Action Research in Teacher Education: Classroom Inquiry, Reflection, and Data-Driven Decision Making

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One of the growing interests in teacher education lies in how and what teachers learn across time and space in the complex ecologies and technologies of today's society. Teacher research has been implemented in teacher education programs as a powerful, exploratory tool for teacher candidates to inquire about educational problems and to improve their knowledge of teaching practice. This article presents insights gained from review of 18 action research projects completed by classroom teachers enrolled in a graduate reading methods course. To better understand what teachers learned through the action research process and how their self-study impacted teaching and learning in their classrooms, qualitative research methods were used to analyze the teachers' projects. The data revealed action research impacted literacy instruction, teachers struggled with how to make their literacy instruction explicit, projects focused on specific literacy topics, teachers used a range of resources for their selected intervention and shared information with each other and with colleagues in their respective contexts.

Teaching and learning are malleable practices that occur in the complex ecologies of individual, social, cultural, and political settings and in the interactions of local and global contexts. Therefore, teacher quality and the evaluation of effective teaching are dependent upon student outcomes; gains demonstrated by a wide range of students who bring diverse experiences as well as other social factors found in classrooms. A recent paradigm shift in the focus of educational research and the role of teachers and teacher educators (Cochran-Smith & Lytle, 1999; Darling-Hammond, 2006) might address the challenge of how to appropriately measure teacher performance. It is possible that teachers themselves, through their own problematization of the teaching and learning process within the contexts where they work, and through their own research can be used to closely examine their role as change agents and decision-makers (Alsop, Dippo, & Zandvliet, 2007), particularly when supporting the literacy needs of struggling readers. From this perspective, comprehensive evaluation of teaching and learning can include a close look at teacher quality by analyzing teachers' examination of their own practices and reflections about how their decision-making impacts student outcomes.

These self-studies completed by teachers expand on current literature about situated learning and the contexts in which practices occur (Lewison, Leland, & Harste, 2008), as well as adding to the literature on effective strategies because they provide a thick description (Geertz, 1973) of classroom practices. Growing evidence shows that teacher quality and teachers' ability to reflect on their instructional practice critically affects students' learning outcomes (Darling-Hammond, 2006). This article describes how candidates in a graduate literacy program problematized teaching and learning in their own classrooms through the use of action research. Although we hypothesized that the action research process would facilitate an opportunity for teachers to self-assess their practice and make timely instructional decisions based on student outcomes, as teacher-educators, we were also curious about how the in-service teacher candidates in our program conceptualized teaching and learning in their classrooms. We wanted to know, (1) how did the action research process impact literacy instruction in the classroom?; (2) to what extent did the teacher-candidates' action research projects facilitate K-12 students' learning and literacy development?; and (3) to what extent were candidates able to problematize and find solutions for teaching and learning issues in their own classroom?

Self-Study in Teacher Research

Teacher research plays an increasingly significant role in contemporary society as a basis for self-exploration and inquiry. For the last few decades there have been active scholarly efforts to formalize self-study research as an accepted form of inquiry and further the framework as a promising research paradigm in educational research. For instance, Self-Study of Teacher Education Practices (S-STEP) Special Interest Group of the American Educational Research Association (AERA) has promoted theoretical discussions on self-study. Recently, the discussion has been expanded to include a comprehensive methodology of self-study as well as strategies and techniques useful to conduct a self-study (Lassonde, Galman, & Kosnik, 2009; Pinnegar & Hamilton, 2009). Self-study that uses a systematic process for inquiry such as the action research process (Mertler & Charles, 2008; Mills, 2003)—particularly where researchers use processes to identify a problem and explore how to address the problem in authentic contexts—can provide valid, reliable, and systematic protocols for classroom inquiry.

The literature and research on teacher knowledge suggests four approaches to research on teacher knowledge, "the scholarship of teaching, action research and teacher research, narrative

inquiry, and critical-cultural teacher research" (Rosiek & Atkinson, 2005, p. 422). The self-study framework grounds action research as one form of teacher-research, which has emerged as a methodology in educational research to help teachers engage in inquiry (Pinnegar & Hamilton, 2009). Action research is emancipatory because it "demands that practitioners take a hard look at the structures and social arrangements that dominate segments of the population" (Newton & Burgess, 2008, p. 19) some of which teachers themselves might reinforce.

Reflection in Teacher Research

Reflection is a significant component of self-study and action research (Mills, 2003) as it is a powerful way to know about the self in research and practice as well as to unpack the very self in teaching practice. Reflective practice in teacher education allows teacher educators to explore how teachers learn by including "I" in an epistemology of reflective practice (Whitehead, 2000). Reflective pedagogy helps teachers closely examine current practice and spearhead changes as teacher leaders (Reason & Reason, 2007). In other words, self-study means studying one's own practice in its simple term, but its definition varies according to role, practice, and purpose (Smaras & Freese, 2006)—a process that lends itself to qualitative inquiry which uses narrative, descriptive approaches to data collection and analysis.

While engaging in self-study, teachers examine and problematize their own teaching by reflecting on their practice (Schön, 1983). Fairbanks and LaGrone (2006) examined the ways in which the teachers constructed knowledge through the discourse of a teacher research group and found that teachers' learning and teaching is transformed through the talk about theory and practice to support their research efforts. Swinglehurst, Russell, and Greenhalgh (2008) assert that "action research is becoming a popular approach to studying complex social situations such as those found in educational settings, where the focus is on simultaneous [inquiry] into practice (generating knowledge) and action to improve situations (e.g. designing new curricula or learning activities)" (p. 385). Through this self-directed inquiry, the teacher will (1) "ask essential questions, gather data and necessary information, and analyze and interpret the information to answer their questions" (McVicker, 2008/2009, p. 22); and (2) engage in critical and reflective thinking through self-directed (Elder & Paul, 2007) exploration to self-evaluate current practice.

The wave of interest in teacher research in the United States (Anderson, Herr, & Nihlem, 1994; Hahs-Vaugh & Yanowitz, 2009) is grounded in the involvement of teachers in research and their examination of learning and teaching rather than on the knowledge produced and transmitted by university researchers and policy makers (Cochran-Smith & Lytle, 1999). The former views teachers as "expert knowers" about their students and classrooms and suggests that teachers are "promising researchers" on educational practice. This perspective allows much productive discussions on practicality and epistemological challenges of teacher research (Cochran-Smith & Lytle, 1999). Furthermore, this lens views teachers as capable of generating knowledge valuable to enhance learning and teaching, based on the careful and critical examination of their own professional practice.

Many educators concerned with how and what teacher candidates learn in and beyond the university classrooms (Zeichner, 2007) suggest that knowledge is not passed down from one person with authority to another or a group of people with less power and limited knowledge, instead knowledge is acquired through social interaction within a particular learning community. In this context, self-study research can help to create a better understanding of what constitutes professional knowledge. Zeichner (2007) provides an overview of the issues of accumulating knowledge across self-studies and highlights the need for more direct implications for teacher education.

> There is a clearly identifiable body of self-study work on case pedagogy in teacher education where researchers consciously build on previous studies (See Grossman, 2005). Much of the self-study literature in teacher education is not situated in this way. Although discussing the personal implications of the research for teacher educators and their students and colleagues at the local level, many self-studies do not speak directly back to the teacher education community in ways that could more directly influence policies and practice. (Zeichner, 2007, p. 42)

The Context

The graduate reading course titled *Socio-Psycholinguistics and Reading* focuses on instructional strategies for working with diverse learners particularly ESL, learning disabled, and special education students. This course is one of the 9 required courses in the Masters of

Education in Literacy program. Full-time teachers enrolled in the course are seeking certification as reading specialists. In this article we refer to the in-service teachers as "candidates." On average there are approximately 50 candidates enrolled in the program at any given time. Throughout the program, candidates use Blackboard as an online learning platform. In this course Blackboard is used to supplement face-to-face meetings with discussion boards, and resources posted by the instructors or other candidates. In the *Socio-Psycholinguistics and Reading* course, candidates complete an action research project over six weeks in his or her own classroom or by working with another teacher in their school. This study used reports from action research projects completed by 18 candidates enrolled in the course during the fall 2009 semester.

In the course, candidates are given guidelines (Appendix A) to fulfill their action research requirements. The assignment sheet provides an overview of the information students must assemble into the project (e.g. description of the context, examples of resources/ review of literature, examples of student work, reflection on the process and practices). Upon completion of the project, candidates prepare a final reflection on the project and briefly discuss what they did, how they think the project will impact their practice moving forward, and the learning outcomes they notice from their students.

Methods

We collected and examined candidates' final reports and reflections along with the student work and outcomes collected throughout the action research project. Our goal when reviewing the candidates' action research projects was to use their reports to better understand what candidates learned through the action research project and how this self-study protocol impacted teaching and learning, and students' literacy outcomes in K-12 contexts. We utilized qualitative research methods and tried to analyze the data objectively. To ensure validity during our inquiry, we worked independently to review the candidates' projects, then met face-to-face to work collaboratively and interactively as a 'self-study community' (Kitchen & Parker, 2009). During these face-to-face discussions we reviewed the assignment sheet, rubrics, and the candidates' work to determine the extent to which candidates met course requirements and whether the scores received for action research project was an appropriate indicator of learning outcomes for the course.

While examining the action research projects, we looked across the various samples using the method of constant comparison and recursive analysis (Glaser & Strauss, 1967) to identify patterns between and among the sources (Taylor & Bogdan, 1984). First, we examined the content (Henn, Weinstein, & Foard, 2006) of the teachers' projects to identify how teachers made decisions about specific instructional practices. Then these practices were extracted and identified as categories, which we used to group narrative elements of the teachers' reports, and examples of online discussions were used to further document the findings that emerged from our data analysis. These elements included such areas as planning, material selection, assessment protocol, examination of student work. Then we recursively reviewed all teachers' reports in a cyclical manner to identify if these categories emerged as trends across the projects. Through this process the following themes emerged:

- candidates reported the action research project impacted their literacy instruction
- candidates struggled with how to make their literacy instruction explicit
- candidates focused on specific literacy topics for the action research projects
- candidates identified and used a range of resources for their selected intervention
- candidates shared information with each other and with colleagues in their respective contexts

Results

Impact of Action Research on Literacy Instruction

All candidates reported that they became more cognizant and acutely aware of the importance of explicitly calling students' attention to the classroom artifacts and resources such as word walls, sticky notes, and teacher-created charts.

Two of the 18 candidates reported on the impact of common planning on classroom instruction and student outcomes. Nicole (all names were changed to pseudonyms), an in-class instructional aide, commented on the importance of ongoing collaboration with the teacher rather than working in isolation when addressing students' literacy needs. She wrote in her final reflection about the action research project:

> Collaboration is an area of focus in the future in regard to literacy centers. My intervention plan should have been used along with the regularly scheduled lessons to highlight the reading skills introduced [in class]. The skills introduced

> in the centers were not being used outside of center time. If collaborating again, I would plan the reading lessons with the classroom teacher to ensure their completion. Similarly, one of the rotations could have been guided reading… involving the classroom teacher. While I monitored the centers, the classroom teacher could have been conducting small-group lessons with specifically chosen students.

All candidates noted a connection between increases in students' independence and better learning outcomes and student motivation. In one of her reflections Kim wrote, "I relinquished a bit of responsibility to the students to facilitate their own conversation." She said that she noticed increased fluency, ongoing activation of prior knowledge, increased comprehension, "terrific interaction with peers" and "greater enjoyment of reading" when she implemented literature circles in her fourth grade classroom.

All candidates noted that language and literacy acquisition takes time. Some reported teaching multiple lessons on the same topic, teaching in different ways, re-teaching, and providing time for students to practice are what they noticed as effective for positive student outcomes. Their reflections and reports also indicate they learned the importance of:

1. fostering students' active participation in the learning process;
2. increasing students' responsibility, and fostering independence;
3. promoting opportunities for students to develop enjoyment for reading;
4. collaborating through teacher-to-teacher common planning;
5. identifying and addressing students' individual needs;
6. considering students' multiple intelligences when teaching and developing activities;
7. using explicit direct instruction;
8. providing time for students to acquire language and literacy skills;
9. introducing students to a wide range of texts such as nonfiction;
10. reading instruction and its benefit for ESL (English as a Second Language) students;
11. providing students with clear processes and procedures.

Many candidates reported that they "modeled" during their lessons; however, few of the reports provided descriptive evidence that the candidate modeled *for* students through explicit instruction. Sarah, who is a literacy coach, noted that collaborating in class with the classroom teacher for her action research project led to significant student outcomes after she modeled

reading strategies for second grade students she worked with in a small pull-out group before the students went back to class. Sarah observed that the students "had better understanding of what they had to do and were willing to do it" when working with her.

Impact on K-12 Students' Learning and Literacy Development

The candidates conducted action research projects on a range of literacy and instructional topics (Table 1) while working with emergent readers at the primary level as well as adolescents in middle and high school classrooms. Across the 18 candidates, some topics were duplicated in some form. For example, topics 5 and 7 were component of two other action research projects. Similarly guided reading (topic 9) was implemented in various formats in three different projects.

Table 1: Examples of Literacy Topics Explored by Classroom Teachers through Action Research

1. Enriching students' writing through authors' strategies
2. Improving the quality of students' book talks
3. Providing comprehension strategies with think-alouds for struggling and disabled readers
4. Best practices to change a middle school writing and reading program
5. Phonics instruction in the kindergarten classroom
6. Incorporating multisensory phonics instruction
7. Literacy centers
8. Literature circles in a fourth grade classroom
9. Using guided reading to differentiate instruction
10. Comprehension strategies and sustained silent reading
11. Increasing student mastery of reading skills using multiple approaches
12. Fostering use of writing strategies and self assessment in student writing

Candidates maintained a narrow repertoire of instructional strategies for effective literacy instruction, which focused primarily on reading and writing. It is important to note that although none of the action research projects we reviewed indicated that the candidate focused on reading assessment intervention, all of the candidates used reading comprehension assessments as a measure of student outcomes during their projects. Most candidates examined strategies for implementing a new approach such as literacy centers, literature circles, or guided reading.

Although the focus on different literacy skills was evident, their research topics share similar concerns about instruction, particularly how to provide literacy instruction in more explicit and systematic ways so that their struggling readers and writers have a better understanding of literacy strategies and more frequent chances to practice them in school. None of them, however, explored other research-based practices such as reading assessment or using technology for teaching and learning.

Problematizing Teaching and Learning

Online discussion was used to build a community of learning while candidates worked on their action research projects. Unstructured online discussions in particular allowed teachers to freely share their knowledge. In both sections of the course, candidates helped each other refine their research topics. Candidates posted and elaborated on suggestions offered during face-to-face class sessions. Early in the course candidates were asked to post the initial draft of their research question along with the "problem" in their classroom that they wanted to address. Our review of their online discussion posts show, the candidates used online forums to help each other refine the specific issue or problem, identify potential resources, identify examples of data sources that would be feasible, and formulate a researchable question.

The candidates' online and face-to-face discussions about the project focused mostly on implementation of the approach and data collection. Kim expressed concern about how to "get this done and teach at the same time," and didn't see how she could find ways to incorporate new techniques to address the problem without stopping in the curriculum. Others shared Kim's concern about "what to look for" when analyzing the data.

Teacher knowledge is shared inside and outside the course and their respective classrooms. Candidates reported that they shared their findings with colleagues in their school during:

- grade level meetings
- academic support and intervention meetings
- Individual Education Plan (IEP) meetings
- in-service workshops where they presented to colleagues
- one-to-one discussions with school administrators such as the principal and vice principal

One second grade teacher, Rebecca who sought to implement explicit spelling instruction into her repertoire said: "I have shared my results and findings with my literacy coach and she is interested in working with me to share my findings and recommendations with my grade level co-workers."

Candidates considered whether the action research process and their findings will impact their future work. Cathy's report noted: "I will …continue this process and do my own research for future use." Fourth grade teacher Amy wrote: "The concepts introduced during my research period will thus be continued throughout the school, and will almost undoubtedly allow all of my students to reach the point of mastery." Donna who implemented literature circles for the first time in her classroom and admitted that before the action research project she "had no idea what a literature circle was or how they could be implemented in the classroom" wrote in her report:

> At the end of seven weeks I feel accomplished and satisfied with the project as a whole. I am extremely glad that I tried something new, and I feel that I now have something I would like to try again in the future. I feel guilty as an educator admitting that everything we do is in its own way research and the students are our "guinea pigs". However, without trying new techniques and projects in the actually classroom it is difficult to tell: what actually works, what would work with modification, and what should not be done again.

Moreover, some candidates expanded the scope of their research by not only sharing the results of the action research with colleagues in their school, but making changes to their literacy curriculum. For instance, a seventh grade teacher Liana examined effective reading strategies that would work for her struggling adolescent readers. In her final reflection, she indicated that in the future she wanted to pick one or two strategies that could be taught, modeled, and practiced in language arts, social studies, and science classes at her school. Liana reported that she shared what she learned from her action research with her principal and colleagues in hopes of establishing a collaborative effort with teachers in the content areas mentioned. She wrote:

> My principal has asked if I will work with him to come up with ideas and lessons teachers can use and teach the staff how to model reading strategies as a future staff meeting. I am looking forward to seeing what happens when all of our teachers begin to use and model reading strategies in their classes and how this

> will affect not only our students' day-to-day progress but also scores on NJASK [New Jersey Assessment of Skills and Knowledge, the state's standardized test].

To address the research problems they explored through action research, most of the candidates in the study have benefited from being introduced to resources and independently sought additional materials for them to utilize in their research. Candidates reported (a) reading aloud and using expression and intonation for students when teaching fluency strategies; (b) completing graphic organizers for the whole class on the board to show students how to read for information, (c) role-playing teacher-student and student-student conferences. However, they offered no description of how these activities and literacy events occurred in the classroom.

The action research project required that candidates use at least 5 different sources for the action research project. They had to review previous research and other practical resources, such as lesson plans, online websites and discussion forums, video resources, and research articles and reports such as online lesson plans, to help with their implementation. Our review of their projects showed that on average candidates used 6-8 resources for the project. All candidates collected and examined a range of data, such as student work, assessments, reflective journal notes, student surveys, observational notes. Most of the candidates indicated a better understanding and use of data. Some candidates realized the importance of collecting assessment data; specifically, they learned how to closely examine student work and assessments. For example, eighth grade teacher, Cathy recognized the benefits of collecting observational data and what she notices about students. She noted that it was important to "informally assess [students'] reading by conducting a running record and recording the results [while listening] to them read." Marilyn, who implemented reading centers, also learned that consistent data collection and methodological procedures are even more important to accurately measure student-learning outcomes. She reported:

> Alternative types of assessments might be helpful as well. Because there were many students who made more errors on the post-assessment, I need to further examine if the creation of the test was flawed, or if using the exact same test would have been more useful in terms of data collection… Until grading it, I didn't realize I put two more questions on the post-assessment…

Conclusions and Implications for Teacher Education

One way to increase teacher quality is to ensure that teachers reflect on their practice to learn from and improve it through continuing reflections and interactions (Schön, 1983). Although there is the potential for bias, teacher researchers can use systematic methods to conduct action research in their own classrooms. We found that the action research process provided our candidates with an authentic opportunity to apply strategies introduced in the reading method course and reflect on their own practice, and a model which they used to investigate a phenomenon occurring in the natural environment of their classroom. Mills (2003) suggests that action research is a process through which information is gathered with the goal of gaining insight, developing reflective practice, and effecting positive changes. The reflective practices of teacher research are multilayered because the teacher engages in self-study and inquiry to examine his or her own practice, then that teacher's report is shared with a wider audience for further exploration through collaborative reflection.

As Zeichner (2007) made clear, self-study research can better inform the individual involved in the study, as well as teacher education community as a whole. The self-study model is an integral part of teacher research because it helps teachers closely examine their practices, particularly through use of research methods like action research. Moreover, the self-study research process provides more insight into the benefits of this approach to teacher educators who teach research courses and who work with in-service teachers to better their teaching practice.

In this instance, using the action research projects as part of a self study process helped our candidates develop a better understanding of their own teaching. Our candidates were able to collect formal and informal assessments along with teacher observations, and closely examine these data and student outcomes in response to specific interventions. Additionally, when shared with colleagues in their schools, the outcomes of their action research appears to have had wider impact on teaching and learning that goes beyond their individual classrooms.

Crawford and Cornett (2000) value teacher research as it promotes a "forum for effecting change…[in] prevailing power structures" (p. 40). Teacher education programs need to foster opportunities for candidates to engage in action research. Furthermore, teacher educators themselves should engage in self-study to explore how they are fostering candidates' reflective and decision-making skills and how teachers' knowledge is transferred. Engaging in self-study helps to

increase teacher educators' understanding of their practice. In addition, we expect that valuable knowledge of teaching literacy as an outcome of this self-study would maximize the benefits of in-service teachers and their diverse learners.

A discussion of the new teacher research paradigms should include an advanced understanding of human learning, which is based on interdisciplinary and ecological perspectives (Bronfenbrenner, 1995). This investigation suggests that critical reflection around issues of knowledge sharing and transfer in teacher education programs can improve educational practice. Lampert (2000) suggests that teachers can be both initiators and active participants in a research agenda, adding valuable insider knowledge to educational research.

Future research in this area can dove-tail teacher-educators' action research and self-study while candidates engage in their own self-study in their K-12 classrooms. Although we did not intend to engage in self-study research at the onset, we now see the benefit of engaging in our own self-study or action research. Engaging in self study can have significant benefits on teachers and teacher educators who want to gain insights about practice through the teacher research process (e.g. Fairbanks & LaGrone, 2006; Mohr et al., 2004). Our review of the candidates' action research project highlighted areas that we can improve upon in our program namely making explicit connections between teaching and learning so that when teachers engage in their own action research they are more apt to recognize these connections. We also saw areas where we can increase our candidates' awareness of resources and literacy-based strategies that can positively impact student outcomes in classrooms. We hope this will increase the range of topics we see in future action research projects.

Appendix A

Assignment Sheet for Action Research Project

Action Research Project[1] Assignment Sheet

Rationale: The purpose of this assignment is to promote teacher inquiry. The assignment will help you explore what will happen when you implement a new approach for literacy instruction in your classroom. Through this action research project educators will have to opportunity to review current trends in a particular area, identify practices that have worked effectively, implement activities to support the literacy development of students, and reflect on the process by looking at student work.

Logistics & Recommendations: Assemble all materials into one document, make duplicate copies, use library resources (Curriculum & Materials Department; online databases)

Steps for Successful Completion of the Assignment

1. Identify the problem
   - Formulate a question based on the problem you want to examine
2. **Description of the context**.
   - characteristics of the students –select students from diverse backgrounds (at least 2 students)
   - the reading program (and/or curriculum) being used,
   - schedule for literacy instruction,
   - problems you are currently having with your literacy instruction
   - any other information relevant to your inquiry
3. **Research/ Resources**
   - adequate resources and materials should be identified to help implement the strategy
   - a wide variety of resources and activities should be used
   - include examples of the resource materials used (articles, website pages, lesson plans)*
4. **Evidence of Student Outcome#**
   - Examples of student work that emerged from lessons*
   - Assessments used to evaluate students' literacy proficiencies in relation to the strategy taught
   - Close examination of the students' literacy skills and development in different areas (oral language, writing, reading, listening)
5. **Weekly Reflections** – typed, reflections vary and incorporate most of the following areas
   - identifies why this strategy was selected
   - shows evidence of decision making,
   - student work is used to guide instructional decisions,
   - evidence that resources helped with the implementation process,
   - shares insights on what worked and what didn't,
   - identifies how activities were modified to meet the diverse needs of students
   - shares insights on the modifications, adjustments, and adaptations used
6. Collect a **minimum of 6 weeks** of data

Possible Topics:
Literature circles, guided reading, writing conferencing, reading strategies, reading and writing connection, learning centers, running records and miscue analysis

*Excerpts of this material will be sufficient
To protect students' identities, please remove names and any identifying information

[1] Portfolios will not be returned. Please include copies of original materials.

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