process of teacher change addresses the role of structures that support job-e—e-e-mbedded inquiry and professional interaction. The most effective professional development for teachers typically occurs through active and engaged participation in communities of practice where individual members can shape what they are learning and what they can do with it (Gilrane, Roberts, & Russell, 2008). Such approaches recognize that teacher learning should be centered on the critical activities of teaching and learning; should investigate practice through questioning, analysis, and criticism; and should be built on substantial discussions that foster analysis and communication (Darling-Hammond, 1999; Putnam, & Borko, 2000; Boyle, Lampianou, & Boyle, 2005). Fostering this approach over time, particularly in a context supported by professional development, such as BMTL, enables teachers to practice and reflect on their teaching as it occurs within the context of their individual classrooms. In this way teaching behaviors can be redirected by setting goals that lead to new behaviors. Setting explicit goals to effect change can impact teacher decision-making that honors the numerous interdependent interactions that constitute the highly complex environments of schools (Carlson, Dinmeyer, & Johnson, 2006).

Reflection is, of course, a critical, though often unseen component of teacher decision-making. In his classic work *How we think*, Dewey (1933) suggested that the process of reflection begins when a teacher experiences a difficult or unexpected problem in the classroom. Action research, as defined and implemented within the BMTL experience, engages teachers in this kind of reflective thinking necessary to identify and address problems in the classroom and ways to improve teaching and learning. Action research can take many different forms in that it occurs through the purposeful, personal, and reflective examination of teaching practice within individual classrooms. Action research provides teachers with opportunities to demonstrate what Schon (1983) calls "reflection-in-action" and "reflection-on-action" and what Darling-Hammond (2005) identifies as the cycle of teacher thinking that occurs during "enactment" and "reflection." Action research also contains elements of what Cochran-Smith and Lytle (1999) call "knowledge-of-practice," which they define as knowledge accrued from the systematic and purposeful reflection on teaching. The type of thinking associated with teacher inquiry is employed after the act of teaching and requires teachers to be reflective, analytical, and to engage with thinking processes that are more deliberate, concerned with method, and associated with a systematic process (Korthagen & Vasalos, 2005). It is within the articulation of this enactment and reflection that action research becomes a vehicle to show the process of teacher change.

The Origin and Organization of Better Mathematics through Literacy

Better Mathematics through Literacy (BMTL) was conceived and designed in response to the national conversation surrounding problem-based and student-centered mathematics instruction. A collaborative effort of university faculty in mathematics education, reading education, and early childhood education along with administrative and support staff from a university center for the study and development of literacy and language, the BMTL project has been awarded more than $700,000 over five consecutive years through federal Improving Teacher Quality grants, to provide high-quality professional development, mathematics manipulatives, children's literature, and professional resources in student-centered mathematics instruction. To date, 237 inservice elementary teachers and intervention specialists representing forty-five individual school districts and thirty-three Appalachian Ohio counties have completed the professional development experience.

BMTL is organized according to three stages of professional development. These include an intense, week-long Summer Institute, three follow-up sessions during the academic year, and a conference-style Action Research Final Symposium. There are two cohorts of teacher-participants each year. One cohort meets on the university's main campus, and the other meets a week later on one of the university's five regional campuses. The regional campus cohort has rotated each year to expand the project's outreach to the Appalachian region it aims to serve.

The first stage of the BMTL professional development experience, the week-long Summer Institute, is designed to engage the teacher-participants within a mathematics learning community to explore student-centered mathematics instruction through two different perspectives. As students, the teacher-participants receive a first-hand experience of rich, open-ended mathematical tasks that span the elementary mathematics concepts of counting, number sense, operations, and algebraic thinking. These activities create a classroom atmosphere conducive to meaningful learning and naturalistic inquiry and are supported by children's literature that develops and expands mathematics concepts. As teachers, the workshop facilitators assist the teacher-participants in deconstructing the critical elements of the mathematical tasks and student-centered pedagogical strategies used in facilitating the tasks as well as the questioning strategies and interpersonal communication which are specifically designed to solicit the teacher-participants' mathematical thinking. Inevitably, the juxtaposition of the student-centered approach to mathematics instruction in BMTL and the teacher-directed approach occurring in most teacher-participants' classrooms creates a high level of cognitive dissonance for the teacher-participants. This unease, coupled with the expectation to enact and reflect upon their own implementation of similar tasks and strategies, sets the stage for the ensuing year-long classroom-based action research.

The second stage of the BMTL professional development experience consists of three follow-up sessions. These occur on Saturdays in September, December, and February of the academic year. The two cohort groups—one on the university's main campus, the other at one of the university's regional campuses—met simultaneously through distance learning technology as the researchers and teacher-participants explored additional, developmentally-appropriate mathematics concepts in probability, geometry and spatial sense, and measurement, respectively. These structured activities and discussions followed a similar format to the days of the Summer Institute, but specific conversations were designed for teacher-participants to share the struggles and successes surrounding the implementation of student-centered mathematics in their classrooms as well as their reflection, questioning, and analysis related to their action research.

The third stage of the BMTL professional development program, the Action Research Final Symposium, was implemented as a public display and celebration of the teacher-participants' experience within the year-long professional development. Held in late April of each academic year, a conference-style format allowed each participant ten to fifteen minutes to present the focus of his or her action research project, any student work or data that supported the findings and conclusions, and the teacher-participant's summary of the impact of the BMTL experience on their teaching and learning of mathematics during the school year. Each presentation session was digitally recorded, and each participant was required to submit a written reflective summary of his or her action research experience, findings, and supporting evidence to the BMTL team.

Setting Expectations with the Action Research Protocol

The BMTL project team knew from the beginning that we wanted this professional development experience to be one that moved its teacher-participants from ideas to action. We also knew we would need a vehicle or structure to help the teacher-participants keep track of how they were implementing BMTL strategies and their effectiveness. That is, we wanted the elementary teacher and intervention specialists to implement and experiment with the student-centered approach to elementary mathematics learned in the 40-hour Summer Institute. We also wanted them to document and reflect upon their experiences as the school year progressed. For this reason, we included instructions on an action research component toward the end of the Summer Institute, and we articulated a clear expectation that the teacher-participants would be deliberate in keeping track of the strategies they were using and their effectiveness.

Now in its fifth year of implementation, BMTL has incorporated an action research component since the beginning. Admittedly, however, the first year of the action research project was somewhat

problematic as it became evident to the project team that the teacher-participants were not clear on the expectations for the action research project or even what constituted action research. Most had a conception of "research" as something far removed from their day-to-day life in elementary classrooms. Seeing action research as a crucial tool to help teachers critically engage in the reflective examination of their mathematics teaching but recognizing the teachers' confusion and frustration over how to conduct such research, the research team developed an Action Research Protocol (ARP). The ARP was a month-by-month guide for participants that offered guiding questions and open-ended prompts for personal reflection. For example in preparation for the September follow-up session, teacher-participants were given these instructions: Be deliberate about what BMTL strategies (ways of teaching) you are using by keeping a journal. Besides being mindful to align your ways of teaching with Standards, be deliberate in examining the effect of your teaching (with BMTL) on student learning. The effect on student learning needs to be a continued and deliberate focus. The following questions may help structure your thinking in this regard:

1. How am I teaching? (i.e. What strategies am I using?)
2. What effect is the way I am teaching having on student learning?
3. How do I know that the way I am teaching is working (or not working) to improve student learning?
4. What sources of evidence will support the fact that the way I am teaching is having a positive effect on student learning? (Possible sources of evidence: student work, observations recorded in a journal, various forms of assessment, video tape or interview with students)

The complete Action Research Protocol appears as Appendix A.

At each follow-up session during stage two of BMTL, the participants were asked to draft their written responses to the ARP questions based on their experience and their interactions with students and to collect student work samples and other relevant data that would support their evolving thinking, tentative conclusions, and reflective responses. As the school year progressed, participants were asked to submit their written protocol responses to the research team at each follow-up session. Each of these sessions also included group discussion time to engage the teacher-participants' learning community in sharing the successes and struggles of the action research project. The ARP was a way of taking what was, to the teacher-participants, an overwhelming and seemingly insurmountable task and making it more systematic, manageable, and reflective while simultaneously providing the researchers with data useful for tracing teachers' changes in pedagogical approaches to teaching elementary mathematics.

Participants and Methods

From the 237 elementary teachers and intervention specialists that completed all three stages of the BMTL professional development experience over the past five years, the researchers purposefully selected a subset of twelve teacher-participants from across all cohorts for in-depth analysis. Based on demographic and categorical data provided at registration, the subset represented an equivalent blend of grade-level teaching assignments and included two intervention specialists who work primarily with small groups of students within a resource room. This purposeful subset also ensured a representative sample in years of teaching experience, a balance in bachelors and masters degree holders, a wide range of mathematics curricula, and geographic locations within Appalachian Ohio. Because only six of all BMTL participants have been male, the researchers felt that including a male in the purposeful sample may risk participant confidentiality; therefore gender was not used as selection criteria.

From this purposeful sample of twelve, the typical BMTL participant is a forty-one-year-old female with an average of thirteen years teaching experience in elementary settings. She taught in self-contained classrooms of twenty to twenty-five students and used a traditional, or teacher-directed, mathematics curriculum. From the sample, ten of the twelve teachers are Appalachian natives teaching in school districts within twenty miles of the cities and towns in which they were raised.

Data Coding and Analysis

Collected by the researchers during each follow-up session, the teacher-participants' Action Research Protocol responses were the primary source of evidence in documenting the classroom teachers' implementation and experimentation with the pedagogical strategies learned in the BMTL Summer Institute

and the academic year follow-up sessions. These responses helped to reveal the teacher-participants' purposeful and reflective examination of the professional and personal changes they were making in their mathematics instruction.

Digital video recordings and transcripts of the Action Research Presentations made by the purposeful sample at each BMTL Final Symposium provided additional data sources. These videos and transcripts encapsulated the sample teacher-participants' struggles and successes as they experimentally implemented a student-centered approach to mathematics in their classrooms and also gave supportive evidence of changes in the teacher-participants' evolving understanding of the teaching and learning of elementary mathematics.

Working with two teacher-participants' data sets from the sample at a time, the authors conducted a preliminary data analysis by independently reading and coding the data with an eye toward pedagogical changes and evidence of impact on student learning. The authors met bi-weekly to discuss and compare the emergent coding and classifications until all twelve data sets had been examined. The authors then discussed and collapsed a wide range of initial codes into more broad categories and recursively examined the sample's data sets to ascertain if new codes or categories were needed. With the categories and classifications set, the researchers began to abstract major themes from the qualitative analysis that encapsulated the teacher-participants' instructional changes that resulted from the BMTL professional development.

Results and Discussion

As evidenced by ARP excerpts from the teacher-participants within the sample data in Table 1, three predominant themes of teacher change emerged through the data sets. The researchers assert that through the BMTL professional development program the elementary teachers and intervention specialists became more integrated, more contextual, and more constructivist toward mathematics instruction. The three major findings are summarized in this section, and Table 1 highlights a brief sample of teacher voices that exemplify the findings. As readers view Table 1, they will see quotes from the teacher-participants' Action Research Protocols demonstrating a first-person perspective of the growth trajectory progressing from September to December to February and to the Final Symposium in late April where teachers presented their action research projects. Though it

should be emphasized that each of the three themes in the findings was found in all twelve of the purposeful sample for this study, Appendix B highlights only one teacher for each of the three findings for the sake of brevity while the discussion that follows describes each in more detail.

Rebecca's Case: Exemplifying how BMTL Teacher-Participants became *More Integrated* in their Approach to Mathematics Instruction

The first major finding related to teacher change as a result of the teacher-participants' year-long BMTL professional development experience is that they began to view their mathematics instruction in a more integrated fashion. This section addresses this finding in general then looks particularly at Rebecca, tracing her journey to show what this looked like for a particular teacher. As a result of BMTL, the participants were also introduced to children's literature and tradebooks that are centered on mathematical themes that can provide connective threads between their literacy and mathematics instruction. These books, in tandem with mathematics manipulatives and a new set of problem-solving strategies modeled in the Summer Institute and follow-up sessions set the expectation for using writing, speaking, and communicating to articulate students' developing mathematical thinking. As the teachers utilized BMTL strategies, they approached mathematics instruction as an opportunity for students to engage in making sense of the mathematics they were learning rather than memorizing a set of steps to carry out a procedure.

While this theme of being more integrated in their approach to mathematics instruction was found in all twelve participants, this section will look specifically at third grade teacher Rebecca's case as one that provides evidence of a year-long reflective development and growth. In September Rebecca indicated that she was trying to "step back and let students solve problems," acknowledging the importance of the struggle as it relates to mathematical understanding. Rebecca shifted her focus to be less about the answers and more about the process students were using to find the answers. She also noted that she encouraged the use of manipulatives and incorporated time for math games and conversation about mathematics. The combination of math and literacy activities became even more noticeable in her December reflection where she notes that her third graders were growing more confi-

dence with the mathematical concepts of number and number sense and using this understanding to write multiple equations for two-digit numbers. Rebecca further noted her integration of story problems, in particular story problems written by the students which paralleled a specific strategy modeled in the Summer Institute.

While Rebecca clearly iterated her students' growing confidence and ability to work through mathematical problems of increasing complexity, she also noted the challenges along the way, especially when tutoring a group that had not been her students all year. In her February reflection she shares that she integrated poems with the study of mathematics with this tutoring group. As she had students share solution strategies and key words, just like she had with the third graders who had been with her all year, she noted that for the students who did not work with her every day "thinking and talking to each other about how they solved their math problems is not coming to them as easily… This is not how they have come to experience math over their first three years in school." Rebecca's integrated approach to mathematics instruction was something she directly noted in the presentation at the Action Research Final Symposium as having particular impact on her lower-ability students. She stated: "I could not believe the progress [they] had made. I honestly attribute the growth they made this year to the BMTL approach. We were always revisiting and using ideas that they had previously learned." And like their teacher, Rebecca's students were "integrating the thinking of others with their own during the whole school year."

Anita's Case: Exemplifying how BMTL Teacher-Participants became *More Contextual* in their Approach to Mathematics Instruction

The second major finding related to teacher change as a result of the teacher-participants' year-long BMTL professional development experience is that they developed and utilized a more contextual approach to mathematics instruction than they had previously. A recurring theme in the data revealed that prior to their BMTL experience the teacher-participants utilized more traditional means of mathematics instruction that focused on rote memorization, repetition, and students working quietly and independently. Using the BMTL approach, teachers shifted their teacher-centered demonstrations of procedures to instruction that involved more complex mathematical tasks and situations that became the basis for authentic

problem solving connecting with students' daily lives. As a result of BMTL, teachers found increased engagement and interest from students by placing mathematical experiences within the context of their students' day-to-day experiences rather than presenting mathematical concepts in isolation and stripped of any relevant context. Concepts central to building mathematical understanding were no longer artificially separated into chapters or workbook pages or artificially fragmented segments of the school day, but instead connected with students' prior knowledge. Strategically selected children's books were used as a conduit to understanding as students actively and excitedly used a wide range of solution strategies to make sense of addition and subtraction in a context.

Again, though evidenced in all twelve of the purposeful sample, this section focuses on one particular teacher, in this case first grade teacher Anita, to illuminate this finding in more detail. Throughout her follow-up reflections, Anita makes reference to her students making use of multiple ways to find and show mathematical meaning and evidence of students' non-traditional approaches to problem-solving. Anita's September reflection shows a range of manipulatives (e.g. color counters, dominoes, connecting cubes) used for problem solving and incorporated with the Number and Problem of the Day. In her December reflection Anita specifically addresses the change in her use of math worksheets. Where in the past she had used these as her primary means of mathematics instruction, she no longer used all of the workbook sheets, having found more contextual ways to teach the mathematical concepts. She stated, "I very seldom ran additional worksheets to reinforce skills taught or to keep the students busy. They didn't seem to need them." She also noted that students worked better collaboratively than independently as a lead up to "recording their own thinking and answers."

This stark contrast between mathematics in isolation and the teacher-participants' shift to becoming more contextual in their approach to mathematical instruction is further evidenced in Anita's February reflection in which she writes: "Students love the math meeting time, and participation is wonderful. They love trying to come up with different ways of solving a problem." She noted that in contrast to the worksheet approach she had used in prior years this more contextual approach resulted in student enthusiasm toward mathematics noting that they "have now come… to predict what the math focus of the book I

share with them at math meeting time will be." And in her Action Research Final Symposium presentation, Anita noted the connection between her more contextual approach to mathematics instruction and student achievement. "The class as a whole has a deeper understanding of money, time, factions, and patterns than I have seen in all my years of teaching… To me, this shows that math meeting time, the problem solving, and the manipulatives are all valuable strategies that I will continue to use in my classroom."

Jasmine's Case: Exemplifying how BMTL Teacher -Participants became *More Constructivist* in their Approach to Mathematics Instruction

The third major finding related to teacher change as a result of the teacher-participants' year-long BMTL professional development experience is that they became more constructivist in their approach to mathematics instruction. This section addresses this finding in general then looks specifically at second grade teacher Jasmine, tracing her journey to show what this looked like for a particular teacher. As a result of having a first-hand learning experience in which mathematics concepts were presented in a student-centered manner within the BMTL Summer Institute participants were more willing to allow students to discover mathematical concepts and relationships in ways that made sense to the students. The teacher-participants learned that students, when given the time and opportunity to think, could make mathematical observations and generalizations from their personal experience and did not have to constantly tell the student what to do and how to think. As a result, mathematics became an investigative and evolving construct in the minds of the students rather than a set of discrete facts and algorithms they were to memorize.

As a result of the BMTL strategies, Jasmine's reflections throughout the year demonstrate how students were able to actively construct mathematical understanding and experience increased engagement in the learning process. Jasmine's September reflection highlights her shift from teacher-centered to learner-centered instruction as she notes their engagement with a discovery approach to learning. "It's so fun to hear their interaction and conversation as I take a backseat to their learning." This increased student engagement and learning put Jasmine's students on a path of learning through exploration where multiple approaches were honored. In her December reflection she notes: "I have allowed them to think, explore, learn by trial and error, [and] take charge of their

learning." She noted the change from how she had taught in past years which was to give students the answers when they couldn't figure them out to instead encouraging them to "find out for themselves." Jasmine and her students grew increasingly comfortable with this student-centered, constructivist approach as the year progressed. In her February reflection she notes that her students are "no longer afraid to try new things, not afraid of messing up." And she reinforced this perspective in her presentation at the Final Action Research Symposium where she emphasized that through "the approach of engagement, the literature, the connections, more variety of manipultives used, the students have experienced math in a new enlightened way."

Conclusion

Ongoing mathematics reform efforts have been an attempt to move classroom instruction away from the tradition in which mathematical knowledge is viewed as stoic, sequential, discrete, and easily understood through a public display of symbolic information (Draper, 2002) and toward an instructional approach in which mathematics knowledge is viewed as an individual construction in the mind of the learner as he or she interacts with people and things in the environment (Ellis & Barry, 2005; NRC, 2008). The National Association for the Education of Young Children [NAEYC] and NCTM issued a joint statement that advocates for a high-quality, challenging, and accessible mathematics education for all children in the first years of schooling (2002) that is predicated on the active engagement of student thinking and the articulation of developing mathematical ideas and thinking as it naturally arises in the context of students' investigations of real-life problems (Lee & Ginsburg, 2009).

Professional development opportunities such as Better Mathematics through Literacy, and in particular the Action Research Protocol, can provide meaningful learning opportunities for early childhood teachers and intervention specialists to reflect on and improve mathematics instruction. While we recognize that professional development opportunities are plentiful, we want to emphasize that what makes BMTL unique and profoundly impactful is the way that it establishes, through the Action Research Protocol, a clear expectation that teachers take what they are learning and put it to use in the classroom. Through the sequence of structured questions designed to guide reflection as teachers enact new strategies and continually gauge their effectiveness, teachers who complet-

pleted the year long BMTL experience became more integrated, more contextual, and more constructivist toward mathematics instruction. These findings echo the calls for national reform in mathematics instruction that emphasize purposeful problem-solving, reasoning, and communication over the memorization of isolated facts and algorithms. Action research offers a conduit for teacher change because it is the lived example that hands-on, story-rich, experiential, learner-centered, multiple-ways-to-find-a-solution mathematics instruction works. The researchers encourage the replication of BMTL strategies and in particular action research that regularly documents teacher reflection on the implementation and experimentation with different strategies for teaching mathematics and their impact on student learning.

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Appendix A

Evidence of Major Findings

BMTL Sample Teacher-Participant & Grade Level	Action Research Responses September	Action Research Responses December	Action Research Response February	Action Research Final Presentation Transcript
Rebecca Grade 3	"I am trying to step back and let the students solve problems instead of being so quick to lead them to the answer. We are focusing more on the process and less on the answers. Manipulatives are available to all students and I encourage their use. We are taking the time to play the math games as this provides a wonderful opportunity for students to talk about math." (Fall, response 1)	"I have noticed how confident that all of the students have become with number and number sense. Every day, they are writing multiple equations for two-digit numbers and as their confidence increases, so does the complexity of their equations. Instead of simply writing 55+3=58, they are writing 20+25+10+3=58. They also write a story problem each day for the number of the day as well as coin values and determining if the number is odd or even." (Winter, response 2)	"Employing BMTL strategies with a tutoring group of third graders has been challenging. I open the sessions with a poem and they share how they arrived at their answers. Then we discuss solution strategies and key words. Sharing their thinking and talking to each other about how they solved their math problems is not coming to them as easily as it did with the students in my class. This is not how they have come to experience math over their first three years in school." (Spring, response 2)	"Nearing the end of the school year, I went back to look at my anecdotal records for each student at the beginning of the year. I could not believe the progress that many of the lower-ability students had made. I honestly attribute the growth they have made this year to the BMTL approach. We were always revisiting and using ideas that they had previously learned. They were integrating the thinking of others with their own during the whole school year." (Final Action Research Symposium Transcript).

Appendix A– continued

BMTL Sample Teacher- Participant & Grade Level	Action Research Responses September	Action Research Responses December	Action Research Response February	Action Research Final Presentation Transcript
Anita Grade 1	"Each new math concept [addition and subtraction] was introduced through exploration and manipulatives. Two color counters, dominoes, and connecting cubes were only a few of the concrete items used in our problem solving process. I use calendar time for spiral review. The number and problem of the day strategies are also incorporated during this time." (Fall, response 1)	"Math book worksheets were only used after students demonstrated knowledge of math concepts through daily recording. Not all workbook sheets were utilized, and I very seldom ran any additional worksheets to reinforce skills taught or to keep the students busy. They didn't seem to need them. They did much better working with a partner and recording their own thinking and answers." (Winter, response 1)	"Students love the math meeting time and participation is wonderful. They love trying to come up with different ways of solving a problem. They have now come to begin to predict what the math focus of the book I share with them at math meeting time will be." (Spring, response 6)	"In late February, most of my first-graders demonstrated mastery of their first-grade math skills, and many were moving on to second-grade skills. I was able to give the diagnostic to the other students in the class by the end of March. The class as a whole has a deeper understanding of money, time, fractions, and patterns than I have seen in all my years of teaching. The other first grade teachers will not get to those concepts until late April or early May. To me, this shows that the math meeting time, the problem solving, and the manipulatives are all valuable strategies that I will continue to use in my classroom." (Final Action Research Symposium Transcript)

Appendix A– Continued

BMTL Sample Teacher-Participant & Grade Level	Action Research Responses September	Action Research Responses December	Action Research Response February	Action Research Final Presentation Transcript
Jasmine Grade 2	"I have changed the way I introduce new concepts by letting them discover what we are doing. It's so fun to hear their interaction and conversation as I take a backseat to their learning." (Fall, response 1)	"I have allowed them to think, explore, learn by trial and error, take charge of their learning, and constantly remind myself that I don't have to give them answers when they ask, but instead, encourage them to find out for themselves." (Winter, response 1).	"I watch as they are no longer afraid to try new things, not afraid of messing up, and to hear them using my words "no big hairy deal" if it doesn't work out the way they thought it would." (Spring, response 2)	"I believe that through the whole process of changing my thinking as far as the way things are presented to them, the approach of engagement, the literature connections, more variety of manipulatives used, the students have experienced math in a new enlightened way" (Winter, response 1).

Appendix B

Action Research Protocol

Better Mathematics Through Literacy (BMTL) Action Research Project
Monthly Planning Document for 2009-2010

August: Think about what you've learned in the intensive July workshop. Figure out what BMTL strategies (ways of teaching) you will integrate into your curriculum in 2009-2010

September: Be deliberate about what BMTL strategies (ways of teaching) you are using by keeping a journal. Besides being mindful to align your ways of teaching with Standards, be deliberate in examining the effect of your teaching (with BMTL) on student learning. The effect on student learning needs to be a continued and deliberate focus. The following questions may help structure your thinking in this regard:
1. How am I teaching? (i.e. What strategies am I using?)
2. What effect is the way I am teaching having on student learning?
3. How do I know that the way I am teaching is working (or not working) to improve student learning?
4. What sources of evidence will support the fact that the way I am teaching is having a positive effect on student learning? (Possible sources of evidence: student work, observations recorded in a journal, various forms of assessment, video tape or interview with students)

September 26th: Bring answers to the above questions (preferably word processed). We will spend some time debriefing on what's happening in your classrooms and how BMTL strategies (ways of teaching) are impacting student learning. *Bring two copies of your written answers—one for yourself and one for us to keep.*

October-November: Consider our discussion from the first follow-up session (September 26th)—what you heard from others about what is and isn't working. Utilize feedback from others and continue to be deliberate about how the way you are teaching relates to what and how your students are learning. Because we will be moving through an actual school year you will be utilizing more strategies or ways of teaching (and repeating some strategies) as the year goes on. Keep track of what strategies (ways of teaching) you are adding and how the strategies you are repeating over time impact student learning. Besides the original four questions (above) the following questions should help structure your thinking and move toward the Action Research Project:
1. What ways of teaching (strategies) have I used over a prolonged period of time?
2. What difference do I see in my students' learning now that they have more practice with these strategies and ways of thinking and learning?
3. What evidence do I have to support my conclusions in #2? (Here again, samples of student work, observations recorded in a journal, formal and informal assessments, video tapes of students working, and interviews with students would be excellent sources of evidence).

December 5th: Bring your answers to the above questions and some examples of student work that will show some of what's going on in your classroom as a result of BMTL. We will take time to share and generate feedback. *Bring two copies of your written answers—one for yourself and one for us to keep.*

January-February: Continue the process of being deliberate about your teaching and your students' learning as you employ strategies (ways of teaching) from BMTL. Because each follow-up session will present new information (September = Geometry; December = Probability; February = Measurement), you should especially be mindful of strategies you are adding. For strategies you are continuing throughout the school year (for instance, if your students are keeping a math journal), your observations and supporting evidence of the effect on student learning over time are valuable. So besides the prior seven questions, you may want to ask the following:

1. Have I seen my students become more confident, comfortable, and capable with math because of the way I am teaching? Explain with some specific details which combine observation and supporting evidence.
2. Now that I'm 6 months into the school year and within three months of the Final Symposium for BMTL, what would I like to focus on in more depth? (i.e. What do I want to be the focus of my Action Research Project?)

February 20th: Bring answers to the above questions (optional) and the four questions listed below (required). *Bring two copies of your written answers—one for yourself and one for us to keep.* This is our last follow-up before the Final Symposium so you'll need to have a clear sense of direction on the specific aspect of BMTL and its effect on student learning that will be the topic of your Action Research Project. What we are looking for are the following:
A clearly defined topic (a particular strategy or way of teaching) employed as a result of BMTL
Conclusions about how the strategy/way of teaching affected student learning
Evidence that supports your conclusions

The following questions will give shape to your Action Research Project:

- What strategy (way of teaching) did I employ, and how was I deliberate in exploring the effects of this strategy or way of teaching on student learning? *You don't have to cover every strategy; focus on a particular strategy (way of teaching) or manageable combination of strategies.*

- What was the effect of this strategy or way of teaching on student learning?

- How do I know that this strategy or way of teaching impacted student learning in a given way? What evidence do I have to support my conclusions?

- How can I share this research with others? (trifold, PowerPoint, essay of strategies and findings, video of students working, interviews with students, samples of student work, etc.)

March-April: Keep utilizing BMTL strategies (ways of teaching) and being deliberate about analyzing their effect on student learning. Formalize your Action Research Project for the Final Symposium, making sure to address the four questions from the February 20th follow-up session and the following:
How will what you learned this year through BMTL affect your future teaching?

- Continuing: What do you envision continuing?

- Improving: What changes do you plan to make to improve you implementation of BMTL strategies (ways of teaching) next school year?

- Expanding: What do you plan on expanding?

April 24th: Final Symposium. The two groups will meet together, and we will have some outside guests to include area teachers, principals, and representatives from the Ohio Department of Education and the Ohio Board of Regents.

The following guidelines will help you to anticipate the Final Symposium:
Each presenter will have 10 minutes.
We will videotape the presentations.

One Final Consideration: Attached is "Permission to Use Photos/Videos" for you to have the parents/guardians of your students sign in the event that you would like to incorporate pictures in your Action Research Project. If you have your own form that covers the same (or more generic) content that you've already secured for the year, that's fine too. *If you use this letter, make sure to personalize it with your school information in the signature portion of the letter mid page.*

Ohio Association of Teacher Educators
Membership Invitation August 2013-July 2014

The Ohio Association of Teacher Educators (OATE) is a state unit/affiliate of the Association of Teacher Educators (founded in 1920) and is also a member of the Ohio Confederation of Teacher Education Organizations (OCTEO). OATE promotes quality teacher education programs for initial preparation, induction, and continuing professional development opportunities for P-12 school districts, agency-based, and college/university teacher educators.

Prefix (Circle): Dr.   Mr.   Ms.   Mrs.   **Name**:_____

Institution: _____   **E-mail Address**:_____

Please include address (even if renewing) as a way to correct any possible errors in the database on a yearly basis.

Address: ___Home or ___Office

(Street or Box)_____ (City)_____ (State)_____ (Zip)_____

Office Phone #: (_____) _____-_____   Fax #: (_____) _____-_____

STATUS: ___Renewal ___New Membership

CATEGORY and DUES:
_____ Regular ($40)
_____ Retired ($10)
_____ Student ($5–full-time undergraduate or graduate)
_____ Agency Subscription ($25) (i.e. library)
_____ Complimentary Member

Make check payable to: OATE; Dues for OATE are tax deductible.

Are you a member of ATE? ___Yes ___No

Employment:
__ (ES) Elem./Sec. School
__ (HE) Higher Education
__ (OD) Ohio Dept. of Ed.
__ (PS) Pre-service/UG
__ (G) Graduate Student

Professional Area:
__ (T) Teacher in E/S School
__ (P) Professor in HE
__ (A) Administrator
__ (D) Director of ST/Intern
__ (U) Undergraduate student
__ (G) Graduate student
__ (L) Library

Please indicate your AREA(S) OF INTEREST IN SERVING:

OATE membership provides many opportunities for professional development, service, and research. YOUR involvement is KEY to the improvement of teacher education!

Name:_____ **E-mail Address:**_____ **Phone #: (____)_____**

Individual Service

__Write an article for the Newsletter
__Serve as a Journal Reviewer
__Serve as Newsletter Editor
__Help with Publicity/Public Relations
__Other: _____

Committee Service

__Serve on the Conference "Call for Proposals" Selection Committee
__Serve on the Journal Committee
__Serve on the Standards and Legislative Committee
__Serve on the Membership Committee
__Serve on the Nominations and Elections Committee
__Serve on the Awards Committee

RETURN TO: ?????
Lynn Kline, Ph.D.- OATE Membership
University of Akron, Department of Curricular Instructional Studies, Akron, OH 44325-4205

Ohio Association of Teacher Educators
Membership Invitation August 2012-July 2013

Membership Benefits

1) Subscription to the Ohio Journal for Teacher Educators ($20 value - two issues/year at $10.00 each). Three (3) complimentary copies for authors of articles published in the OATE Journal.
2) OATE Newsletter.
3) Fall and Spring Professional Conferences with OCTEO.
4) Ohio Field Directors Forum.
5) Annual Partnership/Connections Forum/Summit (Representatives from Higher Ed. and P-12 Schools).
6) Annual Recognition Awards for Outstanding Cooperating Teacher, University Supervisor, Student Teacher, Field Experience Program, Mentor, and Service– A statewide winner and regional winners for each category (must be an OATE member to nominate).
7) Membership Card and Lapel Pin.
AND….
8) Opportunities for dialogue and collective action on current issues affecting teacher education.
9) Opportunities for individual professional growth and leadership.
10) Dissemination of current information through OATE journals, newsletters, conferences, etc.
11) Collaboration with other education entities sharing common interests.
12) Legislative alerts and representation for teacher educators to provide a voice with state policymakers.
13) Opportunities for networking with other professionals for innovative practices.

2012-2013 OATE Officers and Executive Committee

President	Dora Bailey
President Elect	Rachel Wlodarsky
Past President	Linda Billman
Secretary	Therese Kightlinger
Treasurer	Sally Barnhart
Membership	Lynn Kline
ATE Conference Delegates:	Dariel Jacobs (2013)
	Linda Billman (2013)
	Lisa Huelskamp
	Jim Whiteman
Standards Chair	Dariel Jacobs
Journal Co-Editors	Gail Saunders-Smith
	Lauren Cummins
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	Gail Saunders-Smith
	Cynthia Geer
Field Director Forum	Sally Barnhart
Co-Chairpersons	Connie Bowman
Executive Secretary	Diane Nelson
Web Master	Ann Shelly

2012-2013 Conference Schedule

OCTEO/OATE Fall Conference 2012
The Crowne Plaza Dublin Hotel
Columbus, OH

ATE 2013 Annual Meeting
February 16-20, 2013
Hyatt Regency
Atlanta, Georgia

OCTEO/OATE Spring Conference 2013
The Crowne Plaza Dublin Hotel
Columbus, OH

Visit the Ohio Confederation of Teacher Education Organizations Website (www.ohioteachered.org) for details.

OATE INVITES YOU…*to attend and participate in conferences and/or submit a proposal for presentation of your research or project to OATE and/or ATE.*

You are invited…

To share your research and ideas
with other teacher educators!

The Fall 2012and Spring 2013 issues of
The Ohio Journal of Teacher Education
will be an open theme issue.

Submission guidelines are on the last page of this issue.

The Ohio Journal of Teacher Education

The Ohio Journal of Teacher Education provides a forum for the exchange of information and ideas concerning the improvement of teaching and teacher education. Articles submitted should reflect this mission. Their focus should concern concepts, practices, and/or results of research that have practical dimensions, implications, or applicability for practitioners involved with teacher education. The journal is regional in scope and is sent as a benefit of membership in the Ohio Association of Teacher Education.

Manuscripts are subject to review of the Professional Journal Committee and editorial consultants. Points of view are those of the individual authors and are not necessarily those of either Association.

Permission to reproduce journal articles must be requested from the editors.

Manuscript Guidelines

Content: Journal issues may be "thematic" or "open." Currently, all future issues are designated "open."

Length: Manuscripts, including all references, bibliographies, charts, figures, and tables, generally should not exceed 15 pages.

Style: For writing and editorial style, follow directions in the latest edition of the *Publication Manual of the American Psychological Association.* Omit the author's name from the title page. Include 100 word abstract. Please do not use auto formatting when preparing the manuscript! When preparing the list of references, please use the hanging indent feature. Do NOT press Enter at the end of each line and tab in to create the second line indent. Use of the Enter and Tab keys when formatting the reference list, creates an editing nightmare when transferring the manuscript into the publishing program.

Cover page: Include the following information on a separate sheet attached to the manuscript: title of the article; date of submission; author's name, author's terminal degree; mailing address, e-mail address, business and home phone numbers, institutional affiliation; and short biographical sketch, including background and areas of specialization.

Submission: Submissions must be word processed using Microsoft Office Word (Microsoft Excel tables are permitted). Submit the manuscript as an attachment to an e-mail to gasaunderssmith@ysu.edu or lcummins@ysu.edu

Note: It is assumed that all manuscripts submitted to the editors have received local IRB approval. Any manuscripts that do not follow the above procedures will be returned.

Editorial Procedures

Authors will be notified of the receipt of the manuscript. After an initial review by the editors, those manuscripts which meet specifications will be sent to reviewers. Notification of the status of the manuscript will take place after the deadline date for each issue. The journal editors will make minor editorial changes; major changes will be made by the author prior to publication. Manuscripts are accepted throughout the year however, listed below are target dates.

Deadline for **Spring 2013** submissions is **October 1, 2012**
Deadline for **Fall 2013** submissions is **February 1, 2013**

Manuscripts, editorial correspondence, and questions can be directed to Gail Saunders-Smith gasaunderssmith@ysu.edu or Lauren Cummins lcummins@ysu.edu at Youngstown State University.