

Abstract

This paper describes the work of a collaborative research group, consisting of elementary, secondary, and college educators from a variety of disciplines, working together in a meaningful and individualized professional development initiative centered around classroom-based research (CBR). The purpose of the group is to support members as they conduct CBR projects. The group consists of teachers and faculty who participate voluntarily, and who have a strong desire to systematically improve their practice through inquiry. In addition to feeling empowered to make informed changes to their practice, participants experienced numerous benefits from their involvement in the group -- one of the most powerful was the ability to spend time working collaboratively and individually on their research projects that directly impacted their teaching. Samples of participants' research questions are presented, and the authors' individual CBR projects are described in detail. Finally, authors address the challenges and future needs of teachers and faculty who conduct classroom-based research.

Overview

Imagine a group of elementary, secondary, and college educators from a variety of disciplines working together as colleagues in meaningful and individualized professional development. In the spring of 2004, a collaborative research group of K-12 teachers and college faculty began a unique initiative of classroom-based researchers. The group was formed out of and is supported by a teacher education program at small independent liberal arts college. The purpose of the group is to support and encourage teachers and faculty to improve their practice and student learning through classroom-based research (CBR). Also known as action research or teacher research in K-12 education research; the work of this group can also be compared to the Scholarship of Teaching and Learning (SoTL) movement in higher education. This outreach program is dedicated to supporting teachers and college faculty in their efforts to conduct CBR projects, teaching colleagues about the CBR process, offering practicing teachers and college faculty sustainable, meaningful professional development. Essentially this core group of educators focuses on teacher initiated CBR and using their research to inform and improve their practice.

Over the past four years, the group has included a variety of teachers with varying levels of experience, representing five different school corporations and one college. Currently, the teachers include a first year elementary teacher, high school science and biology teachers, and an elementary art teacher, but membership in the group has been sustained by a core group of folks that includes one of the authors (a junior high science teacher) as well as a math education doctoral student and three college faculty – a history professor, an English professor and the second author, a teacher educator. Individual projects are highlighted in the section below.

At the start of each academic year, individual teachers within the group begin by identifying an area of concern within their classroom practice. For some this might be an aspect of their teaching and student learning they are curious about that emerged as a result of their classroom experiences, while for others it is a problem related to student learning that needs resolving. After refining questions, members of the group design research projects specific to their area of concern and aimed at investigating an element of their practice. The overall goal is to gain understanding about how their teaching practice impacts student learning.

In order to support members of the group throughout the academic year, teachers and faculty are invited to campus for at least two full-day work sessions each semester. Sessions are designed to focus on an aspect of the research process from refining questions, to data collection and analysis, to sharing results and ideas for implementing changes to classroom practice as a result of findings. As is characteristic of this type of work, the CBR process for this group is ongoing, recursive, and both structured and flexible enough for continued support for group members.

The meetings are of threefold benefit to the participants. First, a full workday away from their teaching allows participants to step back and think about their project outside of their demanding teaching responsibilities. Second, it allows group members to discuss with their colleagues what they are experiencing throughout the CBR process, and reflect on the direction in which they see their projects going. Participants are paired with a critical friend from the group who can provide feedback and an additional vantage point into their work. Finally, the work sessions provide moral support to teachers and faculty by eliminating the isolation that often accompanies teaching. Between group meetings, members can seek advice from the multiple perspectives offered by group members by posting project updates on the College's Moodle website or corresponding via e-mail with their critical friend.

An important feature of the group is that participation is voluntary and new members are always encouraged to attend. Attendance is made easier by the fact that the college's Teacher Education Program compensates each teacher's employer for the substitute teacher fee on days the teacher attends the workshops. Teachers and college faculty who choose to take part in the group are committed to CBR and have a strong desire to improve their practice through a systematic self-inquiry. Additionally, the teacher participants are frequently supervisors for the Program's student teachers, and as they engage in research projects, they provide an impressive model for the future teachers who graduate from the College.

Projects

Several participants have completed initial investigations and have hence incorporated changes into their practice. Although space allows us to highlight just a few of the projects (below), others are just as worthy of noting.

- High school French/German teacher – Project questions: “How necessary is homework in a foreign language class? What constitutes beneficial homework for these students? Is homework best used to wrap up a lesson or to bridge or launch in to a new lesson?” Findings from the project caused him to make changes to homework policies and the nature of homework assignments in his language classes.
- High school English teacher – Project questions: “How does allowing students to literally own the novels they're required to read for class encourage student engagement? If positively, how are their critical thinking skills impacted?” This particular teacher was so committed to this question that he found outside funding to be sure that all of his students could own their own novel for his course. Though his project is ongoing, his initial findings show that students' engagement is somewhat increased, at least initially.
- College English professor – Project questions: “How does a freshmen course on masculinity affect student views and attitudes toward gender?” Often members study their CBR project for one academic year, and then

choose to engage in a new area of interest in the following year. However, this is a good example of a long-term project that evolved throughout the duration of teaching the same course for several semesters. This professor used his inquiry project as the focus of his year-long sabbatical. Having taught this course periodically since 1993, he used previous students' work and current students' work as well as individual interviews as the primary data sources.

Although some teachers attend work sessions sporadically, we believe that even having exposure to CBR is a positive step toward more meaningful and sustainable professional development. If nothing else, their brief foray in to CBR encouraged them to become more systematic about reflecting on their teaching. However, a core group of teachers and college faculty have remained with the group year after year. The authors represent part of this core group and below is a description of each of their projects.

Michele's CBR Project

I believe regular journaling is one way to help teacher candidates learn how to be reflective practitioners, and in my early work with undergraduate pre-service teachers, I assumed they knew what it meant to reflect on their teaching. However, I began to recognize the fact that they do not, in fact, always inherently know how to meaningfully reflect on their work. Often they need instruction about how to critically think and write reflectively about their developing practice. Over several semesters, I have noticed that without specific prompts, my students' teaching journal entries tend to be summaries of the events in the classroom rather than critical reflections of their teaching. So, the question that guided this project is: *How do specific prompts impact teacher candidates' reflections on their teaching?*

I teach three different courses in our teacher education program, in which I require students to journal about their teaching experiences -- the junior level general methods course that includes a two-week teaching unit, the senior level adolescent literacy course that includes a one-week teaching unit, and the student teaching experience that includes an 11-week practicum. In all three courses, students are required to keep an electronic teaching journal. Because I have journal data from all these courses that spans four semesters, I had a number of options in terms of organizing and analyzing the data, including a longitudinal look at a cohort of pre-service teachers who took all three classes with me, but I chose to compare students in the same course from one semester to the next because I wanted a feel for how different cohorts of students from the same point in the program were responding to the prompts. Therefore, I will focus on what I found from the junior level general methods course -- the first methods course and the first "real" teaching experience for students in our program.

I first taught the junior level general methods class in the spring, 2006 semester. During the spring, 2006 and fall, 2006 semesters, I had not yet

identified journaling as my CBR question, but I was paying attention to the nature of the students' journal entries because it was part of their grade for the course. Because I was noticing students were writing summaries rather than critical reflections of their teaching experiences, in the spring, 2006, I gave students the following instructions to prompt their journal writing. I would not call this a journal prompt per se; I would call it journal instructions.

Spring, 2006 – “Journal Instructions”

- 1) *General reflection on the day's lesson -- this does not mean a list of things that happened, but a genuine reflection of how the lesson went from your perspective.*
- 2) *Specific reflection based on YOUR individual teaching question.*

Unsatisfied in the spring, 2006 semester with students' journal entries because I thought they still did not show students' critical thinking nor very thoughtful reflection, I decided to change the prompt for the daily teaching journals. In the journal entries, I expected students to show more critical thinking and thoughtful reflection and I believed revising the prompt would help them do so. Therefore, I developed what I would call the “sentence starter” prompt in the fall, 2006 & spring, 2007 semesters.

Fall, 2006 & Spring, 2007 – “Journal Sentence Starters”

In all the daily entries, you should respond to the following prompts:

Today's lesson in general can be described as . . . because . . .

My teaching in particular can be described as . . . because . . .

Today, I learned . . . and in the future, I will . . .

In terms of my focused question(s), I noticed that . . .

As a result, I am beginning to think . . .

What I found as a result of these sentence starters is that some students were more apt to write reflectively than others. Although, I would like to say definitively that it was a result of the sentence starters, I cannot. I noticed that some students elaborated on their responses to the sentence starters in ways that showed critical thinking and deeper reflection than others, who were satisfied to simply finish the sentence prompts with very little elaboration or thoughtfulness. So, I began to think the sentence starter prompts might be too specific and might not be encouraging nor enabling some students to think and write critically and reflectively. Therefore, I decided revise the prompts once again. During the fall, 2007 and spring, 2008 semesters, I used the following prompt for students' daily teaching journals.

Fall, 2007 & Spring 2008 – “Journal Prompt”

In each daily reflection, you should first generally explain how you think the lesson went in terms of your teaching and the students' engagement/learning. Next, reflect on what you learned as a teacher, and finally, explicitly address the topic of your focused questions.

It was during spring, 2007 semester when I decided to study this phenomenon more intentionally in a CBR project. Instead of continuing to

change the prompts based on my hunches and anecdotal evidence, I wanted to look in depth at the journal entries and the prompts I was providing. Using the junior level methods class' journal entries, I thought it would be important to identify places in them where students were summarizing or "reporting" and where their writing manifested more critical thought and reflection. Therefore, I began with a holistic look at the journal entries across the five semesters, and chose what I thought were exemplary entries. From these, I developed a coding system that helped me identify examples of "summary," "critical thinking," and "thoughtful reflection" in each students' set of journal entries.

At this point in the project, further refined a coding system based on three levels of reflection: "minimum reflection" (Simple *retelling* of events from teaching, primarily *descriptive* in nature); "average reflection" (Beyond simple retelling with some *critical reflection, explanatory and interpretative* in nature.); "in-depth reflection" (Critically reflective *narratives*, characterized by *analysis and inquiry*.)

From my analysis I identified patterns that are useful for thinking about how to teach and evaluate students' journaling and reflective writing. First, I found there to be a pervasive narrative style element (that was more descriptive than reflective) to most of the journal entries that I coded consistently as "minimum reflection". Initially, I considered this a problem that might indicate students' inability to critically reflect. However, I now believe that students need to contextualize their teaching and comments, even if only briefly before they begin expanding more critically on their teaching. Another pattern I noticed was that students' journal entries were generally characterized as in-depth reflections when they were discussing their focused question, which tells me that when students identify areas of focus they are more likely to critically reflect on that specific area than when asked to reflect more broadly on their teaching experience. This mirrors what happens with teachers developing CBR projects from their own questions.

My project is an example of a CBR project that evolved from my practice over the course of several semesters. Even before I identified the topic of reflection and journaling as an area of study for me, I was reflecting on it and adapting my practice as a result. Another important finding was that I realized I should not be hesitant to comment on the content of the students' journal entries as a way to mentor them toward becoming more critical thinkers. I restricted my responses to their journal entries to comments directly related to their teaching concerns rather than giving them feedback on the nature of their reflections. Now, as I teach the course, I am much more intentional about teaching students how to critical reflect and provide critical feedback to them in their journal writing. As I continue to analyze the longitudinal data, I am eager to see how students' ability to reflect develops over time. Other participants in the group identified CBR projects at the beginning of the academic year and finished their project in the spring. One example of this follows:

Amy's CBR Project

“...As is your sort of mind, so is your sort of search: you’ll find what you desire” (Browning, as cited in Gaither & Cavazos-Gaither, 2000).

Browning’s verse suitably summarizes my experience with action research. My sort of mind? The sort of mind necessary to anyone approaching action research – enthusiastic about problem solving within one’s own practice and an openness to discovering and owning the ‘good, the bad, and the ugly’ in terms of practice. My desire? To improve my practice and to share what I have learned with my colleagues. Harnessing the power of action research has supported my quest to examine and improve upon my students’ levels of ocean literacy and stewardship.

My self-study was conducted in the spring of 2007 and again in the fall of 2008 in our rural and land-locked mid-western junior high school. The participants were seventh graders in my general science classes. Over half of them had never visited an ocean. Casual engagement coupled with a brainstorming session about all aspects of the ocean with my students led me to believe that they knew very little about the ocean (ocean literacy) and even less about how their lives might impact the oceans (ocean stewardship). I had been teaching science in the public schools for many years yet had never covered the ocean in any appreciable depth. The ocean is barely mentioned in our state standards, adding to the ease at which I comfortably had ignored it.

The impetus for my research was the urgency of the topic on the global stage. An ocean literate citizenry is crucial to the health of our planet (U.S. Commission on Ocean Policy, 2003). I began to wonder to what degree my land-locked junior high students exhibited ocean literacy and ocean stewardship and what might be the optimum strategies to use to improve those levels. My action research was born of those wonderings. I set about assessing my students’ ocean knowledge and stewardship attitudes and using reflective practice to figure out what classroom activities would be the most fruitful. A great deal of time was spent in locating and trying out effective curricular resources as well as enrolling in professional development courses to improve my content knowledge and pedagogical expertise. Now that I have conducted this study across two years of students, I am confident that I have devised an effective methodology.

For each of the two study years, I asked students to brainstorm what they knew about the physical ocean, the biological ocean, and about the human-ocean connection, primarily to discover any misconceptions they held that I should remember to address. My pre-test/post-test was designed based on the document, *Ocean Literacy: The Essential Principles of Ocean Sciences* (National Geographic Society, 2006). Questions were written to coincide with each of the seven essential principles deemed most central to ocean education efforts by the National Geographic Society and a consortium of many other informed individuals and organizations involved in ocean literacy/stewardship efforts.

Students created ocean “blue-book” journals, which they used to record their thoughts and opinions as we progressed through the unit. I too kept a journal of my thoughts and observations and of what seemed to work well and not so well. Stewardship building was addressed by involving my students in the

setting up and care of a classroom coral reef aquarium and a tide pool “touch tank”, and by our involvement in a Greenpeace movement to protect whales. With middle school teaching principles in mind, students worked in collaborative groups and all activities were action oriented. Lessons that weren’t well received or that didn’t seem to have much of an impact the first year of my study, were replaced the second year. The bulk of my time was spent searching for great lesson ideas, scouring for the necessary supplies, and recording my reflections in my journal. My Wabash College classroom-based research group was there to remind me that all the work was worth the effort and made countless suggestions as to how to streamline data collection and analysis.

Based on triangulated data sources (the student pre/post-tests and “blue-books” and my reflective journal), my efforts seemed to have enjoyed a degree of success. Student scores improved from pre to post tests. My “critical friend” helped me to glean information from student blue books that indicated learning had occurred and that attitudes towards stewardship had grown. My journal highlighted the causes of the failures and successes and allowed me to ruminate on the impact of my efforts on my students’ learning.

Training myself to keep a reflective journal was an important outcome of this study. I intend to continue my journaling as it has proven itself to be a wonderful professional tool. By putting my reflections on my work in writing on a daily or even weekly basis, I am creating a priceless resource for improving my practice across the board. Whether it be looking back at the strengths and weaknesses of a lesson, looking for common concerns running throughout a school year and noting how best to deal with them, or just the joy of reading the diary of my life’s work, journaling is a logical component of self-assessment (National Middle School Association, 1995). I am looking forward to continuing in this process of action research, research to help me reach the important environmental education goals I have for my students. The urgency of environmental education in today’s world contributes to the vitality of my work. As Gil Grosvenor, the chairman of the National Geographic Society stated, “Teachers are the greatest natural resource we have on planet Earth: they are the ones who will ultimately save our oceans” (*National Geographic Society EdNet, 2007, p.1*)

Implications

We are in no way suggesting that the process of conducting CBR projects is simple nor is it easy to bring colleagues together in such an endeavor. We have faced many challenges both as a group and through our individual projects, but in the end each of us has found value and meaning in the process. As a group, we have struggled to get the funding that would allow us to develop the group in terms of numbers and resources. Only one year were we able to pay participants stipends for their involvement and only one year were we able to fund conference presentations. We have also struggled with the retention of our members from year to year. It is difficult for teachers and faculty members to maintain the motivation (even with the best of intentions) it takes to conduct CBR

in their classroom on top of all their other pressing responsibilities. Although the group provides a level of support for teachers and faculty doing this kind of work, when their colleagues and building administrators and deans do not support it on a daily basis, it is difficult for teachers and faculty to make progress on their projects between work sessions. All of our members have faced challenges making the time to communicate with critical friends between meetings, posting our progress on Moodle, finding the time to reflect on our experiences through journaling, and formally documenting the findings of our projects. Many fascinating projects have gone undocumented and without making the work public, as Lee Shulman argues, it really cannot be called research or scholarship (Shulman, 2005). Making CBR a priority is the key issue in a teacher's and faculty member's involvement. The core group of us are largely motivated by our involvement in higher education and the goals that accompany our career or graduate school work.

We believe CBR to be a valuable form of professional development that all teachers and faculty should have the opportunity to participate in, if desired, especially new teachers and new college faculty. However, we have found that without a group to support itself, it would be difficult for an individual to get started and persist with this kind of work independently. The nature of the process requires collaboration. Important questions that need to be addressed in order to expand the participation of teachers and faculty conducting CBR include:

- How do we get teachers and faculty interested in and committed to conducting CBR when they are feeling swamped with their day-to-day responsibilities?
- How can we continue to motivate and support those teachers not involved in graduate work to persist in conducting CBR over an extended period of time, despite the obstacles that they face?
- How might we expand our group to encompass the students at the College who are enrolled in the teacher education program?
- How might we elevate the status of our program so that a principal and dean might think of us when looking for professional development activities for struggling colleagues?
- How might our partnerships between K-12 schools and higher education institutions be fostered and maintained?

Conclusions

We believe that teachers and faculty involved in CBR naturally serve as role models within their schools, on their campuses, and in their communities. An important final step in the CBR process is making the results of the studies public so the work can contribute to the field, and other teachers and faculty can be encouraged to try CBR in their own classroom. In April, 2007, three of us presented at ICTR (International Council on Teacher Research) to share the work of our CBR group. In addition, one of the authors (junior high science teacher) presented her research at the NSTA conference in the spring of 2008. Another author's (the teacher educator) project on journaling was presented at

the 2008 International Society of Scholarship of Teaching and Learning annual meeting. These are clearly steps in the right direction.

The CBR process is an integral component of the sponsoring institution's Teacher Education Program, and all student teachers complete a CBR project during their student teaching experience. In fact, the teacher educator has studied this process as one of her CBR projects in the past, and an article about mentoring her undergraduate preservice teachers through the CBR process is under review. We have also had the opportunity of presenting our process of conducting classroom-based research in another university's methods course and helped prospective teachers brainstorm CBR questions of their own. In an effort to provide teachers and faculty one informal venue for "publishing" their work, at the culmination of each school year, we hold a celebration wherein each member of the group shares his/her progress and findings. We hope to continue to promote and support more informal and formal presentations of participants' work in the future. Through our efforts, we hope to encourage other teachers and faculty members to find ways to share their work with colleagues beyond our small group. In classroom-based research, we have found a tool by which we can improve our practice and also influence the practice of our colleagues. "Questions asked and findings reported by teachers may make more sense to other teachers and be more directly applicable to classroom contexts than research conducted by university researchers" (Van Zee, 1998, p. 792.). Sharing our work with interested collaborators, listening to their critiques and suggestions, and in turn, offering our own comments and recommendations for their work, is a joy and a way around the isolation we teachers sometimes feel. Having critical friends with whom to debate the merits of pedagogical approaches provides impetus to the process of classroom-based research. Ultimately, if we are serious about impacting the field of education and building a knowledge base about teaching and learning, we must find venues for publishing this work.

References

- Browning, R. (1981). *The Poems*. Yale University Press, New Haven, 501.
- National Geographic Society EdNet (2007). About our environment and oceans for life community. Retrieved June 8, 2008 from http://www.ngsednet.org/community/about.cfm?community_id=128
- National Middle School Association, (1995). *This we believe: Developmentally responsive middle level schools*. Columbus, OH: NMSA.
- Ocean Literacy: The Essential Principles of Ocean Sciences National Geographic Society (2006). *Ocean literacy: The essential principles of ocean sciences K-12 [brochure]*. Washington, D.C.: NGS.
- U.S. Commission on Ocean Policy (2003). *Part III ocean stewardship: The importance of education and public awareness – promoting lifelong ocean*

- education. p. 83. Retrieved January 27, 2007 from www.rbff.org/educational/bpe2.pdf
- Shulman, L. (2005). Keynote Address. 2005 CASTL Institute: Developing Scholars of Teaching and Learning, Chicago, IL.
- Van Zee, E. (1998). Preparing teachers as researchers in courses on methods of teaching science. *Journal of Research in Science Teaching*, (35)7.
- Williams, G. (2002, December). *Autonomous access, spontaneous pursuit, and creative execution: insightful and creative mathematical problem-solving*. Paper presented at the meeting of the Mathematical Association of Victoria annual conference, Melbourne, Australia.