Networks
An On-line Journal for Teacher Research

# University-Based Collaborative Pre-service-Mentor Teacher Teams: A Model for Classroom-Based Inquiry

**Ronald Beebe and Diane Corrigan**

## Abstract

Current literature indicates classroom inquiry not only enhances the training of pre-service teachers but also increases the effectiveness of mentor teachers and improves student learning. However, designing an effective *collaborative* model has met with less success. This study examined the experiences of ten pre-service/mentor teacher teams in urban schools who participated in designing and implementing collaborative classroom-based research conducted in their classroom. The model sought to address issues noted in previous studies related to equal participation and anxiety surrounding the research process. Findings suggest that a university supported model employing a reflective practitioner approach enhances collaboration and promotes positive results for both pre-service and in-service teachers. Specifically, participants indicated the importance of collaboration, engagement with the teaching process, heightened awareness of student learning, and professional efficacy as significant outcomes.

## Introduction

Teacher retention continues to be a serious issue, especially within diverse, low income urban districts. Some argue that teacher attrition is a perennial issue within the teaching profession, yet the fact that as many as 50% of teachers leave the profession within the first three to five years remains an alarming statistic (Ingersoll, 2002). In the face of this trend, some teacher researchers maintain a need to increase teacher recruitment; however, the fault does not appear to be a lack of candidates (e.g., Cochran-Smith, 2004; Smith & Ingersoll, 2004). As faculty working in a teacher preparation program in a large Midwestern urban environment, this presented a problematic situation: how best to prepare teacher candidates to become effective teachers in urban schools *and* not become another attrition statistic. Related to this was a need to retain high quality teachers in urban schools who could serve as effective mentors for pre-service teachers.

With a growing body of literature demonstrating both the importance and efficacy of teacher research for both pre-service and in-service teachers (Cochran-Smith & Zeichner, 2005; Darling-Hammond & Bransford, 2005), the development of effective models of teacher research that include both pre-service and mentor teachers is needed. As an urban teacher education program, we believed it was necessary to develop mechanisms to better prepare teachers and teacher candidates to not only succeed in, but remain in, urban schools. We envisioned a classroom-based research experience that could provide a focused opportunity to engage pre-service and in-service teachers collaboratively in reflective, data-based conversations regarding teaching and learning in the urban classroom. Providing a structure in which pre-service and

mentor teachers could engage in contextualized conversations arising from reflective inquiry around best practices we believed would enhance the pre-service-mentor relationship. Additionally, supporting the process of designing study methodology and assisting with data analysis could alleviate some of the stress often associated with "research" as well as with perceptions regarding the time commitments research requires.

The purpose of this study was to explore the efficacy of a collaborative classroom research opportunity for pre-service and mentor teachers facilitated by university faculty. We hoped to design a model that would address issues noted in previous studies reporting on the impact of classroom research projects for pre-service teachers, specifically through the implementation of a collaborative team approach and support for the development and nurturing of a practitioner research knowledge base.

**Collaborative Classroom-based Research**

Previous literature suggests classroom-based research affords an enriching experience for pre-service teachers (e.g., Burbank & Kauchak, 2001; Gitlin, Barlow, Burbank, Kauchak, & Stevens, 1999). Additionally, when paired with mentor teachers, the literature suggests classroom research not only enhances the training of pre-service teachers but also increases the effectiveness of the mentor teachers and ultimately, improves student learning (Valli, 2000). Some researchers' findings also note that pre-service student teachers engaged in classroom research in an urban setting are more likely to choose to teach in an urban school setting (Oakes, Franke, Quartz, & Rogers, 2002; Yost, 2006). Further, in-service teachers engaged in classroom research tend to experience lower levels of burnout and demonstrate stronger commitments to teaching (Henson, 2001). The development of effective models of practitioner inquiry implies collaboration *between* the pre-service and mentor teacher. As part of this collaborative experience, the mentor teacher can provide insights into classroom practice as well as model the inquiry process. In turn, the pre-service teacher brings background knowledge of the current evidence-based practices learned through coursework.

While a great deal of literature has focused on these benefits of teachers engaged in classroom research, the design of effective research experiences for pre-service teachers remains an issue. As Price and Valli (2005) suggest, in part this reflects the developmental issues of teacher candidates: as novices, they are uncertain as to what exactly should be the focus of a research project. Other areas noted in the literature indicate problems in the development and implementation of pre-service/mentor research collaborations that range from conflicts between mentors and pre-service teachers regarding specific research questions or designs, to a lack of knowledge about the research process itself. In reviewing the literature, we posit that most designs present the process of conducting the research as the task of the pre-service teacher, typically as an adjunct to the student teaching experience and often without explicit support from the mentor teacher. Keating, Diaz-Greenberg, Baldwin, and Thousand (1998) outlined a series of collaborative designs which produced effective results, yet it was not clear that collaboration between the pre-service teacher and the mentor teacher was a specific aspect of the program. We suggest, then, based on the findings of other researchers in teacher education that an effective design should engage *both* the pre-service and mentor teacher in a shared process of practitioner inquiry focused on exploring a specific aspect of teaching and learning.

Collaboration also appears to be a critical aspect in providing a positive experience (Keating et al., 1998). Developing a sense of mutual purpose and commitment in the research process fosters a collegial approach to classroom inquiry. This begins with the formulation of the research project based on issues generated within the classroom setting. Such a structured approach to the research process "helps facilitate two

critical components of the process: encouraging active involvement of the practicing teacher in the action research process and completion of protocol issues at the school site" (Keating et al., p. 384). To extend this perspective, establishing a collaborative team approach to the research process that incorporates the mentor teacher as a collaborator might also address some of the problems experienced by pre-service teachers reported in Gilbert and Smith:

> Though fellows believed that their mentors were collaborating with them on their action research, mentors expressed uneasiness about their lack of participation in fellows' action research projects. Mentors suggested that they were so busy trying to get the mentoring role "right" that they did not really participate in the action research. (2003, p. 81)

Additional concerns surrounding the process of engaging in practitioner inquiry focus on the issue of the term research itself. The knowledge base of research is not something which typically engenders a sense of confidence. As Strickland, Corley, and Jones (2001) contend, "the word 'research' is frightening to undergraduate students" (p. 10). Unfortunately, this fear is not confined solely to the population of undergraduate pre-service teachers, but often extends to in-service educators as well. Additionally, Gilbert and Smith (2003) noted, "research is a word that, for most teachers, conjures unpleasant visions of wrestling with data, statistical procedures, and an already overloaded schedule" (p. 81). Consequently, an important issue to consider within a model for classroom inquiry is the development of competency (and comfort) with practitioner-oriented research methods.

As a means of responding to the need to provide adequately prepared, culturally responsive teachers for the urban schools served by our institution, we designed a collaborative model of classroom-based research that would engage pre-service and mentor teachers during the student teaching semester. The structure of the course would focus on addressing the concerns raised in previous studies regarding tensions that surfaced regarding anxiety surrounding the research process and perceived additional time commitment around classroom-based research. In addition, there would be a focus on the development of a common research question that emerged from the classroom setting through conversations between the pre-service and mentor teacher and facilitated by university faculty.

## Methodology

To create the collaborative pre-service and mentor dyads, pre-service teaching placement information sessions were used to recruit interested pre-service teachers and mentors. In addition, supervisors for pre-service teachers were asked to submit names of potential mentor teachers they believed would be good candidates for the program. We purposely selected pre-service and in-service teachers based on both convenience and criteria sampling (Johnson, Onwuegbuzie, & Turner, 2007) from this pool. From these lists, interested pre-service teachers were matched with interested mentors based upon licensure area and preferred location for the pre-service teaching experience (in this case, either a suburban or urban school setting) to create the classroom dyads.

### Pilot study – Developing the Collaborative Model

A pilot study in one spring semester examined the experience of three pre-service/mentor teacher dyads selected through the process outlined above who worked together as a collaborative research team. At the beginning of the semester, the pre-service/mentor dyads met collectively for two four-hour sessions designed to provide a basic introduction to the process of classroom-based research. The intent of these sessions was to address issues related to the process of reflecting on practice, developing a research question, locating appropriate background literature, and describing potential methods of data collection. These seminars addressed issues noted in the literature which focused on a lack

of knowledge regarding research methodology, research design, data collection, and analysis in particular (Gitlin et al., 1999; Strickland et al., 2001). In addition, the dyads were coached to collaborate on the development of specific research questions related to the classroom setting (e.g., instructional strategies, assessment techniques, etc.). During the remainder of the semester, the pre-service/mentor dyads met twice each month with the university instructors to examine and discuss the evolution of their specific research projects. The rationale for these meetings was to address any concerns arising in the implementation of the research, to monitor progress, and to facilitate a collaborative conversation among the dyads regarding the research process. At these semimonthly meetings, the university instructors provided support by encouraging reflection on various aspects of the research design, data collection methods, and on-going data analysis and interpretation. In addition, discussion questions related to emerging factors during the implementation of the research process (e.g., focus of the research question, accessing literature, data collection, etc.) were posted online to foster continued discussion and reflection between face to face meetings.

The framework of the teacher as a critically reflective practitioner (e.g., Dinkelman, 1997; Larrivee, 2000) informed the development of the classroom-based research projects. Within this framework, dyads focused on concerns, issues or problems arising within the classroom related to teaching and learning (e.g., instructional strategies, assessment techniques, materials, or classroom environment, etc.). This process resulted in the dyads designing methodologies to address socialization in one prekindergarten classroom, the use of community role models for learning through play in another prekindergarten classroom, and uncovering misconceptions in an eighth grade science classroom through inquiry-based lessons.

## Data Sources

Three primary data sources were considered in this pilot study: a reflective participant journal, notes from the biweekly meetings and discussion postings, and an open-ended questionnaire. Using multiple sources addressed triangulation (Charmaz, 2000).

### Reflective Participant Journal.

To foster individual reflection, each participant maintained a reflective journal. Using specific prompts related to the sequence of steps in the research design, impressions of how the implementation of the research impacted their students, and what follow up steps should be taken were recorded by participants.

### Notes From The Biweekly Meetings And Discussion Postings

At the biweekly research team meetings, the instructors maintained a running record of questions, ideas, and struggles presented by the pre-service/mentor teams as they developed their research, implemented their strategies, and began to analyze their data. In addition to notes at these face-to-face meetings, a series of prompts (see Appendix A) were provided on the university's course management system to foster further reflection and discussion among the participants and the instructors. Notes from the meetings and the discussion posts afforded insight into the concerns and problems, as well as successes, the pre-service/mentor teams encountered during the course of their research.

### Open-Ended Questionnaire

A final post course open-ended questionnaire (see Appendix B) was completed by each participant. Responses to the questionnaire provided additional information regarding their experience with the course as well as the research process itself.

### Pilot Data Analysis

The reflective journals, notes from the biweekly meetings and discussion postings, as

well as questionnaire responses were examined by the university instructors using content analysis (Strauss & Corbin, 1998) based on codes derived from literature on pre-service/in-service classroom research studies. Specifically, the analysis highlighted areas where the model addressed specific issues of concern raised by previous studies and whether or not these had been attended to effectively. From codes, general categories of analysis emerged that focused on communication, collaboration, research knowledge base, personal efficacy and university faculty support. In addition, the data was examined for impact on pre-service and mentor teachers as well as indications of any impact on their students. To achieve trustworthiness, the course instructors compared the results of their analysis and reached a consensus on what potential areas to change in the structure of the course. These findings were shared with the participants of the pilot program for accuracy of interpretation as well as positive impact on the course. Finally, the dyads presented their studies at their local school sites, two regional conferences, and published one article (see Jones, Watters, & Beebe, 2007).

## Preliminary Findings

Based on analysis of the pilot study, two specific changes were made in the course: 1) more focus was placed at the beginning on providing an overview of methods of data collection and analysis, and 2) onsite visits to each dyad's classroom would be scheduled to further explore and refine their research topic as well as gain insight into the classroom setting as the research setting.

### Providing an Overview of Methods of Data Collection and Analysis

The first revision to the course was supported by one pre-service teacher's suggestion that "although it is a very dry topic, a review of ways to examine data may be helpful." Additionally, one pre-service participant noted "finding time, especially for the needed reflection, was a formidable task. It took a great deal of thought to specifically define the question and design an appropriate tool for data collection." Finally, another insight from a mentor underscores both the importance of discussing data collection as well as the impact of the action research project itself:

> The article on case studies was great.... I have often tried to get interns to do this kind of fine-tooth critical, systematic observation. Usually they don't do it – I think they just don't get it. As the article said, they are so accustomed to being in a classroom that they take everything for granted. There are a couple reasons I am eager to have interns do serious observation. One is that having them articulate their observation forces them actually to buckle down and do the difficult, arduous task of close observation. Another is that while I am teaching there is so much that I miss that I long to have an extra pair of eyes and ears to tell me what is going on that I miss.

This corroborated previous studies that noted the difficulty many pre-service and in-service teachers have with research design and specifically the process of data collection and analysis (e.g., Keating et al., 1998; Strickland et al. 2001).

### Implementing Onsite Visits

The second change was added by the university instructors who believed it would be important to gain insight into the issues the classroom research dyads were addressing by seeing the environments which became the research sites. This was achieved by implementing onsite visits. Onsite visits would afford an opportunity to continue the conversations started in the seminars regarding the development of the issues and topics into research questions. We believed that this might also respond to larger concerns about feasibility and implementation discussed in previous research, specifically in terms of time management (e.g., Gilbert & Smith, 2003).

Changes to the course were then shared with the three pre-service/mentor dyads (one dyad responded) and a faculty colleague for accuracy and appropriateness. The consensus from this member checking (Simons, 2009) supported the proposed changes, which were implemented in the presentation of the course model. Overall, the pilot demonstrated the model to be an effective approach to employing classroom inquiry within the student teaching experience for both pre-service and in-service participants.

**Implementation of the Model as a Course**

Based on the analysis and feedback from the pilot study, the revised version of the model was implemented in the following spring semester with seven pre-service/mentor dyads. The same sampling procedure was followed as in the pilot study.

At the beginning of the semester, the teams met for two consecutive four hour sessions to review the research process, began to develop research questions, and scheduled collaborative research team meetings. An additional focus was placed on data collection and analysis measures during the second seminar session, with specific methods discussed as well as opportunities provided to "experiment" with different data collection methods. A brief overview of analysis techniques was presented, based on the types of data analysis conducted by the teams in the pilot study. Materials were also made available online providing further description of data collection and analysis methods and examples of their use.

Following the seminar sessions, visits were made by the university instructors to each of the classrooms of the pre-service/mentor pairs, not only to gain insight into their classroom environment but also, to further discuss the development of their research question. Because of the number of teams, and the fact that the various school locations covered a large geographical area, the class was divided into three teams that met every two weeks. As in the pilot study, the purpose of the research team meetings was to offer a collaborative environment to assess progress on individual projects, provide suggestions, and maintain a supportive atmosphere during the implementation of the research. To maintain collaborative interactions during the weeks where there were no face to face meetings, specific discussion questions were placed on a course blog and each participant was required to maintain a reflective journal. A final post-course, open-ended questionnaire was completed by each of the participants to obtain additional feedback.
Employing the same critically reflective practitioner model, dyads developed classroom-based research projects ranging from literature circles in a sixth grade language arts class, learning centers as alternative assessment, positive behavioral support for emotionally disabled and developmentally delayed students, using project-based learning in the preschool classroom to meet literacy standards, to flash cards to improve word recognition for at-risk first grade students (see Appendix C for specific titles). Each of the research topics emerged from the process of reflection on how to complete the phrase "I wonder…" in terms of classroom-based experiences related to teaching and learning. Throughout the process, university instructors met with the pre-service/mentor dyads to develop methods of implementing strategies, data collection tools, data analysis and implications for their classroom as well as for teaching and learning related to their grade level and/or content area.

In addition, the dyads met in research team clusters based on geographic location which allowed for conversations to occur across grade level and content areas. These interactions also provided opportunities for pre-service and mentor teachers to consider and reflect on their colleagues' projects from the position of practitioner researchers, thus allowing them to develop their research knowledge base through concrete application. Finally, each pre-service/mentor dyad presented the findings of their research to

appropriate grade level or content area teachers and administrators in their respective school buildings.

## Data Analysis

In order to examine the effectiveness of the course model, a constant comparative approach (Strauss & Corbin, 1998) was used to develop codes, then categories from the reflective journals, discussion postings, notes from the research team meetings and the post-course questionnaire. The researchers examined the relationship of the categories to the course model, looking for associations between the specific areas addressed in the pilot as well as emerging themes regarding the experiences of the pre-service and in-service participants. Four themes emerged from the analysis: the importance of collaboration, engagement with the teaching process, heightened awareness of student learning, and professional efficacy. These themes were shared with two mentor participants who indicated they provided an accurate reflection of their experiences.

## Major Findings

As indicated by the themes which emerged from the journals, discussions and questionnaires, the model enhanced participants' awareness of the impact of their teaching, both in terms of reflection on practice as well as their students' learning. This knowledge served to increase the teaching efficacy of pre-service and mentor teachers as they developed an understanding of instructional strategies and assessment methods and how those might be perceived by students. A sense of empowerment also emerged, as pre-service teachers examined evidence of the effectiveness of teaching methods and mentor teachers shared specific data with parents. Finally, the collaborative research process provided an alternative lens through which classroom and school environments could be viewed in more positive and effective ways. As one mentor noted, "this project provided a lifeline for me this semester. I'm not sure I would still be in the classroom." Other literature suggests similar outcomes, advocating for the importance of continuing to develop structures and perspectives that encourage and support teacher research and classroom inquiry (Darling-Hammond & Bransford, 2005; Lytle & Cochran-Smith, 2003).

### Importance of Collaboration

One aspect mentioned in previous studies focuses on the importance of developing a collaborative relationship between the preservice and mentor teacher. Nurturing a sense of shared purpose and commitment in the research process fosters a collegial approach to the classroom inquiry process. Strickland et al. (2001) in their study of pre-service teachers conducting action research point out:

> [...] the biggest obstacle faced by these students was the fact that teachers in the schools have limited, if any, knowledge of action research. It would be difficult to assign pre-service teachers a project with which cooperating teachers would not have the skills necessary to provide assistance to the student. (p. 10)

The collaborative model used here addresses the need to develop a common knowledge base regarding action research, but moved further in the sense that the pre-service and in-service teachers worked together on a commonly developed project.

> I believe that the classroom research was very beneficial because it allowed me to work closely with my mentor teacher on a project that we were both interested in allowing a bond to form that otherwise may not have been formed. (Pre-service teacher)

Additionally, the collaboration moved beyond the research process itself, encouraging discussions focused on the relationship between teaching and learning. As one mentor noted, "Meeting as a team was very helpful for brainstorming and providing support for the researchers. It would also

benefit in-service teachers as they attempt to move from following curriculum to data-driven instruction."

## Engagement with the Teaching Process

Collaboration provided an opportunity for the teams to systematically reflect on the impact of their teaching. Facilitating reflection on teaching and learning between the pre-service and mentor teacher augmented the student teaching experience through discussions focused on implementation of specific pedagogical practices. This was especially salient for the pre-service teachers, as noted by the following:

As I reflect on what has occurred throughout the past weeks I have come to realize that Authentic Assessment is an excellent resource tool to teach with. I will continue to use Authentic Assessment when I am an official teacher of the gifted. I have learned a great deal from my courses as well as my student teaching experience. The most valuable information I have learned came through my action research project. I can create meaningful research that contributes to the education of the gifted. I am quite excited about this.

Keating et al. (1998) suggested that future studies examine the impact pre-service research opportunities have on the potential for participants to continue systematic research practices once they have finished their credentialing program. While this excerpt does not offer concrete longitudinal data, it does suggest that the experience can orient students toward a "habit of mind" that may impact practice.

Still, inservice teachers also found the process to be valuable way to think about what happens in the classroom. In this way, collaborative conversations about practice serve as contextualized professional development for the mentor. One mentor reflected on her preservice teacher's use of concept maps:

> Students created concept maps using Inspiration. The maps were to show what the students learned about Islam. She told the students that they should think about the maps as a way to explain what they knew to other people. The concept map was a tool that would help them explain what they learned. When she told them this, it was like a light turned on. The students started to think about their assignment as a way to share their learning with other people. I kept thinking about how rarely students believe their assignments are a way to share or express their knowledge. This led me to authentic assessment. If imagining the assignment was for other people to understand had such an effect on students, what could happen when the assessment actually was for a real benefit.

At one of the research team meetings, another mentor teacher shared thoughts about the process of reflecting on student interactions in the classroom.

> The teacher was able, through reflection and observation, to determine what was inhibiting student learning. In this particular study, it was found that students were lacking in social skills and had few opportunities to practice independence, while the teacher needed to re-examine classroom management strategies to better meet the needs of these students. Once these detriments to student learning were identified, a literature review led to the development of the supports needed by the teacher and students to further enhance student learning.

As a result of this process, this teacher was able to generate a research design and methods of data collection to explore the implementation of more student-centered method to classroom management based on practices from the Reggio Emilia approach.

In the current atmosphere of high-stakes testing, reflection in the context of teaching often focuses on content rather than process. In the case of this collaborative research

model, both pre-service and in-service teachers found an opportunity to engage in conversations about the *how* of instructional methods and their impact on learning (process) and not just the *what* (content).

### Heightened Awareness of Student Learning

Related to recognizing the impact the research process has on teaching, there was a concomitant attentiveness as to how this affects student learning. This insight was equally shared by pre-service and in-service participants. However, it was interesting to note how pre-service and in-service participants used that information. Both pre-service and in-service teachers reported a focus on the relationship between student learning and their teaching. The following comment is typical of those provided by pre-service participants:

> In participating in the classroom research I found myself really focusing on what the students knew and how they were learning the information they were being taught. I also think that by doing this research I have reassured my previous assumptions that most middle school students learn better and retain more information through hands on experiences as opposed to lecturing. [...] I believe that doing this research has given me the argument or background information that I need to prove that my lessons are worthwhile and beneficial to middle school students.

Similarly, mentor teachers benefited from the chance to employ new instructional strategies and evaluate their impact on students. As one in-service teacher reflected:

> I love, love, love literature circles. I am so excited to listen to the students in class. It's such a great way to start the day. The students are really engaging with the novel, Trouble Don't Last. There are two groups, and each is led by a student. As the students discuss the guide questions and share their own questions, their conversations about the book are getting more in-depth. This week I have noticed that they have started looking back into the book to find answers. Previously, [we] would need to prompt them to go to the text for answers. Now, they are looking up passages on their own to settle disputes in the group. Because several of the questions are open-ended, the students are becoming empowered to create meanings for themselves [sic]. As they discuss questions and return to the text, they are learning to trust what they think instead of searching for one correct answer.

Conversely, mentor teachers also sought to use information gained from the research process in their interactions with parents. A particularly interesting outcome from one of the studies related to an information processing deficit uncovered in the use of learning centers as an alternative form of assessment.

> Most of our data collecting is done. The student we were worried about, MH, has had some extra individual time. I've spent time going over stories and comprehension questions making her find details in the story to support her answers and then asking some higher level questions (why, what if, etc...) and again asking her to justify her answers. She has been given extra directions and supervision in centers and encouraged to ask questions. The most important thing I tried to do was make the family aware of our concerns. Her mom came in for a conference on March 23rd and we spent almost an hour explaining what we had discovered in our research and some things she could do at home to help MH work on direction following and comprehension.

While both of these suggest the use of the research and data to support teaching practice, inservice teachers were more likely to see that information as a resource to be shared with parents; whereas preservice teachers viewed this as supportive of their decisions regarding instructional strategy. It

is likely that this difference is due to disparities in professional development between experienced mentor and novice pre-service teachers, yet this scenario provides an important opportunity for preservice teachers to learn from inservice teachers how to use classroom data to engage parents in the educational journey of their children beyond the sharing of test scores.

### Professional Efficacy

The final theme to emerge relates to the sense of professional development gained by the participants. Pre-service teachers bring background knowledge from coursework related to research-based practices to the classroom, while mentors provide rich insights into the real world classroom setting. Additionally, the research process offered an opportunity to address and reflect on issues regarding instructional strategies, formative assessment opportunities, and student engagement and motivation. As one mentor noted:

The experience offered a tool or a lens through which the challenges faced this year could be examined. Rather than projecting blame on the children or the district and then not taking action, classroom research led to a sense of efficacy by developing possible solutions to the obstacles being encountered.

This appeared to be a common theme in terms of the mentors' experience. Not only did it provide a productive and healthy means of addressing problems in the classroom, but for some, it also offered a healthy avenue to deal with the stress often encountered in urban settings due to high enrollments and lack of resources. Another mentor described the benefits of the process this way:

Classroom research, due to its focus on problem solving, can be empowering for the struggling educator. It forces the educator to take responsibility for finding solutions rather than blame. It is very easy to join the "ain't it awful" [sic] lunch-room culture and the action research project offers a participatory experience of an alternative."

As a measure of the impact this process had on the inservice teachers participating in the course, all seven of the mentor teachers suggested that, in addition to the opportunity to engage in a classroom research experience with pre-service students, a separate classroom research seminar be made available for teachers who do not have student teachers as a form of professional development. This would offer teachers an opportunity to engage in research projects addressing issues of teaching and learning specific to their classroom and students. Other researchers indicate this to be a promising approach (Ponte, Ax, Beijard, & Wubbels, 2004; Yost, 2006).

Additionally, the preservice teachers commented that the experience provided a deeper insight into the process of reflecting on their teaching practice as well as enriching their student teaching experience.

> This project has prepared me for my future in many ways. I now feel more confident about doing research. One day I would like to attain my PhD. I know it will be challenging, but I feel like I will be able to handle it. […] I promise to always give my best and maintain a high level of professionalism and respect. (Pre-service teacher)

Henson (2001) found significant gains in in-service teacher efficacy in a study of eleven teachers participating in collaborative teacher research project. While this study did not measure teacher self-efficacy directly, it would seem that the results here support those findings. Both preservice and mentor participants found the collaborative research experience beneficial in terms of professional development as well as professional identity.

## Discussion

Based on the findings of the pilot study and follow up course implementation, it would appear this model offers an effective approach to introducing the process of classroom inquiry and research into the preservice field experience during student teaching. While it is difficult to make strict comparisons

between this model and those discussed in the literature reviewed for this study, our results suggest that both mentors and pre-service teachers find this collaborative model to offer a meaningful approach to incorporating teacher research into every day classroom practice. A recurrent theme in literature from the field suggests that knowledge of research design and methodology often presents a serious obstacle for both preservice and mentor teachers (e.g., Gilbert & Smith, 2003; Gitlin et al., 1999). Participants in this model found the collaborative model to provide both collegial and university faculty support throughout the research process which helped alleviate concerns about selecting appropriate methodology to fit an issue and time requirements to conduct research.

This model also addressed previous concerns related to the investment of the mentor or inservice teacher in the research process (Strickland et al., 2001). By creating a collaborative team that explored potential research questions, worked together on data collection, and jointly evaluated data, preservice teachers received valuable support from their mentors. In addition, mentors appreciated the "extra set of eyes" that provided objective observations of what was occurring in their classroom. Finally, the use of research teams to systematically reflect on both the process and progress of the research project was viewed to be an integral component of the model's effectiveness. Taken together, the experiences of participants in the pilot and course implementation phases suggest this collaborative model provides a substantive and meaningful research experience.

Providing successful opportunities for classroom inquiry continues to be an important task for teacher education programs. The model developed and explored here seems to offer preservice and mentor teachers the opportunity to collaborate on research that enhances both teaching practice and student learning. At the time of this writing, the model is in its third iteration, with a growing number of students and mentors indicating interest in enrolling in the course. Furthermore, mentors from the previous offerings have indicated their willingness to repeat the course with new pre-service teachers. While the impact of the experience for participants during this course is significant, it remains to be seen whether systematic reflection in the form of classroom inquiry becomes a "habit of mind" in the future and is sustained. As the course continues to evolve, and as mentors continue to return to engage in this process, that question may be partially answered. What is still unknown is the impact on pre-service teachers and their practice of classroom inquiry in the future. Future research needs to follow these teachers into their first years of practice to ascertain whether this experience has become an integral part of their practice as well.

## References

Burbank, M. D., & Kauchak, D. (2001). Action Research Teaming: An examination of multiple teaming confirmation. *Professional Educator, 24*(1), 11-23.

Charmaz, K. (2000). Grounded Theory: Objectivist and constructivist methods. In N. Denzin & Y. Lincoln (Eds.), *Handbook of qualitative research* (2nd ed., pp. 435-454). Thousand Oaks, CA: Sage Publications.

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

Darling-Hammond, L., & Bransford, J. (Eds.) (2005). *Preparing teachers for a changing world: What teachers should learn and be able to do*. San Francisco: Jossey-Bass.

Dinkelman, T. (1997). The promise of action research for critically reflective teacher education. *The Teacher Educator, 32*, 250-274.

Gilbert, S. L., & Smith, L. C. (2003). A bumpy road to action research. *Kappa Delta Pi Record, 39*(2), 80-83.

Gitlin, A., Barlow, L., Burbank, M. D., Kauchak, D., & Stevens, T. (1999). Pre-service teachers' thinking on research: Implications for inquiry oriented teacher education. *Teaching and Teacher Education, 15*, 753-769.

Henson, R. K. (2001). The effects of participation in teacher research on teacher efficacy. *Teaching and Teacher Education, 17*, 819-836.

Ingersoll, R.M. (2002). The teacher shortage: A case of wrong diagnosis and wrong prescription. *NASSP Bulletin, 86*, 16-31.

Johnson, R. B., Onwuegbuzie, A. J., & Turner, L. A. (2007). Toward a definition of mixed methods research. *Journal of Mixed Methods Research, 1*, 112-133.

Jones, P. E., Watters, E., & Beebe, R. S. (2007). Relationships are influential: Promoting mutual respect in a public school setting, *Journal of Teacher Research*, *1*(1), 35-50.

Keating, J., Diaz-Greenberg, R., Baldwin, M., & Thousand, J. (1998). A collaborative action research model for teacher preparation programs. *Journal of Teacher Education, 49*, 381-390.

Larrivee, B. (2000). Transforming teaching practice: Becoming the critically reflective teacher. *Reflective Practice, 1*, 293-307.

Lytle, S. L., & Cochran-Smith, M. (1992). Teacher research as a way of knowing. *Harvard Educational Review, 62*, 447-474.

Oakes, J., Franke, M. L., Quartz, K. H., & Rogers, J. (2002). Research for high-quality urban teaching: Defining it, developing it, assessing it. *Journal of Teacher Education, 53*, 228-234.

Ponte, P., Ax, J., Beijaard, D., & Wubbels, T. (2004). Teachers development of professional knowledge through action research and the facilitation of this by teacher educators. *Teaching and Teacher Education, 20*, 571-588.

Price, J. N., & Valli, L. (2005). Preservice teachers becoming agents of change. *Journal of Teacher Education, 56*, 57-72.

Simons, H. (2009). *Case study research in practice*. London: SAGE

Smith, T. M., & Ingersoll, R. M. (2004). What are the effects of induction and mentoring on beginning teacher turnover? *American Educational Research Journal, 41*, 681-714.

Strauss, A., & Corbin, J. (1998). *Basics of qualitative research: Techniques and procedures for developing grounded theory (2nd ed)*. Thousand Oaks, CA: Sage Publications.

Strickland, J. S., Corely, A., & Jones, L. (2001). *Identifying obstacles to preservice teacher action research: Two case studies*. Paper presented at the Annual Meeting of the College and University Faculty Assembly of the National Council for the Social Studies. (ERIC Document Reproduction Service No. 464909)

Valli, L. (2000). Connecting teacher development and school improvement: Ironic consequences of a preservice action research course. *Teacher and Teacher Education, 16*, 715-730.

Yost, D. S. (2006). Reflection and self-efficacy: Enhancing the retention of qualified teachers from a teacher education perspective. *Teacher Education Quarterly, 33*(4), 59-76.

## Appendix A

Discussion Post Prompts

Topic One:
Before starting the research, it is time to check that you have organized your procedure and data collection. What are you using to gauge student perceptions? Have you thought of how to evaluate that pre- and post-study? What are you using to collect this data? How are you going to be systematic about recording your own observations? It is not a good idea to simply rely on memory; you should have some method or schedule of recording observational data throughout the class/day – what are you using? While there is always a focus on summative assessment, don't forget that formative assessment can also provide valuable data to indicate student learning and understanding, as well as change over time. Hove you thought about how you might integrate formative and summative assessment? What are your data collection measures for this?

Topic Two:
Remember that this is not "pure research" but rather applied research – and it is an iterative process; you will need to be watchful for places where your "plan" may need to be altered. Do not be surprised if the first steps do not unfold as you had envisioned. For now, you should be implementing the first steps of your methodology – what worked? Were there steps that you needed to add, remove, change – why?

Topic Three:
There should be a little data to begin your reflections about changes in methodology, changes in data collection, as well as initial thoughts about where this all might be headed in terms of outcomes. What continues to go according to plan? If you have had to make changes, what are they and why; have they provided the intended outcomes or results? As you continue to engage in your study, you should also be collecting additional data on the steps you have taken to implement the study, changes that have occurred, extraneous variables that have arisen, in order to maintain a study history. You will find this helpful when considering limitations or other factors that may have impacted your results.

Topic Four:
Before you become totally immersed in the process of analyzing data, it would be a good time to think about organizing your data analysis plan. First, is there any data that you think would be important but that you have not collected? What would it be? Why would this data be important? Is it possible to collect it, and would it be unbiased at this point in the study? What is your quantitative data suggesting at this point? What is your qualitative data suggesting at this point? What connections between the quantitative and qualitative data are emerging? Is there a connection between the "data" and student perceptions? What are you seeing as the positive outcomes from the study?

Topic Five:
Now that you have data, you have started to think about the outcomes; there is also the issue of making connections back to the literature and previous research. What have you found that is supported by the literature? What in your data is different? Don't focus on "significance" here since you likely do not have a large enough sample to make that determination. In what ways will you be able to incorporate the literature in support of your findings? Finally, what changes would you make in your study now that you have completed it? What would you improve? What worked well? What would you add?

**Appendix B**

Classroom Research Study: Interview Questions

What was/were the biggest obstacle(s) to conducting classroom research?

What about the classroom research experience enhanced your teaching effectiveness?

What about the classroom research experience enhanced your students' learning?

What would make conducting classroom research a more helpful experience?

Do you believe classroom research is beneficial in the student teaching experience?

If you were to design a teacher research experience, what parts of this model would you incorporate? What would you change?

What could university faculty do to make classroom research a more efficacious experience?

[For pre-service participants] What could mentor teachers do to make classroom research a more efficacious experience?

[For in-service participants] What could be provided to pre-service teachers to make classroom research a more efficacious experience?

**Appendix C**

Classroom-based Research Projects by Title (Grade Level and Content Area)

"Effects of Authentic/Experiential Teaching Strategies on Student Engagement and Retention" (9th Grade World History Class)

"The Use of the Jigsaw Method of Cooperative Learning to Increase Student Comprehension in the Language Arts Classroom" (12th Grade English Class)

"The Value of Peer Editing in Senior Seminar" (12th Grade Composition Class)

"Use of Flashcards to Improve Word Recognition" (1st Grade Class)

"Effects of Formative Assessment on Student Learning" (4th grade Mathematics Class)

"Are Centers an Accurate and Effective Alternative Assessment for At-Risk Students?" (2nd Grade Class)

"Using Literature Circles to Increase Student Engagement" (8th Grade English Class)