

Action Research within a Graduate Education Course and Its Impact on Teacher Confidence and Student Motivation

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Numerous research studies over the last two decades link teacher effectiveness to student learning and achievement. This research study focused on three teacher-researchers that were completing their master's degree in education at a mid-west university. As a culmination to their degree, these teacher-researchers implemented action research projects in their own classrooms. Over the course of two semesters, they completed a series of steps that provided a structure to their research. As part of data collection, each of the teacher-researchers completed a survey and was interviewed. Results from the study showed that teacher-researchers valued and internalized course requirements, improved their own classroom practices and saw an increase in student learning within their own K-16 classrooms.

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Background Information

Research shows that highly effective teachers have a direct influence in enhancing student learning and lifelong educational aspirations (Barron & Darling-Hammond, 2008; Brophy & Good, 1986; Little, Goe, & Bell, 2009). One way to support the process of quality teaching is to have practitioners reflect on their own practice while, at the same time, work towards improving it (Lincoln & Guba, 2000). Action research can be used to inform practice and can be an empowering experience for educators (Coghlan, & Brannick, 2014; Hubbard, & Power, 1993). This project analyzes the implementation of action research by three graduate students completing their capstone experience as part of their master's degree in Curriculum and Instruction (C&I) in a large Midwestern University.

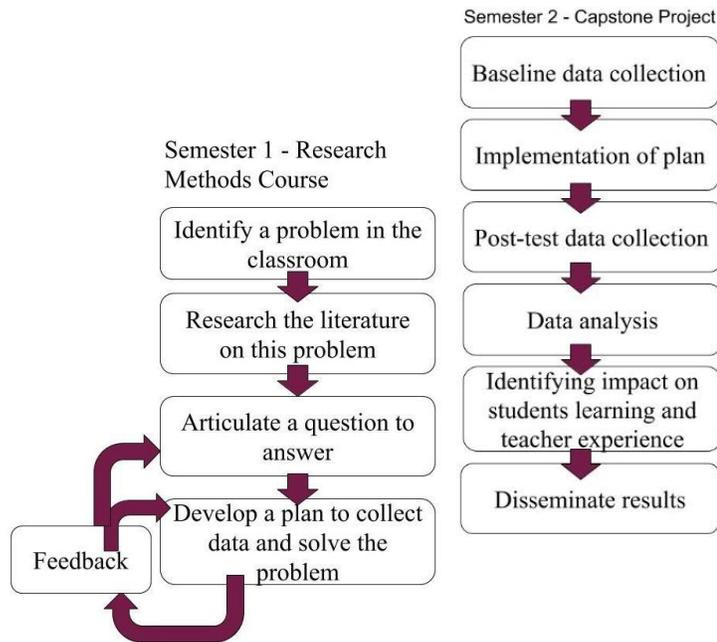
Action research as a concept has been around for over 50 years and has been viewed as a research methodology that has repeatable cycles that focus on problem analysis, articulating a plan of action, collecting data/observations, reflecting, analyzing, and implementing a change for social/educational improvement (Hine, 2013; Mills, 2011). As traditional research focuses on the scientific method that has generalizable results, action research typically emphasizes finding a solution that fits a specific context in a specific situation. There may be transferability of ideas from one action research project to another due to similarity of settings or people engaged with the project.

Statement of the Problem

Approximately six years ago, the C&I program made changes to its capstone experience by splitting it into two courses: a research methods course that emphasizes a literature review and a capstone course where students complete an action research project. The idea was that

students would take a research course first before completing their capstone project. The research methods course explores the range of educational research in current practice and develops an understanding of the role and limitations of research for informing educational practice. Students select an issue related to their classroom and conduct a literature review that demonstrates their knowledge of the literature, ability to read and synthesize research and write according to standard protocols. As part of the research methods course, they also draft a proposal for their capstone project. The second course involves fine-tuning the proposal, completing the research, writing the master's project paper and obtaining the approval of a master's committee.

Using action research as the basis for a capstone project allows K-16 teachers to thoughtfully consider how an issue can be solved using a series of steps (figure 1) that will directly impact their own classroom. The goals of the capstone experience (filling the gap between theory and practice, empowering teachers to develop new knowledge that they can apply to their classrooms, having them make changes that support quality student learning and enabling professional growth) tie in well with action research (Hine & Leavery, 2014; Johnson, 2012).



Note. Throughout the capstone project, significant feedback is given by faculty, and teacher-researchers formatively assess their students' progress and adjust their plans.

Figure 1. Research Steps Used in the Two-Course Sequence

The C&I faculty were also mindful that action research can have negative impacts on teachers because of the amount of time that it can demand. Teacher-researchers are also embedded in the research process and may not be as objective in analyzing data from their own classrooms.

During the 2016-17 academic year, a group of faculty in the C&I and Educational Studies (EDST) programs made refinements in the two-course sequence (Research Methods and Capstone Project) to further enhance the experience that students have in completing an action research project in their own classrooms. C&I faculty who teach the two-course sequence and EDST faculty who have expertise in AR worked together to build modules that emphasize the big ideas of action research (e.g., research ethics, problem solving, etc.) as well as the process of

the actual project. The C&I and EDST faculty wanted to study the impact of the action research projects on the way graduate students think about research and its use in their own K-16 classrooms. Hence, the research question for this study is: how does planning and implementing an action research project affect teacher confidence and their student's motivation?

Literature Review

Though there are diverse methods of implementing action research in graduate teacher education courses, having K-16 teachers design and implement this type of research within their own teaching promotes reflection and empowers them to make decisions based on data rather than anecdotal evidence (Bogdan & Biklen, 1982). Typically, teacher researchers either focus on an instructional change, a change in student behavior or a positive impact on the learning process (Hine & Lavery, 2014). Having teacher researchers involved in a collaborative learning process where they share information and ideas, gain a deeper understanding of pedagogy and delve into a particular aspect of practice can encourage them to be change agents who promote social justice education and influence social conditions for teaching learning and professional development. Thus, action research must be practitioner-driven, promote positive change either in the classroom or at the school at large, and be systematic in implementation (Holter & Frabutt, 2012).

Action research is a flexible tool that allows for both development of research skills along with practitioner dispositions (Vaughan & Burnaford, 2016). Lustick (2009) found that guiding teachers through the planning process of action research (no required implementation) had little impact on teachers' reflective abilities and did not promote teachers' growth as researchers. It is essential that teachers be allowed the opportunity of completing a research project to develop the

necessary skills and disposition to address challenges in their own classrooms. In other words, the teachers need to experience problem solving using systematic research.

Action research provides teacher researchers the opportunity to develop and sharpen their understanding of teaching practices which, in turn, helps them to become skilled, reflective practitioners. Including action research in a teacher education graduate program and supporting teacher-researchers is complex, and the effectiveness of implementing action research depends on numerous factors, such as goals and objectives of the program, course requirements, and willingness of faculty to spend the time to support and guide the graduate students (Vaughan & Burnaford, 2015). In a study that involved 114 master's-level students, Rogers et al. (2007) found that the teacher-researchers saw action research as a way to help them establish deeper personal relationships with students and that the students developed more of a decision-making voice as well.

The sense of empowerment that teachers develop through the implementation of action research was highlighted in a language arts action research course (Johnson and Button, 2000). When confronted with directives, the teacher-researchers found their voice and asked 'why' questions. Asking for clarification and/or justification requires confidence which evolves for teacher-researchers as they realize they can speak out about issues concerning their teaching and classrooms.

As all research designs have their relative strengths and limitations, a particular design is selected to address a specific research problem. The use of case study research allows researchers to investigate complex social situations that share a varied and holistic account of a phenomenon. A concern about case study research is that of generalizability. Rather than generalize, ideas from case studies can 'transfer' from a project into other settings and invites

readers to make connections between the research and their own experiences (Baxter & Jack, 2008).

Methods

The C&I students who take the research and capstone project courses are typically K-12 teachers (though a few instructors at baccalaureate institutions have taken the two-course sequence while completing their master's degree) who are currently teaching full-time in public, private and non-formal institutions. They conduct AR projects in their own classrooms while completing the C&I research and capstone project courses.

This project was exempted from the Institutional Review Board (IRB) process as the research is considered 'quality improvement' and not a true human subjects research project. Surveys using an online survey tool (appendix A) were disseminated to graduate students after they had taken their research methods course and prior to beginning their capstone experience. Participating in the survey was voluntary and had no impact on students' grades in either course. A total of three interviews were completed by students who had graduated and agreed to be interviewed. These interviewees were chosen through a convenience sample from a total of 20 students who had completed their capstone course in the spring semester. A graduate assistant (GA), not affiliated with the courses conducted the interviews with the three teachers. These interviews focused on student understanding of AR, benefits and barriers to implementing AR and the impact of AR projects on how students think about research and its use in their own K-12 classrooms (see appendix B for interview questions).

As the theoretical basis for this study, symbolic interactionism, a theoretical focus that emphasizes the exchange of meaning through language and how that meaning is interpreted by other people was used (Blumer, 1969). Consistent with this viewpoint, the researchers looked at

the impact of action research on the teachers and their students in their respective schools by focusing on their individual perspectives and experiences. The preferred methodology for this project was the case study which allows for exploration and understanding of complex issues (Gillham, 2000). The use of case studies as a research tool helps with understanding behavioral conditions through the participant's perspective (Yin, 1984). Both within-case and cross-case comparisons were used to examine intervening variables and help identify what conditions were present in the cases that "activate the causal mechanism" (George and Bennett, 2004, p. 21). This causal mechanism is viewed as "the elucidation of the processes that generate the objects, events, and actions we seek to explain" (Ekstrom 1992, p. 115). The three case studies were analyzed to better understand how action research affects teacher confidence and their student's motivation. Table 1 highlights the specific case studies in this article.

Table 1

Case Studies

Participant (pseudonym name)	Action Research Project Description	School
Leah	Increasing effort and accuracy in math homework	Suburban middle school
Victor	Increasing perseverance in math class	Urban high school
Gretchen	Increasing African American participation in Advanced Placement (AP) courses	Rural high school

The format for analysing the data followed the constant comparative method by Glaser and Strauss (1967). Each of the two researchers reviewed the interview transcripts and created codes based on important points being made by the interviewee. These codes were continually

compared with the previous incidents. From the codes, preliminary themes were developed that emphasized both researcher and respondent categories that used local language and terms (Glaser and Strauss, 1967). Discussion amongst the researchers served to refine the themes into five categories:

- Confidence levels before, during and after completing the AR project, including the evolution of the action research process and graduate writing skills
- Roadblocks and barriers to completing the AR project
- Supports during the AR process that were most helpful
- How the action research project affects K-16 student motivation and efficacy
- Professional growth and leadership

Results and Discussion

The questions that the three teacher-researchers answered were developed to allow them to share information about their action research projects, their experiences in the two-course sequence, and their reflections on how the AR projects impacted their future teaching, their students and their school communities. The intention of the open-ended questions were to have teacher-researchers share experiences and reflections in their own words, and to focus the interview on what about the AR project was impactful to them personally as well as their students' learning processes. Limitations to interviewing included participant recall of events and comfort level with the interviewer.

During the first semester in the research methods course, students use the literature review as the basis for their action research project. They develop an action research proposal that includes a problem statement about the issue, which is typically classroom based. The next semester, the students refine the proposal, revise the research question, create data collection instruments, and implement the action

research project. According to a survey given to all teacher researchers ($n = 24$) at the beginning of the first course, only 17% of graduate students had previous experience with AR. All three teacher researchers who were interviewed for the case study had little experience with AR prior to this program. They had all heard of AR before, and one had written a literature review in another master's program, but none had implemented action research in the classroom.

Initially, teacher researchers felt overwhelmed by the prospect of action research. Leah reflected on how she felt as she initially learned about her action research project: "How will I ever do this, in this [short] amount of time?" Victor said, "I thought I could never do this... that [action research] was for lab rats. I didn't think I would have the knowledge, determination or skill to do action research." However, as teacher researchers developed their AR projects, they began to see that AR was not as intimidating as they initially thought. "It doesn't have to be big and elaborate, and take months or years," said Leah. "It can be just an idea, and you do research on your own, as a teacher," Victor reflected. After completing their AR projects, all three students said they felt confident about implementing other AR studies in their own classrooms. They still felt they would need guidance to write literature reviews and present written results for publication, but felt very confident about defining a classroom problem, reading existing literature about it, developing ideas for solutions, and collecting and analyzing data with students in the classroom.

Each teacher researcher developed an AR project to solve a problem in his or her classroom or school system. The three teachers saw significant positive changes in the attitude and engagement of their students, as a result of their AR projects. In addition, teacher researcher self-confidence increased concerning personal writing ability and ability to conduct future action research projects.

Leah is a middle school math and science teacher. In her 7th grade math classes, she had trouble with low student effort on homework assignments and students who sometimes wrote "random

numbers” on paper just to get credit for having done their homework. She put students in teams and developed a point system that rewarded students for accuracy on homework assignments, as well as for coming up with questions for the class problem-of-the-day and for performance on other in-class math activities. She saw an increase in effort and accuracy on homework and also increased engagement in class. Students were excited to see how many points their team had scored each day, and whose problem had been chosen for the problem-of-the-day. They began to ask teammates why they had not done their homework if their team had not scored many points for the day. They also started to challenge each other, by creating problem-of-the-day questions from previous units. Leah was sure that students would have complained if she asked those challenging questions, but her students were willing to take on the challenge without complaint when it came from their peers. Surveys that Leah’s students completed as part of the action research project, also showed that the 7th graders liked the new system, and that they felt more motivated about doing math. They wanted to continue with the point system, after the action research project was over. Leah said she liked feeling “more in tune with [students’] feelings about the class” through the surveys and class discussions. Although she is moving to a new school, in a different state, and teaching science next year instead of math, she plans to use the technique again, and feels confident initiating other action research projects. At some point, she hopes to develop a system that encourages more internal, rather than external motivation.

Victor was concerned about his high school seniors beginning to “check out” in the spring as graduation neared. He surveyed the seniors about their feelings about math class before he implemented a strategy aimed at increasing their perseverance and planned to give the survey again after several weeks. Then Victor started conferencing weekly with each student to discuss current grades and what needed to be done to bring grades up. After a few weeks, he noticed that students did not blame him as often for their poor performance. Comments like, “he gave me a D” were less frequent. When someone

did complain, classmates would make comments to each other such as, “Well... you know what you have to do. He told you. So get it done.” Victor noticed the most difference in the attitudes and work habits of those students who might have been in the highest risk of failing the course. However, all students began to see that their work was “paying off” as they participated in the weekly conferences. When the survey was given again, students were less likely to agree with statements like “I’m bad at math”, “I hate math” or “I can’t do math”. Surveys also indicated that they were more “excited about math class”. Victor plans to continue to conference with students weekly next year and said that he feels confident developing new action research projects as well. He plans to present his idea to other teachers at the beginning of the school year, in hopes that they will be interested in implementing this conferencing technique as well.

Gretchen, a high school history teacher, noticed that relatively few African American students were signing up for advanced placement (AP) classes in her high school, so she asked colleagues and administrators to recommend African American students who might be both capable of and interested in taking AP level courses. She interviewed these recommended students about their thoughts and attitudes about AP classes. She wanted to find out who influenced their decisions about which classes to take, and why they did not choose AP classes. Some of what she found contradicted other studies in the literature (Klopfenstein, 2004; Hughes, 2010; & Ricks 2014) which indicated that peers influence African American students most in their decisions about taking high level classes. For the students in this small rural high school, their parents were more likely to influence them to take an AP class, rather than peers.

Through the interview process, Gretchen was able to convince more African American students to take AP classes. Although the actual impact on these students’ AP exam scores was not apparent, the students did seem to be engaged in the classes. Gretchen has presented her research to other high schools in her district and is communicating with AP teachers in other subjects as well. She also found

enthusiasm from other AP teachers and school administrators about the increase in African American student enrollment. Gretchen is now planning to contact former students, now in college, to find out whether the AP experience was helpful in preparing them for college level classes. She hopes that some African American students will speak at “AP night” when students and their parents who are interested in AP classes get to learn more about the program. This current project is still a focus, but Gretchen said she feels confident that she could design and implement another action research project.

Teacher researchers reported the most personal growth in the area of their own writing. Leah struggled with the writing process. She had trouble being specific in her writing, had some issues with grammar and encountered different expectations from different professors who reviewed her work. For example, in early coursework one of her instructors gave little to no feedback on her writing, but in the following semester she encountered rigid requirements in relation to writing quality and APA formatting. A more consistent focus on expectations might have helped her gain confidence in her writing ability. She ended up changing the focus of her project to some extent from the original proposal, which meant she had to add to and revise her literature review while she was implementing the AR project in the classroom and writing about the results. Now that the project is complete, she has more confidence in her writing ability. “I did it!” she says with pride. She gives much of the credit for her success to her two faculty readers and a writing tutor who supported her in the writing process. She indicated that she would still need some support to write another literature review and action research report but feels she would need significantly less support than during her first attempt. In regards to the development and implementation aspects of action research, her confidence is high.

Victor said in his interview, “I think I’m worlds away from where I was, in terms of my writing, but not enough to feel confident to publish.” However, he expressed a high level of confidence designing, implementing and analyzing data from action research and confidence with the use of

technology in implementing the research as well. Still, Victor felt it would be helpful to have someone to “bounce ideas off of” next time he considers doing an action research project.

Gretchen said that the literature review that she was expected to complete was “a lot more involved” than she thought it would be. She said, “the program...really taught me to go through that [literature review] process” and she now understands the necessity of looking at other studies and analyzing her own research in connection to them. Her writing style also changed as a result of the requirements of the courses. She had always written papers without outlining her ideas first, and when required to fill out a template, she remembers “I hated it while I was doing it... my husband heard me gripe and moan about it.” Later, as she was writing, she came to appreciate the usefulness of the required template and was grateful for having done it. She and her husband are both in graduate programs at different universities, and they both agree that the Curriculum and Instruction program that included action research “prepared [her] way better” than his program did.

Conclusions

This paper explored how teacher-researcher confidence and their students’ motivation can be impacted by the implementation of an action research project as well as highlighted how action research can be used to inform practice in diverse educational settings. The significance and value of action research can be seen through the statements made by the three teacher researchers as well as the body of literature that promotes action research as a quality process for educators to undertake. It allows teachers to view their classrooms as a research site where they can analyze problems, design solutions and implement them (Shosh & Zales, 2007) and supports their awareness and appreciation for action research as a catalyst for positive change in their own classrooms (Turner, 2010).

Through the incorporation of action research, the teachers used a systematic process that helped them analyze and solve their own teaching issues. Teachers can see themselves as the drivers of their own practice as they move through the cyclic process of action research, studying their own structure and practices and using that information to develop quality learning processes for their students (Johnson, 2012). This also allows them to be change agents in their own schools. Though the teachers initially had a lack of confidence in their writing capabilities, over the course of the action research project, this perception subsided and they developed a pragmatic approach to refining their thoughts on paper. Allowing that some discomfort in articulating ideas is fairly common in academic writing, the teachers evolved over the two-course sequence to be able to express their ideas and share them with colleagues and school administrators.

Ultimately, teacher education programs must help to foster the transformation from teacher to teacher-researcher. When teachers become immersed in studying their own practice, they develop meaningful skills and dispositions that can guide them throughout their professional careers. Direct connection between graduate curricula and the learning of students and teachers in actual classrooms is crucial for the deep reflection and connection teachers need to become true researchers.

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Appendix A

Even though you may not be completing an action research project, please answer all of the survey questions. Thank you!

1. Include your name here

2. What type of capstone project would you like to complete? In the comment box below, share what you know about action research.

Action Research

Curriculum Unit

Portfolio (typically only used by the instructional technology students)

Other (please specify)

3. Have you ever developed or been a participant in an action research project? If so, please explain below.

Yes

No

Other (please specify)

4. If you were to implement action research in your classroom, what might you want to explore?

5. How confident do you feel in your ability to use action research in your classroom? Explain your answer below.

Very confident

Confident

Not at all confident

Other (please specify)

6. What supports would be necessary for you to implement action research in your classroom?

7. What barriers might make it difficult to implement action research in your classroom?

8. What types of data might you collect in your classroom to address an action research question?

9. The following scenario is an example of an action research project: The teacher wants to explore the impact of implementing a flipped classroom (students review lecture and notes outside of class and do problem solving inside of class) has on student motivation and achievement. Explain how you would design that study and what obstacles you might face?

10. What is the likelihood that you will conduct action research in your classroom? Explain your answer below.

Very likely

Likely

Not at all likely

Other (please specify)

Appendix B

Teacher-researcher survey questions

Interview questions for teacher-researchers

- Would you please tell me a little about the action research project you did as part of your graduate work at University of Cincinnati (UC).
- What did you know about action research before the UC courses? Had you done action research before?
- What did the UC program add to your understanding of how to conduct action research?
- What were some of the big “aha” moments for you about action research?
- What benefits did you see as you did the research?
- How was the UC program helpful to you in terms of designing and implementing your action research project?
- What kinds of difficulties or barriers did you need to overcome as you worked on your project?
- What additional support would have been useful to you as you completed the action research project?
- Did you share your action research results with anyone at your school or in the broader community beyond UC?
- Were colleagues and/or administration in your school interested in your project? Were they supportive of the research you were doing?
- Did you make any changes to your teaching style or curriculum due to action research results?
- Were there any lasting effects from your action research project?
- What is your confidence level, at this point, with action research, compared to before the program, and compared with your idea of “highly confident”?
- Have you done, or are you planning any other action research projects? If so, what would they be they about?
- If you have not done any additional action research, what kinds of supports or encouragement would prompt you to do some on your own?
- Have you mentored any colleagues as they engage in action research?
- Are there any other thoughts you would like to share?