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The use of web-based tools to teach action research: A developing instructional model for teacher researchers

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The use of web-based tools to teach action research:
A developing instructional model for teacher researchers

Introduction

Research on best practices for teacher education has identified key elements to promote effective teaching that will maximize learning in students. Among them is the capability of teacher education programs to promote reflective thinking in teachers (Russel, 2000). Reflective thinking, as explained by Dewey (1933), is the ability to engage in “active, persistent and careful consideration” of a problem. Through reflective thinking, teachers can develop a critical stance and deliberate practice that is based on sound principles, applicable to the contexts of their classrooms. One strategy for promoting such high level of thinking is the use of action research in teacher preparation. Although most work on action research is carried out at the in-service level, some studies have demonstrated success when implemented at the pre-service level. (McDuffie, 2001; Auger & Wideman, 2000).

Since the year 2000, faculty members at The University of Texas-Pan American (UTPA) began a restructuring process to ensure that undergraduate teacher education courses corresponded to new State professional development standards. State teaching standards follow the trend to identify reflective practice (Schon, 1983, 1987) as an essential skill for teachers. Faculty agreed that professional interpretation and evaluation of observation data is dependent on critical thinking and a connection to theory. Methods associated with action research offered a practical mechanism to connect data from observation to theory, and to provide mental models to support reflective practice. This approach envisions the teacher as researcher (Parsons & Brown, 2002).

Purpose of the Study

Given the present demands for teacher accountability, it is imperative that teacher preparation programs prepare teachers by developing their ability to reflect deeply about their practices and to seek better approaches in instruction. Action research offers a possible means of promoting critical reflectivity prior to graduation. However, undergraduates have not yet been exposed to the ways of research to make their inquiries systematic and their conclusions reliable and valid. As proponents of the development of

teachers who are reflective practitioners, we had two purposes for embarking on this research project: 1. to engage in our own action research to develop instructional practices that promote a reflective stance and a readiness for self inquiry in our pre-service teachers, as they seek to address issues of theory and practice; and 2. to discover the extent to which conducting action research using Web-based tools (i.e., Electronic Learning Communities and Web CT) impacts reflective thinking practices of full-time student teachers in a university teacher preparation program.

Theoretical Framework

Our work is largely influenced by the "Action Research on Action Research Project" at The University of Wisconsin-Madison (Noffke, S. & Zeichner, K., 1987). It has evolved as an action research project on our use of action research with student teachers at The University of Texas-Pan American. Although our projects are similar in purpose, particularly in their attempts to impact teachers' roles, habits and skills as they are inducted to the teaching profession, our developing model is different due to several factors such as our context, our student demographics, and our use of online instructional methods to stimulate reflective and thoughtful teaching through action research. More specifically, The University of Texas-Pan American is located geographically along the Texas/Mexico border. 87% of our students are first generation college students, of Hispanic origin (mostly Mexican-American) and are dependent on federal financial aid for their education. In addition, the use of Web-based communication tools, such as the use of an Electronic Learning Community (ELC) and Web CT, to facilitate action research projects during student teaching plays a critical role in making inquiry a habit of mind that assists our student teachers as a practical and useful approach to effective reflective practice.

The research project used an action research approach to investigate the teaching of action research to undergraduate students. As such, it represents a systematic look at educational practices used to teach undergraduates to engage in action research. The instructional practices evolved through three phases based on the cyclical process of action research as described by Johnson (2002), the findings and conclusions from each phase informed the action and inquiry of the next phase. Thus, the first phase constituted the development of the instructional practices and the analysis of student

outcomes. Each of the following phases evolved from the findings and conclusions of the previous phase by modifying instructional practices and exploring new questions. The ultimate goal was to develop a coherent set of instructional practices that were research based within the context of the setting.

Data sources or evidence

The participants in the study are preservice teachers from three seminar courses that are taken in conjunction with their student teaching during the last semester of an undergraduate teacher preparation program. All data were coded for analysis through the use of HyperRESEARCH computer software (1998). Phases of the study are described below:

- Phase I: Development- Initial development of practices to teach the creation and implementation of action research to pre-service teachers in an EC-4 program. EC-4 denotes students who are preparing to become certified teachers from Early Childhood (or Pre-K) through 4th grade. In this phase, we examined the impact of our instructional practices on students' learning to conduct an action research project. Questions answered by this phase of the study included;
 - To what extent are students capable of engaging in an inquiry project of this nature?
 - How did the instructional practices lead to reflective thinking and student success in this assignment?

The data for analysis consisted of the final papers, online discussion scripts and instructor's notes. Transcripts of discussion postings were analyzed for evidence of connections to instructional practices and to the final project and how the discussions served as a support for learning of action research. These connections served to evaluate the extent to which students were learning to engage in inquiry and the level of reflectivity. The final project was analyzed for quality in the inquiry project in terms of students' ability to focus on a question, research and analyze pertinent literature, develop a research method, collect data, analyze and draw conclusions for future practices. The findings helped to plan for phase II of the study which was based on the modification of instructional practices to promote a higher level of sophistication in students' inquiry projects.

- Phase II: Implementation- Modifications in instructional practices were implemented to address the challenges encountered in the first phase of the study. The participants in this phase were in the All-Level (or Early Childhood through 12th grade), Middle School (4th-8th grade) and High School (8th-12th grade) teacher certification programs. This phase made use of the same sources of data outlined above. Student assignments were examined for their ability to engage in critical thinking about pedagogy. In addition to answering the above questions, data was analyzed for levels of reflective thinking about issues in practice to answer the following questions:
 - How did the quality of the final projects in phase II compare to the quality of the final papers in the first phase?
 - How did modification in instructional practices impact the level of reflectivity as evidenced in discussions and final projects?
- Phase III: Replication- The method developed in phase II was shared with another instructor of this course who duplicated the procedures with ongoing support from researchers. Participants included a section of pre-service teachers in the All Level (EC-12) teacher certification program. The current analysis looks at the final papers, identifies levels of reflective thinking about issues in practice and uses dialogues among practitioners to examine problems and issues to be addressed in the next phase. Research questions are:
 - To what extent are reflective practices apparent in final projects?
 - What instructional practices show evidence of positive impact in the quality of students' reflectivity?
 - What issues and problems have surfaced in phase III need to be addressed in the next phase of the action research?

While this is a study in progress, we have the ultimate goal of developing a model that applies to preservice teacher who are preparing to teach in the various tiers teacher certification (i.e, EC-4, 4-8, 8-12, EC-12). Therefore, future cohorts of preservice teachers will include a variety of participants from different levels of certification. The researchers are also aware that the findings are bound to the context of the setting and

have limited generalizability. Nevertheless, further study may lead to development of practices that can be effective across diverse situations.

Results and Conclusions

The findings reveal that students were able to learn the process of action research through instructional practices that presented the research process in steps with peer support through online discussions and professor support through feedback on each component of the final project. The final projects from phases II and III show an improvement in the quality of the inquiry. Beginning in phase I, students were taught the concept of triangulation of data and most were able to apply the concept in their own inquiry. The development of the assignment in stages with feedback provided the means to maintain students with the task of systematically examining a problem of their concern for a sustained period of time (one semester) which promoted deeper levels of reflectivity than is normally exhibited in undergraduate students.

Educational or Scientific Importance of the Study

This research project is of educational significance because it presents new knowledge about instructional practices that can promote reflective thinking in teachers. It also seeks to promote quality in education by preparing teachers as researchers of their own practice and addresses the need to promote quality in the inquiry practices of teachers as researchers.

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