Initiating and Sustaining a Culture of Inquiry in a Teacher Leadership Program

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How can teacher educators initiate and sustain a culture of inquiry among participants in a graduate program? This was the core issue in the design of a new Masters degree program that emphasized teacher leadership. As the faculty discussed desirable features of the program, agreement emerged that the core courses should build teachers' capacities to inquire into their own teaching practices and student learning. Because inquiry was seen as a central component of teacher education, professional development, and school improvement (Valli, 2000; van Zee, 1998), program faculty placed high priority on modeling a culture of inquiry in program design and publicly

engaging in classroom inquiry and action research ourselves (Valli & Price, 2000; van Zee, 2000).

Thinking about what data to gather and how to interpret these data are critical elements in developing expertise in inquiring into one's own teaching practices (Cochran-Smith & Lytle, 1993; Hubbard & Power, 1993, 1999; Mills, 2003). Such inquiries may provide information about teaching and learning that would not be obtainable any other way. The potential of such research for reforming practices was realized early in the last century by Dewey, who wrote that teaching strategy

> becomes a matter of finding the conditions which call out self-educative activity, or learning, and of cooperating with the activities of the pupils so that they have learning as their consequence …A series of constantly multiplying careful reports on conditions which experience has shown in actual cases to be favorable or unfavorable to learning would revolutionize the whole subject of method. (1928/1956, p. 125-126)

More recently, Shulman (2004) has called for teachers at all levels to document the wisdom of their practices. By making their findings public, teachers have the potential to influence the thinking and practices of colleagues and other educators.

Although the status of teacher research has been debated (Richardson, 1994; Wilson, 1995; Wong, 1995a, 1995b), there is agreement that such research can be helpful to individual teachers in improving their own practice (Price & Valli, 2005; Zeichner, 1993). Teacher research findings typically apply only to the setting in which the research is conducted but may be informative to others who find the research questions, data, and interpretations to be relevant to their own settings. Lincoln and Guba (1985; 2000) proposed that "trustworthiness" and "transferability" are suitable criteria to judge quality in contexts where reliability and generalizability are inappropriate. Discussions about what kinds of data to collect and how to collect, refine, and interpret a wide variety of data can increase the trustworthiness of research that teachers conduct. Such discussions also may increase the transferability of such studies if colleagues find the knowledge generated to be useful and relevant. The use of such research processes for good decision-making in schools underlies the focus of this program on instructional leadership.

Because of this agreed-upon focus, design issues that needed to be addressed included creating opportunities for participants to formulate and explore questions, develop arguments based on evidence, recognize and address ethical concerns when researching while teaching, and share findings with others. Now in the fifth year of the program, we decided it was time to publicly document how we were teaching and studying the core courses. We also decided to query current participants and graduates about their experiences. Questions of primary interest were:

- ◆ How do we, the instructors, initiate and sustain a culture of inquiry in core courses?
- ◆ How do current participants and graduates perceive the program?

In the following sections, we describe our collaborative research on this study, give

an overview of the program and courses, and provide findings of perceived program impact on teaching practice, leadership, and student learning. One noteworthy finding is the strong link between inquiry and leadership.

Methodology

In the tradition of collaborative teacher research, we engaged in a qualitative study of our own practice. The authors include the instructors for three core courses that engage participants in studies of teaching, learning, and assessment. Two of the authors are faculty members who shared responsibility for directing the program and who designed and taught the opening course (van Zee) and the action research course (Valli). The third author (Rennert-Ariev) is a graduate of our doctoral program, now a faculty member elsewhere, who designed and taught the portfolio course. The authors also include three graduates of the program. Mikeska was a first grade teacher who conducted a survey of current participants, interviewed program participants and graduates, and analyzed the data. Two of the graduates, Roy and Catlett-Muhammad, were elementary school teachers who participated in formulating questions for the survey, shared their experiences on various aspects of the program, and provided member checks for data analysis and interpretations. This collaborative inquiry enabled us to see the program from multiple perspectives.

We begin with an overview of the goals and framework that guided program design. Next, the instructors describe a variety of ways to initiate and sustain cultures of inquiry with evidence drawn from participants' responses in three core courses. Results from the survey, interviews, and student work follow. The survey was conducted with cohorts taking classes in Fall 2004. These included the third cohort, enrolled in the culminating leadership course (N=19), the fourth cohort, enrolled in the action research course (N =16), and the fifth cohort (N=11), enrolled in the opening course. The questions most pertinent to this article asked respondents to assess how core courses in the program (a) affected their teaching practice, (b) helped them become better teacher leaders, and (c) impacted student learning in their classrooms. Participants checked one of five responses on a Likert scale: significant impact, some impact, minimal impact, no impact, and not applicable. They were also asked for comments on each question.

In addition to the survey, fourteen interviews were conducted with participants across all five cohorts during the 2004-05 academic year. These were volunteers who could arrange a time to meet with Mikeska, either on campus or at their schools. Interview questions sought general feedback on the program, as well as more detail about survey questions: Did the program affect views of teacher leadership and opportunities to become teacher leaders? Did the program impact their teaching and did it benefit their students? Mikeska analyzed these data by counting frequencies of responses on the survey and identifying common themes in the written comments and interview statements (Miles & Huberman, 1994; Strauss & Corbin, 1998).

Initiating a Culture of Inquiry through Program Design

The primary goal of the program is to foster instructional leadership. The premise is that teachers become leaders in their schools when they engage themselves and their colleagues in inquiry about teaching practice and student learning. When intentional and systematic, such studies can provide evidence upon which to base decisions, by the teacher in the classroom, with colleagues on grade level teams, and sometimes with administrators and faculty in the entire school (Cochran-Smith & Lytle, 1993).

In keeping with the leadership focus, the faculty designed the program to prepare participants to undertake certification by the National Board for Professional Teaching Standards (NBPTS). Board certification requires a professional portfolio that documents teaching practices and assessment responses that explore the complexities of teaching and learning. Five core propositions, such as commitment to students and their learning, guide the development of standards for teachers in a wide variety of fields and grade levels (see www.nbpts.org). A standard for a middle childhood generalist, who teaches children ages 7-12, for example, is Respect for Diversity: "Accomplished teachers help students learn to respect and appreciate individual and group differences." We consider such NBPTS standards to be critical foci for teacher inquiry during the program whether or not participants later choose to undertake the formal national certification process.

Based on these goals the faculty formulated a framework to guide development of the program so that participants would:

- ◆ Learn through inquiry and reflection.
- ◆ Respect diversity of goals and cultural traditions in schools and communities.
- ◆ Deepen understanding of curriculum content.
- ◆ Build a repertoire of instructional and assessment skills, including use of technologies.

In addition, the faculty decided to design a cohort experience based on a set of core courses in which all participants entering in a given year would enroll together.

The program spans two and one half years in courses that meet after school and during the summer. It begins with a core course, Studying Student Learning in Diverse Settings and continues with Conducting Research on Teaching, which extends over three semesters. The other core courses are Assessing Student Learning and Development, Developing a Professional Portfolio, Applications of Computers in Instructional Settings, and Teacher Leadership. According to their interests, program members select from a range of courses that are subject-focused (e.g., literacy, mathematics, science or social studies) or issue-oriented (e.g., inclusion, urban schools, anti-racism education).

Cultures of Inquiry in Three Core Courses

For the purposes of this article, we focus on the three core courses which the authors taught and collaborated on. The opening course, Studying Student Learning in Diverse Settings, initiates the participants into a culture of inquiry. This is sustained through the subsequent course, Conducting Research on Teaching, that meets five times each semester for the next three semesters. The inquiry process culminates in a summer course, Developing a Professional Portfolio, that draws on data collected throughout the program. These are discussed below.

Initiating a Culture of Inquiry: Studying Student Learning in Diverse Settings

This course (EDCI 611) introduces participants to classroom inquiry guided by NBPTS standards and focused on core subject areas of the elementary and middle school curriculum. The typical class schedule includes a gathering activity that can be joined readily as teachers arrive at different times, a main event, and discussion of the readings.

The guiding questions for the course are:

- What are you curious about in your students' learning?
- What data might provide insight and information in exploring this question?
- How might you interpret these data?

These questions motivate a wide range of inquiry activities, several of which are described below.

Engaging Participants in Articulating Their Interests

In order to create a course that incorporates participant interests, the first session begins with small groups articulating issues that they would like to read about and discuss. The groups then examine NBPTS standards and indicate which are relevant to the issues they want to explore. In one cohort, for example, four of the five groups included ESOL (English for Speakers of Other Languages) and second language issues on their lists, so readings addressing these issues became part of the course syllabus. In addition, three TESOL faculty members were invited to be guest speakers during class. One of the participants commented upon the process of contributing to the class agenda in a journal entry:

> . . . our professor asked us to do something that was unlike anything I had ever done through my undergraduate years in college. She asked us for our ideas and our interests as a cohort so she could design our curriculum. "What a great idea!" I thought to myself. Instead of creating a standard syllabus that is used year after year for each student cohort that began the Teacher Leadership Program, the cohort of students would design the syllabus based on their individual learning needs and unique interests.

Although the course has a curriculum (research related to NBPTS standards and elementary school subject matter foci) and includes many of the same readings every year, this process enables refinement of the readings, guests, and activities with the specific interests of a particular cohort in mind.

Interpreting Web and Video Case Studies

Another way to open a class session is to discuss examples of teacher inquiry. These have included documentary websites constructed by K12 teachers (see http://gallery.carnegiefoundation.org) as well as video clips of "science talks" in which students discuss what they think with one another (Hammer & van Zee, in press). One of the videos, for example, shows fifth graders discussing what they think will happen when a pendulum, made from a string and washer, is swung back and forth and then the string is cut at the top of a swing—how will the washer fall? The students became quite vigorous in their discussion, agreeing and disagreeing with one another's ideas. With a transcript of the discussion in hand, participants discuss what ideas the students offer and how they interpret one another's thinking. Watching and discussing this video have inspired several participants to try facilitating such "open-ended" discussions in their own classrooms and to write papers documenting these changes in their teaching practices (van Zee & Hammer, 2006).

Meeting Researchers

Typically readings each week include at least one paper by a faculty member as a way to introduce the participants to research underway in our department. When possible, a faculty author meets with the participants at the beginning of class. The reading assignment includes the question: "What would you ask the author if you had the opportunity to meet?" so the participants are primed to engage in conversation with these visitors.

Analyzing Student Work

The first main assignment for the course is an analysis of student work. Discussion of this assignment is the main event for a series of four sessions. At each of these sessions, one member of each group of four brings in a set of student work to discuss with the other group members. Guided by materials supplied by NBPTS to prepare for undertaking the certification process, they examine work from at least three students who represent different challenges. The group members discuss the goals of the assignment, patterns in the students' responses, interpretations of student learning and their teaching, and reflection upon their own learning from this analytic process. After the series of four sessions discussing their preliminary analyses of student work, the participants turn in complete written versions.

Analyzing a Videotaped Discussion

The second main assignment for the course is an analysis of a videotaped

discussion in the participant's own classroom. Discussion of this assignment is the main event for a second series of four sessions. At each of these sessions, one member of a new group of four brings in a videoclip to discuss. Guided by materials supplied by NBPTS, the group members discuss the goals of the discussion and interpretations of student and teacher utterances with particular attention to student questions.

Formulating and Examining an Issue of Interest

The third main assignment for the course is an informal study of an issue that the participant has formulated and examined with evidence drawn from data collected for weekly journals, analyses of student work, and the videotaped discussion. One participant, for example, reported upon "The Evolution of Discourse in My Classroom." Discussion of such a self-study occurs during the last four sessions of the course. At each of these sessions, one member of a group brings in a draft of a paper reporting on the study for a writer's workshop. The group members discuss the issue, the data, the interpretations under development, and the draft. Participants then present their findings to one another on the last day of class.

Sustaining a Culture of Inquiry: Conducting Research on Teaching

Continuing this focus on studying one's own teaching practice described above, EDCI 698 is structured as a three-semester sequence of one-credit classes in which participants study and engage in action research. It also continues to draw on National Board standards as a framework to guide research and reflections. In their action research, class members are encouraged to think of themselves as change agents by drawing on as many standards as possible:

- ◆ understanding students, subject matter, curriculum, assessments, and the learning environment;
- ◆ respecting diversity and encouraging family involvement;
- ◆ using a rich variety of instructional resources and strategies;
- ◆ encouraging multiple paths to learning;
- ◆ developing professional relationships; and
- ◆ engaging in reflective practice.

The course is conducted as a seminar in which participants regularly present their ideas about the readings, research on teaching, and their own action research projects. They may conduct their action research alone, but are encouraged to collaborate with other members of the class or with other professional colleagues. The first, one-credit segment of the course is designed to deepen and broaden

understandings of action research and change, including critical and cultural perspectives, acquaint participants with the literature and different approaches to action research, help them generate ideas for action research, and provide opportunities to practice various modes of data collection.

In the next two semesters, participants continue to read teacher research and about teacher research, and engage in a year-long action research project. By the end of the third semester, they have written a paper worthy of being submitted to a conference or journal. Class members hold a teacher research festival, where they present their work to faculty and the next Teacher Leadership cohort, using the American Educational Research Association's roundtable format. By structuring the course across three semesters, our goal is to promote life-long habits of inquiry that will strengthen teaching practice. Several assignments are completed over the course of the semester to sustain their action research inquiry.

Developing Research Questions and an Action Research Plan

An important first step in action research is developing research questions. Participants often ask, what am I trying to change: myself, my students, the classroom environment, teaching strategies or materials (Valli, 2000)? To help them realize that it could be any or all of the above, one of their first assignments is a reconnaissance process where they explore their own beliefs and orientations toward teaching as well as their school/classroom context to generate research questions (Mills, 2003). Because class members are eager to implement an idea before they have critically examined their teaching practice and context, this assignment forces them to "wonder why things are the way they are" before thinking about courses of action. Not until they explore various puzzlements and concerns do they submit a plan of action (with a timeline, resources, and constraints), which helps them determine the feasibility of their project.

Acquiring Research Skills

Using Mills' (2003) framework, these teacher researchers learn about and practice three forms of data gathering: *experiencing* (observing, taking fieldnotes & anecdotal records), *enquiring* (asking, interviewing, surveying), and *examining* (looking at documents and student work). The goal is to help them see their classrooms and schools with fresh eyes, to become enquirers in a strange land. They learn that "observing" is not data, that one must record observations in the form of journals, fieldnotes, or anecdotal records. They also learn about the value of enquiring, of asking students about their understandings and perspectives. Several of the assigned readings by teacher researchers emphasize listening to student voices: Paley's (1986) "On Listening to What Children Say," McKay's (1999), "Trusting the Voice of a Young Learner," and Heaton and Lampert's (1993), "Learning to Hear Voices." Inevitably, class members are startled by how much they can learn by listening to student talk or asking simple questions. They wonder why they didn't think of that before, why it wasn't a more regular part of their daily routine.

Joining a Community of Scholars

The course seeks to bridge the divide between traditional research and teacher research (Cochran-Smith & Lytle, 1990) by having class members ground their work in the relevant scholarship. They submit annotated bibliographies containing both types of research with annotations that summarize the study and describe the relevance for their own project. By doing literature searches for both types of studies, participants understand that teacher researchers and traditional researchers can complement each other's work and that both have valuable perspectives. They are encouraged to see themselves as contributing to the body of work in their subject area by presenting their studies at the culminating Teacher Research Festival as well as at their schools, school districts, and professional conferences. Each year, selected papers are posted on the department's website (http://education.umd.edu/EDCI/info/researchfestival/ABSTRACTS.html).

Engaging in Peer Support and Collaboration

Although the final products of the teacher research efforts are individually written papers and presentations, peer support and collaboration are built into the course in three ways. First, participants are part of small groups throughout the course where ideas, advice, suggestions and critique of each other's projects are freely exchanged. In this way, they receive regular, non-threatening feedback that helps them clarify and strengthen their inquiries. Second, participants pair up to give each other more focused feedback on drafts of their final papers, using a peer coaching guide. Written to match the paper criteria, the guides provide detailed information about the strengths and weaknesses of their papers. And third, participants are encouraged to actually engage in collaborative action research. Although this rarely happens in a formal sense, the informal collaborations have been powerful. Two participants, for example, conducted literature circle studies with non-fiction in two different schools and worked together on teaching and data collection strategies. Several others engaged co-teachers, site-based staff developers, or para-educators in helping them collect and interpret observation and interview data.

Sustaining a Culture of Inquiry: Developing a Professional Portfolio

The purposes of EDCI 614: Developing a Professional Portfolio are threefold: (1) to help program participants reflect on the professional knowledge, skills, dispositions, and commitments they have acquired, (2) to consider some of the ways that alternative assessments have altered common conceptions of student learning, teacher preparation, and teacher professional development, and (3) to give participants practice preparing documentation for National Board certification. Specifically, the course is structured around two assignments designed to resemble conceptually those used for the NBPTS assessment. The work completed in this course is

designed, primarily, to foster reflective professional habits and deeper insight into teaching. Participant inquiry is framed by the National Board portfolio components and scholarly literature on assessment. These experiences are used in the course to foster teachers' capacity to theorize about their own experience and their practice—inquiry that is central to teacher research (Ballenger & Rosebery, 2003).

Course readings focus on issues, ideas, and controversies within recent research literature on performance-based assessment, including the use of portfolios for teachers' professional development. Readings and discussions emphasize new ways of thinking about how teachers are assessed, helping participants evaluate both the theory and the practice(s) of assessment in ways that help them both to document their own best practice and to create powerful forms of instruction and assessment for their students. In the course, participants elect to complete one of two assignments described below: a videotape analysis or a reflection of their professional accomplishments.

Analyzing a Videotaped Lesson

In this assignment, participants produce a 20-30 minute videotape of their teaching and a written analysis that shows how they meaningfully engage their students in learning a particular skill or concept. The videotape and analysis need to make clear how they facilitate discovery, exploration, and talk among students in order to develop students' inquiry and deep understanding. Through the written commentary they provide evidence of their understanding of their students, of their planning, and of the lesson as seen on the videotape. They also provide evidence of their ability to analyze and reflect on their teaching practice.

Since the written commentary is a critical element of this documentation, participants are given detailed information on how to construct its three sections: the instructional context and planning, analysis of the videotape, and reflection. The first section, instructional context and planning, asks about instructional goals, influences of the teaching setting on the selection of teaching content and strategies, and why specific learning experiences were selected. The second section, videotape analysis, requires a description of events prior to and after the videotape segment that facilitate interpretation of that segment; an explanation of incidents that show student understanding, misunderstanding, misconceptions, errors or progress; and how particular exchanges in the videotape demonstrate exploration, discovery and talk among students. And the third section, reflection, asks for indicators that lesson goals were or were not met as well as possibilities for the redesign of the lesson.

Preparing Documentation of Professional Accomplishments

In this entry participants demonstrate how they work with and through parents, families, and community to support students' learning and development. They describe their activities in this area, explain why they are significant given their teaching context, and submit documentation to support each of their descriptions. They document evidence for the following accomplishments: (1) how they have

treated parents and other interested adults as valued partners in children's education, (2) how they have worked collaboratively with colleagues to improve teaching and learning, and (3) how they have engaged in ongoing professional development. For each accomplishment, participants write a description and analysis that answers each of the following questions: What is the nature of this accomplishment? Why is this accomplishment significant? How does this accomplishment have an impact on student learning? Considering the patterns evident in your accomplishments taken together, what is your plan to further impact student learning in the future?

All participants who have elected to complete this assignment have submitted evidence of work completed in the course of their Teacher Leadership Program. In particular, participants have characterized their action research study both as a significant marker of their own professional development and as a catalyst for collaboration with their colleagues. For example, one participant wrote:

> My action research study is by far the most significant professional development experience I've ever had. I notice student learning now in a much more specific way. Also, because of opportunities to talk about my project with my colleagues in my school I've been able to share my knowledge and I feel more inclined now to talk about my teaching in general.

Assessment and Feedback

Detailed scoring criteria, adapted from those used for NBPTS assessment are used in the course for the instructor and for participants to evaluate portfolios (National Board for Professional Teacher Standards, 2004). They also provide participants with a means of self-assessment. Using these rubrics as a guide, participants analyze exemplars completed by former participants in the program, complete two drafts of their assignment, and receive and provide peer feedback. Peer feedback for both assignments is based on constructing interpretive summaries that are designed to prompt rich analytical feedback and deep levels of reflection for the author and the reviewer (Delandshire & Petrosky, 1994).

Because researchers have noted the role of writing skill in mediating how portfolio entries for the National Boards are evaluated (e.g., Burroughs, 2001; Serafini, 2002), EDCI 614 helps participants develop writing abilities so they can best represent their teaching and inquiry. As such, participants learn to practice writing as a medium to capture experience and knowledge of teaching practice. As Lampert (2000) notes, writing about teaching is necessarily incomplete yet "without description what is learned remains private and unexamined" (p. 94). A central goal of this course is to refine participants' written fluency to better represent their practice, to sharpen their analytical lens, and to provide shared texts that support a shared culture of inquiry into their practice and their professional accomplishments.

Perceptions of Program Impact

Having described the main components of the core courses, we now turn to

participant perceptions of program impact. We focus on the three questions that are of most relevance to our collaborative action research on these courses: Did a culture of inquiry in the core courses have an impact (a) on teaching, (b) on leadership, and (c) on student learning? (See Table I).

Culture of Inquiry Impacts Teaching Practice

The survey of current participants asked them to assess how they felt the core courses affected their teaching practices. Of those who had completed the courses, 65%, 96%, and 81% thought that EDCI 611, 698, and 614 respectively had some or significant impact. Comments about ways in which courses affected their teaching practices fell into three broad and overlapping themes. The first dealt with the relevant knowledge gained from courses, the second with acquired skill in classroom observation, and the third with becoming more critical, reflective thinkers.

Participants commented that they valued the focus on their own teaching practices and students' learning. Surveys indicated, for example, that discussions had become a more integral part of classrooms and that respondents were more aware of both their accomplishments and areas for further development. One respondent wrote that she "enjoyed collaborating with other teachers—the sharing of ideas is what has impacted my practice the most." Another explained that "because my action research pertained specifically to my classroom teaching, it had significant impact. The effects of my research were immediately applicable and it continues to impact my teaching as I continue to informally conduct further research and share it with others."

Although we anticipated that reflection would emerge as a theme in the analysis, we were somewhat surprised by the importance this had for participants. Although we received general comments like, classes "helped me to think reflectively about my teaching" and "allowed me to explore things in my own classroom and make changes that are beneficial to me," several comments were more detailed reflections on the impact of specific assignments, such as video analysis, for instance, in prompting them to try new things. Comments also included vivid metaphors, such as, the course "allowed me to look at my teaching with *a different eye*. I was able to analyze and learn from myself." During an interview, one

Table I: Perceived Impact of a Culture of Inquiry (N = 38)*

	Teaching Practice	Teacher Leadership	Student Learning
EDCI 611: Studying Student Learning	65%	47%	59%
EDCI 698: Conducting Research on Teaching	96%	86%	93%
EDCI 614: Portfolio Development	81%	53%	33%

* Percents are of those who responded "significant or some impact" vs. those who responded "minimal or none."

participant vividly recalled being asked to "examine ourselves in the classroom and see what we were weak in or strong in or what we did that was different. . . . *until then I never really did a serious reflection*, but I had to do it because it was part of the class." Later in the interview she went on to say:

> I think it [the program] affected my teaching practice a great deal. . . . *because I was watching myself, I was watching them* [the students]. . . . I had to look and see what I could do that was helpful to somebody else and also help myself in learning and growing in the classroom.

Other respondents also stated that because of what they had learned in their courses, they had changed the ways they observed, documented, and reflected on classrooms events. One other comment foreshadows a theme we uncovered, and will return to in the next section of the paper, the relationship between action research and teacher leadership: "the focus on data collection has also helped me to help others at my school with current mandates to collect data over time and hopefully show growth."

Culture of Inquiry Impacts Teacher Leadership

The survey also asked participants to assess how they felt the core courses helped them become better teacher leaders. Of those who had completed the courses, 47%, 86%, and 53% thought that 611, 698, and 614 respectively had some or significant impact. Comments, again, fell into three broad and overlapping themes. Respondents indicated that core program courses helped them learn to be more collaborative, develop expertise that was valued in professional settings, and gain confidence in sharing knowledge with colleagues, themes which further indicate that the participants found the program helpful in developing their leadership abilities.

Learning to be collaborative was one of the major themes. As one respondent wrote, "I think I am a better teacher leader, because the experience, it has shown me how to be flexible and more collaborative with others. I have a better understanding of what is effective leadership and pitfalls to avoid as a leader." Another stated that the professional portfolio development class encouraged her to step into more leading roles in her school and gave her ideas of how to express her views and create change in a positive way. As alluded to in the previous section, others felt as though the experience of learning to analyze and reflect on their own teaching, learning to take a more active role in learning about and from teaching, was, in itself, a critical component in becoming a leader. Their enhanced expertise seemed to give them both confidence and credibility as teacher leaders.

One participant wrote that through involvement in action research she became an expert in both her topic and in conducting research. As a result, she had numerous opportunities to share her expertise, and thus become a teacher leader, with her grade level team, the school improvement team, and at district-level workshops. Others affirmed this link:

> I found that becoming a better teacher and becoming a better leader are very closely

> related. As I change my teaching practice for the better, I simultaneously became more of a leader in my building.
>
> … a better leader…helping me to put more thought into leading research in my school.
>
> Teacher research forces you to evaluate, analyze, and reflect upon your teaching and student learning. These characteristics are important for teacher leaders.

Even though participants did not graduate from the program with advanced certification as a curriculum specialist or as a supervisor or administrator, they seemed, nonetheless, to be regarded as leaders in their schools and school districts, and able to make contributions in that capacity. One participant worried at the start of the program that she would not have advanced certification, that she wouldn't be able to accomplish anything extra as an education professional. But she spent time in the program developing and analyzing reader's workshop in her classroom. Coincidentally, her school district began to use a reader's workshop model throughout its elementary schools. Her own study in the area gave her confidence in analyzing the differences in her model and the school district model, identifying similarities and differences, and not feeling "so confused and uncertain about what they are telling me to do. I can no, yes, no, yes." This confidence came from having done research in the area and learning from her own first hand analysis: "I know these [strategies] work."

Another interviewee added that once you've developed research knowledge, you're able to say, "I am going to do this, this, this and this, and I am not going to do these things." She contrasted this approach with teachers who are handed new programs or curriculum and "do not have the confidence to do that. And so then they try and do everything. Or they do nothing. I mean one or the other, because they are not gonna choose because they do not have the confidence to differentiate."

Culture of Inquiry Impacts Student Learning

A third survey question asked current participants how they felt each course impacted student learning in their classrooms. Of those who had completed the courses, 59%, 93%, and 33% thought that 611, 698, and 614 respectively had some or significant impact. Comments about how the program impacted student learning suggest two broad themes that support those found in the other impact answers. The first theme deals with the positive impact that changes in their knowledge, beliefs, and teaching practices have on student learning. The second theme deals with the positive impact of their increased reflective skills and capacities. These themes suggest that the participants found the program helpful in developing their ability to teach effectively, that participants learned not only about their teaching, but also how to scrutinize and assess student learning in more meaningful ways. As one respondent commented, even though she focused only on a few students in her action research project, all her students benefited from the changes she made in her teaching.

These improvements in teaching and learning were attributed directly to new insights, perspectives, and knowledge that challenged their teaching beliefs and

assumptions. Knowledge gained in courses throughout their program provided a firm foundation for their action research projects. In their final papers, participants would refer to specific courses that challenged assumptions (e.g., about mathematics as a discipline) or provided valuable information (e. g., about helpful teaching strategies for English Language Learners). Assessment and differentiation were also given as examples where changes in teaching practice improved student learning:

> Hearing new perspectives and analyzing my beliefs about assessment allowed me to reorganize my assessment system to help students learn. Results of my action research study led me to implement strategies which allow for greater student learning.

> I have also used more differentiated lessons. . . . Due to my increased use of differentiation, my students have been more successful.

Survey respondents also attributed program impact on student learning to their increased reflective capacities. Their comments indicated that they were taking more time to reflect on their teaching, that classes helped them become more reflective, and that they were getting better at meeting individual student needs:

> My students benefit from my constant analysis and reflection of their work and my teaching.

> I think I made a lot of improvement within a short amount of time as compared to not taking courses that required me to reflect on my teaching practice. As a result, I feel my students gained more knowledge and ways of learning than if I had not modified the ways in which information was delivered to them.

Videotaping and analyzing their lessons in particular was viewed as a "great way to look at students in a detailed manner." Analyzing a videotape of her teaching made one participant aware that she needed to read her students' body language and responses more carefully. Another commented that assignments that made her analyze student work positively influenced her teaching, "which in turn has impacted student learning."

As suggested by the above examples, program participants were asked to closely examine their practice and students' work in different ways across courses in the program. This enabled them to keep building on knowledge and steadily improve teaching and leaning. Pat Roy, for instance, began to scrutinize the Word Study activities in her third grade classroom during EDCI 611, which she took during her first semester in the program. She kept a journal to track students progress in seeing word patterns and determine if specific strategies would impact students who were reading and writing below grade level. While she kept data on all the below level readers, she targeted one student she thought might be dyslexic and who was new to her school. This interest evolved into an extensive and detailed case study of two students for her action research paper, in which she concluded

> …I believe through the use of Word Study, my students who are reading below grade level are becoming more efficient in reading. . . . I am observing them decode words

> in their small group and looking through unknown words to identify parts that they do know. . . . I am really encouraged to see the progress that my below level readers and writers are making and have hopes of getting most of them on grade level by the end of the year.

Final Reflections

Overall, the results of this study affirm the importance of initiating and sustaining a culture of inquiry in a Master's program for practicing teachers. Of particular interest to us has been evidence of transformation, such as a participant's reflection on introducing open-ended discussions in her classroom:

> . . . I began to see myself change roles as a teacher. . . . The first time discourse took place I wouldn't let the kids edge in a word because I was afraid to let go of all the power. . . . Now I see myself as an active listener. . . . Although I am not standing in front of the classroom giving the directions, I know I am still their teacher because I am the one that has created this learning environment for the children to grow in.

By presenting her study to her colleagues, this participant made public some of the wisdom (Shulman, 2004) she had developed by trying out discourse practices she had observed in class. Similarly, the action research papers, posted on the department website, form a collection of reports such as Dewey (1928/56) envisioned that provide detailed accounts of actual teaching practices that others can peruse. This on-going process is building a community that includes teachers as contributors to "the theoretical and pedagogical discussions on the nature and development of human learning" (Duckworth, 1987, p. 168).

In retrospect, it is not surprising that the Conducting Research on Teaching course was viewed as having the most significant impact on teaching practice and student learning. No other course had such a central focus on action research and effecting change in teaching and learning. Based on respondent comments, we have reason to believe that extending action research across three semesters sustained an inquiry orientation and enabled participants to make more frequent and better connections with other courses.

Given the timing and nature of the courses, we were also satisfied with the responses to the other two courses. As the first course in the program, it would be unusual for Studying Student Learning in Diverse Settings to have an immediate, strong impact on participants' perceptions of their leadership capacities. Nonetheless, it set the tone and direction for the program by preparing for the courses that followed. Similarly, as one of the last courses in the program, Developing a Professional Portfolio aimed more to help participants reflect on the professional knowledge, skills, dispositions, and commitments they have acquired rather than to engage in new inquiries that impacted student learning. In fact, since the course is taught in the summer (when program participants are not teaching) it is surprising that even 33% perceived that it had an impact on student learning. One notable validation of the inquiry assignments was how many participants commented on

the value of video analysis and analyzing student work samples. These are assignments that are given, in one form or another, in all three courses and seem to have an empowering effect on program participants and graduates.

As we reflect upon five years of experience with this program, we want to rethink how we can emphasize leadership even more. Our finding that engaging in inquiry and action research empowers participants to become leaders has important implications for program design as we expand to include high school teachers. We also are developing some follow-up activities that maintain our connections and sustain a culture of inquiry among our graduates. In addition, we are interested in engaging other teacher educator colleagues in a collaborative inquiry: What issues emerge in your courses and programs when engaging teachers in inquiring into their own teaching practices and students' learning? We are eager to learn from your experiences.

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