

III: Methodology

Rationale for naturalistic, participant observation

This participant observation took place in a naturalistic setting. While it was undeniable that this research was not truly naturalistic because of the interventions I was introducing in the form of the professional development, the research did adhere to the spirit of naturalistic research in two ways. First, it focused on two real classrooms that I was not directly manipulating. Second, my goal in this inquiry was centered around developing a greater understanding of the variables that affect teacher change (Lincoln & Guba, 1985). In order to develop a picture for outsiders of what supporting teachers in developing learner-centered environments involved, I had be able to tell the story from an emic perspective¹ (Lincoln & Guba, 1985). In order to develop an understanding of change that was meaningful, it was necessary to develop an understanding of their lives in their classrooms. The purely etic

approach dictated by positivistic research would not allow this insider's view of the teaching world nor would it allow a holistic explanation of the environment.

Further, the ontological view assumed by naturalistic research acknowledges the existence of individual realities. Through my past work with teachers using these simulations, I knew that the teachers would each have their own view of the simulation, their own goals for their students, and their own definitions of success. Trying to address these differences in a non-naturalistic setting that could not consider these differences would lead to a flawed understanding of the support these teachers needed. As pointed out in Lincoln and Guba (1985),

It is ironic, we believe, that in their zeal to meet criteria of internal validity, conventional inquirers create (contrive) contexts that influence behavior as much as natural ones do, but produce responses that will never be found in a natural setting. Such studies may be successful in showing how respondents *may* behave...but almost never show how respondents *do* behave. (p. 191)

¹ The use of the notion of *emic* perspective in this research may be somewhat problematic. It is *emic* in that I was in a naturalistic setting and used my presence in that setting to inform my thinking. This study would have likely yielded very different results if I had chosen to work with teachers in a traditional professional development setting rather than in their own classrooms. However, the perspectives reported throughout the dissertation are my interpretations of the setting that I was a part of. *Emic* in this sense is not meant to imply that I did not act as an outsider by introducing an experience that was not a regular part of this context. Rather it is meant to show my participation in that context as a full member of the experience, not as an onlooker.

Finally, this research did not seek to find strict cause and effect relationships between certain methods and teacher behavior. Rather, it sought to demonstrate plausibility (Erickson, 1985) – to create a picture of the kinds of circumstances, problems, and questions that affect teacher change. I hoped to provide a rich enough and careful enough explanation of my experience that if I, or someone with similar key attributes, were to go into a similar setting, similar outcomes might be observed. It was not the goal of the research to identify key aspects of the framework as being effective or not effective. Instead, the focus is on fully describing the phenomenon so that the reader might decide on its value for her own setting.

Methods

Specifically, this inquiry was a participant observation case study. More perhaps than in any other kind of research, the inquirer and the participants interacted to influence one another and the knower and the known became inseparable (Lincoln & Guba, 1985). The case study was appropriate to this research effort because it corresponds to the theory that what people do is often a result of their unspoken beliefs and understandings (Stake & Mabry, 1995). As with all case studies, this one tries to present “deep understandings that translate to their own experiences” (Stake & Mabry, 1995 p. 301). It is this deep understanding that links

the case study to practice. This means that the end result of the case study is not to direct practice, rather it is to empower “educators to develop approaches responsive to their unique situations” (Stake & Mabry, 1995, p. 302).

More specifically, this was an instrumental case study (Stake & Mabry, 1995) because its goal was to gain better understanding of an issue. Stake and Mabry (1995) point out that you cannot simultaneously focus on the issue and on the people involved, therefore, one must become dominant. For this effort, developing an understanding of the development process was absolutely vital to answering the research issue: developing an understanding of what it means to support teachers in becoming more learner-centered.

A participant observer forever serves in two roles simultaneously: “ (1) to engage in activities appropriate to the situation and (2) to observe the activities, people, and physical aspects of the situation.” (Spradley, 1980 p. 54). The level of participation in this case study varied. As described by Spradley (1980), the level of participation I attempted to maintain in the classroom was at the moderate level. This level of participation involved a conscious effort of the researcher to balance being an insider and being an outsider. I realized that as the facilitator, a role I had to take in order to introduce strategies, I acted at an active participation level. At this level, the researcher takes on certain behaviors of the culture of interest (Spradley, 1980).

Because of the delicate nature of the interactions between the researcher and the participants, extra effort was made to ensure a high level of trustworthiness in this research. Further, when the roles of researcher and participant conflicted with each other, I consciously attempted to move toward the researcher position as often as possible. For example, one early conundrum that required me separating the facilitator from the researcher involved my work with Ms. Murray. I questioned whether I should introduce shifting her teaching to a more facilitative approach when she was already considered a success in her district and the way of teaching I proposed differed from the methods she was recognized for using. In another, less complex instance, I decided to tape record every interview with the teachers even though I realized as the professional developer that the discussion might be richer without the tape being used. However, each incident required careful consideration of the trade-offs and issues.

While most of the methods used were qualitative, there were a few quantitative measures involved. These did not seek to validate the qualitative data, but rather to help create a deeper, clearer picture for the reader (Denzin, 1989). The primary quantitative measure used was a checklist used to evaluate videotape data collected from the participants' classrooms. This instrument, based on the instrument used by McBride (1995), tracked teacher interaction behaviors. This tracking of

behaviors provided another lens through which to view the cases; they were not used to rate the quality of teaching or compare the teachers with each other. The videos allowed me to watch for trends in behavior over time. One other source of quantitative data was the use of an instrument that measured the degree to which the teachers reported being learner-centered in their beliefs and actions (McCombs & Whisler, 1997). This tool allowed me to look at the teachers from a different perspective and to understand more about their thinking.

This research was done during a four-month span. I was able to observe all but one episode of the simulation for the seventh grade class and all but four in the eighth grade class. I was also able to be present for the teachers' introductions of the simulations to their classes. Because of the timespan, I was able to watch the teachers try new things and develop new knowledge about teaching and learning. However, as shown in the adoption and teacher training literature, change is a very slow process. During the four months (October, 1998 to February, 1999), I was able to capture only the baby steps that these teachers took.

Participants

In order to find participants for this research, I turned to Classroom, Inc. to help identify a pool of potential participants. In the selection of the pool of potential

participants, special attention was paid to the typicality of each case. The pool was comprised of those teachers who taught normal classes relative to their school as opposed to teachers who used the simulations in after-school programs, ESL classes, or school-to-work classes. This was a focus because these alternative programs are outside the traditional CRI experience. Another criteria set forth was that the teachers needed to use the simulations during my data collection period. This proved to be quite challenging as some of the teachers I spoke to were not planning to use the simulation at all or were planning to use it later in the school year. Further, the pool consisted only of teachers who were geographically near each other so that the collegial group would not be a burden. Finally, the pool only consisted of teachers who had used the simulations for at least one year. This was because in the first year of adoption, teachers tend to struggle more with technology skills than with pedagogical issues (Dwyer, Ringstaff, & Sandholtz, 1991) and this research was focused on pedagogy rather than technical skills. Additionally, teachers who were part of any special Classroom Inc. efforts that might interfere with this research in some way were excluded from the pool in order to protect CRI's work with these teachers as well as to prevent confusion among the teachers.

Each of the approximately 12 teachers identified and their principal received a letter inviting them to participate in this study. The expectations of participation

were outlined and the teachers were told they would be voluntary participants with the right to withdraw at any time during the study. Further, they were each offered a stipend in exchange for their time. While I realized that this might have affected the teachers' interest and attitude toward the study, I also felt that compensation was appropriate given the amount of time the teachers would be spending working on this project.

From the pool of teachers, only Ms. Murray and Ms. Collins, two teachers at Thacker Middle School, a New York Public School, were both willing and able to participate in this study. Evelyn Murray, was an eighth grade math teacher who had used *The Chelsea Bank* with her sixth grade class four times in the past. However, this was her first time to use it with eighth graders. The class she implemented it in was designated an *average* class, meaning that most of them had around a fourth grade reading score on the state tests (Deveneau Interview, 1/14/99), but, according to Ms. Murray, they were fairly strong in mathematics (Murray Interview, 10/29/98).

The other teacher, Therese Collins, was a seventh grade earth science teacher who chose to implement *Green Mountain Paper Company* with her *superintendent's* class. These were the students in the seventh grade with the highest test averages for reading and math. This was Therese's second time to use *Green Mountain Paper Company* in her three years of teaching at Thacker.

In addition to my primary participants, Ms. Collins and Ms. Murray, two sixth grade teachers at Thacker agreed to join us in our collegial group. These teachers, Mr. Crane and Mr. Deveneau, were both in their first year of teaching and in their first year of using Classroom, Inc. simulations. They were team-teaching *The Community Clinic* as part of the sixth grade curriculum. While they were not appropriate for the main case study because they were new to the simulations, they were active and important contributors to our collegial group meetings.

Each of these participants, as well as Mr. Gabel, the principal for the magnet, were provided with information about their roles in writing and were given the option to leave the study at any time. Further, they were all promised anonymity, therefore all people and places reported in this report, with the exception of the outside observers, have been given pseudonyms to protect their true identities.

Data

Data of four kinds were collected: (1) observations, (2) interviews, (3) documents, and (4) completed survey instruments. Data were collected between the end of October, 1998 and the end of February, 1999. In all, I was able to observe or videotape Ms. Murray working with students on the simulation a total of nine times and Ms. Collins a total of 14 times (with two of those observations being during a

single week). In addition, I was able to interview each teacher each day I observed her class. In addition to this data, I also observed and took notes at five collegial group meetings and interviewed the director of the institute and Mr. Deveneau once each and interviewed Mr. Crane two times. Table 3.1 presents the type data collected on each day.

The data collected combined to offer an answer to the driving question for this research: How can these teachers be supported in becoming more facilitative and learner-centered as they use CRI simulations? Specifically, I wanted to focus on the effectiveness and limitations of the framework that was developed as part of this research. To this end, the data included information about my specific interactions with the teachers as well as information about the context and the external factors at work in the classroom.

Table 3.1: Type of data collected from each teacher by week.

Week	Date (Monday)	Evelyn Murray	Therese Collins	Collegial Group Meetings
1	10/26	Observation Interview	Observation Interview	
2	11/2	Observation Interview	Observation Interview	
3	11/9	Observation Interview Outside Observer		
4	11/16		Video Interview	

5	11/30	Observation Interview	Observation Interview	
6	12/7		Observation Interview	Observation
7	12/14	Observation Interview Outside Observer	Video Interview Outside Observer	
8	1/4	Video Interview	Video Interview	Observation
9	1/11		Observation Interview	Validation by Ms. Collins
10	1/18	Observation Interview Outside Observer	Observation Interview Outside Observer	Observation
11	1/25		Observation Interview	Validation by Ms. Collins
12	2/1	Observation Interview	Observation Interview	Observation
13	2/8		Observation Interview	Validation by Ms. Collins
14	2/22	Video Interview Outside Observer	Video Interview Outside Observer	Observation

Observations

In all of the observations, the emphasis was on the interactions the teacher had with the students. Special attention was paid to whether those interactions appear to be consistent with the teacher's perceptions of what her role should be while the students are learning and whether the interactions appeared to be consistent with

each teacher's teaching philosophy and goals. There was also attention paid to change over time. Within my four-month window of data collection, I was able to watch an evolution of each teacher's approach to using the simulation.

Classroom

Most of the observational data were collected while the simulation was being used with each class as well as during the collegial group meetings. In addition to these weekly observations, I was also able to observe each teacher teaching in her own subject matter area at the beginning of this research project (Observations 10/28/98 & 10/29/98). I was also able to observe one class period in which Ms. Murray worked with students on simulation-related materials rather than on the simulation (Observation, 12/17/98).

The observations were collected in the form of field notes taken during the classes in all cases except when videos were being shot. In all of the classroom observations except one in Ms. Collins' class on December 16, 1998, my role was strictly that of an observer – I did not interact with the students or the teacher except as necessary to maintain a safe and collegial atmosphere.

During the videotaped sessions, only supplemental notes were taken, such as copying items from the chalkboard, as the video provided the same kind of data as

the observation. For each week that involved videotape, transcriptions were made from the videos and those transcriptions were analyzed in the same way the field notes were analyzed.

These observations sought to capture the interactions the teachers had with their students as well as the assignments and day-to-day activities of the classroom in order to develop a richer understanding of how the teachers were approaching their classes and to help understand whether the support structures being tried were impacting the teacher-student interactions. In both the collection and analysis of the data, my primary concern was with the kinds of questions they ask in their interactions, the general characteristic of the interactions (e.g., is the teacher asking questions, and offering advice), and other information of that kind.

In my first week of observations, the data gathered included observations of classes being taught by each teacher in her subject area. I spent approximately half the day (four class periods) with each teacher in order to understand her regular teaching style as well as to see some of the introductory work each was doing with their simulation class. Because one of CRI's goals is to change the way learning happens (Unknown, 1995) it was important for this research study to determine if the teaching styles being promoted by CRI were already present in the teachers' day-to-day work. My observations during these half-day sessions focused on the kinds of

teaching strategies and activities the teacher used, the general approach to the students the teacher seemed to have, and the overall level of coaching the teacher seemed to demonstrate.

Collegial Group

The data from our collegial group meetings was also collected through observations. During the course of this study, we had a total of five sessions, held approximately every other week starting in mid-December, 1998. Each session last slightly less than 50 minutes and was held during the teachers' lunch period. Because of the nature of my role in these groups as a facilitator, these observations were more biased and less detailed from an observational standpoint than the classroom observations. The observations covered the flow of the meetings and captured my thoughts and opinions of these events. The observation data collected in these group meetings was collected as notes, much like notes at a meeting, then elaborated on immediately following the meeting so that as much detail as could be recalled and recorded. The focus of these observations was on the teachers' choice of topics to discuss, the flow of the conversation, and the teachers' overall attitudes toward what they are doing with their classes using the simulations. Additionally, the observations provided me with the opportunity to capture changes in the teachers' foci during

these meetings, evolution in their relationships with each other, and indications of the degree to which the group became a vital part of developing a support network.

As noted in Table 3.1, three of the five observations of the collegial groups were presented to Ms. Collins for verification. Because I was a participant in these meetings, it was important to get a second opinion on the notes taken to assure that I did not miss something important. The notes provided to Ms. Collins for verification were a shortened version of the complete set of notes, as they did not contain any of my opinions or reactions to the meeting. In all three instances Ms. Collins offered no changes to the notes I offered.

Videotape

Finally, each teacher was videotaped at least two times during the course of this study – in the seventh week and in the fourteenth week. The videos were shot from a tripod with the teacher being the constant focus of the video. For each videotape, I asked the teacher to wear a microphone so that I could hear her conversation with the students. The videotapes were used in two ways for this study. First, they provided another form of observation that allowed an accurate record of the incidents that had occurred. To this end, the videos were transcribed and the transcription was treated as observational data. Further, the videos provided an

opportunity for multiple observers to consider the teachers' behavior and analyze it over time. To gain a new perspective on the changes the teachers made over time, the two videos made of Ms. Murray's class (Observations, 1/7/99 & 2/25/99), and the final two videos made in Ms. Collins' class (Observations, 1/6/99 & 2/24/99) were analyzed using a checklist. The first two videos made of Ms. Collins' room were not used as part of the checklist analysis because there were too many technical problems with the computers on those two days.

The four videotapes were analyzed by myself and another researcher, Jamie Kirkley, involved in the IU team's broader work with Classroom, Inc. The checklist (See Appendix A) focused on the nature of the interactions between the students and teacher. Specifically, it looked at each teacher-student interaction to consider whether the teacher was guiding, providing feedback, or directing her students. It also examined the kinds of questions being asked by the teachers and whether they promoted critical thinking. While the checklist provided space for recording other kinds of interactions – such as dealing with technical difficulties and discipline, we focused our inter-rater work on the relevant interactions defined as instructionally relevant as opposed to those that were disciplinary, dealing with technology problems, or observations. Promoting critical thinking was defined as any activity that forced the students to explain what they were doing or to explain how they got

an answer as well as reflective interactions. The only portion of the videos analyzed using the checklist were those segments in which the students were actively working on the computer.

For Ms. Collins, the raters agreed on 100% of the interactions and their character as well as the kinds of questions being asked. For Ms. Murray, the raters initially agreed on 85% (33 of 39) of the critical thinking strategies, and 87% (34 of 39) of the approach styles as well as 87% (34 of 39) of the interaction character items. The raters were able to resolve their differences through a second viewing of the videos, however, that resolution was often through a system of gaining understanding of the other person's opinion more than coming to absolute agreement.

The approach for using inter-rater agreement, while intuitively contrary to the traditional purposes of outside observers in naturalistic studies in that it required the viewers to agree on what was happening in the classroom, did serve to enhance the report in the spirit of naturalistic inquiry. This enhancement happened in two ways. First, the videos opened up a dialogue between two researchers in an effort to come to understand both what was happening in the classroom and its implications. These dialogues led to a different kind of analysis of the data than would have been achieved by a single person working alone. It may be considered that the inter-rater

agreement was as much about reaching agreement on what constituted promotion of critical thinking at certain levels as whether or not the teachers actually achieved that level. Second, this form of video analysis allowed an outsider into the data in a way that allowed me, as the participant observer, to check my biases. In this way, it worked much in the same way as having the outside observers only in a more focused way.

While using a checklist standardized the data analysis and offered a frequency measure of certain key behaviors, it did not tell the rich story about the situation my field notes were able to. However, the checklist provided another perspective and another avenue for discussion of the data as I worked through the analysis process. It also helped to tie together many of the teachers' actions in a way that would not have been achievable through field notes alone because field notes lack the personality and tone the videos were able to capture.

Interviews

The interviews were aimed at helping to generate an understanding of each teacher's beliefs about her learners, her perceived role in the classroom, and her goals in using the simulations. Additionally, interview data was used to clarify certain actions and occurrences in the classroom. Finally, the interviews served the dual role.

They informed me about the teachers' beliefs and goals, and acted as a medium for promoting teacher reflection. Many of the questions I asked during our interviews were written with this dual purpose in mind.

Each teacher was interviewed during my first visit to her classroom. This interview was semi-structured focusing on the teacher's beliefs and goals. The questions dealt with how each teacher perceived her role and how she expected the Classroom, Inc. simulations to fit into her classroom. In addition to these questions, I asked some questions about professional development to help me understand each teacher's past experiences as well as the kinds of attitudes each teacher had about professional development. This interview lasted forty-five minutes to one hour and was completed in a single session. This interview was tape recorded and transcribed verbatim. For the initial interview, I was most concerned with starting to understand who each teacher was and what her goals for using the simulations were. To this end, I asked questions about how each teacher viewed herself, how she approached the simulation, and what her goals were. I also asked questions regarding professional development to help me understand what each teacher had experienced both in CRI workshops and other, unrelated professional development efforts (Appendix B).

During the course of the study, there were twelve informal interviews focused both on issues arising from the observations and a set of reflection questions

that were part of the effort to support teachers in becoming more reflective (Appendix C). These interviews took place after each observation session (See Table 3.1). With the math teacher, I was generally able to conduct the interview immediately following her *Chelsea Bank* class, whereas with the science teacher, I generally had to wait approximately two hours between the class and the interview. These interviews ranged from 10 to 45 minutes in length and were tape recorded and transcribed verbatim. Many of the interview questions focused on clarifying particular observations or asking the teacher to talk about particular goals of different activities. Other questions sought to understand each teacher's beliefs about learners, about the role of teachers, and about learning in general. Often, the questions required a certain degree of reflection on what happened during the class period or during the previous class period, if there were questions that arose in my transcription of the prior week's work. Very few of the questions asked the teacher to look ahead even though that would be a natural progression from the reflection activities we did engage in.

On the final day of my data collection with each teacher, I conducted a second formal interview, much like the original interview. This final interview lasted approximately forty-five minutes to an hour and, like all of the other interviews, was tape-recorded and transcribed verbatim. The interview focused on six reflective

questions that required the teachers to look at themselves and at their work during my work with them. Specifically, I asked them to reflect on what the students had improved at, what they felt best about in their teaching, how they viewed my role, how they felt about the peer (collegial) group, and to describe a classroom where learning is taking place². (See Appendix B for complete protocol). My final interview with Ms. Murray also included some questions that had arisen from data analysis on her case, whereas I had been able to complete my extra questions with Ms. Collins the previous week.

In addition to the extensive work done with the teachers, I also interviewed both of the sixth grade teachers who participated in the collegial group and Mr. Gabel, the director of the institute in which all four of these teachers were based. In my interviews with Mr. Crane and Mr. Deveneau, I asked both teachers similar questions to those asked during my initial interviews with Ms. Murray and Ms. Collins (Appendix D). In addition to this initial interview, I was able to interview Mr. Crane, one of the sixth grade teachers, a second time at the end of my data collection. In this interview, I used the same questions as those I had asked Ms.

² The question asking teachers to describe a classroom where learning is taking place was a follow-up on the same question which I had asked each teacher previously (Ms. Collins on 11/18/98 and Ms. Murray on 12/2/98) Christmas holiday. It was adapted from Peterman (1993).

Murray and Ms. Collins (Appendix D). My goals in this follow-up interview was to gauge whether the collegial group work had affected his attitude about the simulations or teaching and to hear his feedback about both the peer group and my presence. My interview with Mr. Gabel focused on understanding the school from an administrative perspective and learning what kinds of supports were in place for the teachers. I asked questions regarding why the CRI simulations had been adopted, what he saw as being the traits that make an outstanding teacher, and his goals for the community of the school – specifically what professional development and collegiality should be like (See Appendix E).

Documents

While important for this study, documents comprised the smallest portion of the data I collected. The documents included a written reflection completed by both Ms. Collins and Ms. Murray as well as a very few documents collected from their classrooms in the form of blank worksheets and assignments that they gave the students. The reflection, completed on December 17, 1998, asked the teachers to describe my role in working with them and to offer suggestions for ways I could help them more. The teachers, however, wrote very individual reflections that answered only parts of the questions initially asked. For instance, Ms. Collins focused her

reflection on why she likes using the simulation and its benefits to both her and her students. The few assignments I collected from the teachers were worksheets they had handed out to their students.

In addition to these documents, I made verbatim transcriptions of various school documents such as the mission statement, vision statement, and goals and objectives for the institute.

I also referred to a copy of the school's 1996-1997 "Annual School Report" (Division of Assessment and Accountability, c. 1998) which highlighted the happenings within the school in terms of projects they are involved with and academic efforts being made as well as reporting students' scores on math and reading tests. This document also included the school's "New York State School Report Card" which provided more data regarding student performance as measured by standardized tests.

Finally, documents were collected from Classroom, Inc. in the form of workshop materials and promotional and descriptive materials they provide to people interested in their products. These included one complete set of materials from a workshop I attended on peer coaching as well as product catalogues and articles that were written to promote the simulations.

Survey Instruments

The two survey instruments completed by the teachers were “The Teacher Beliefs Survey,” (McCombs & Whisler, 1997) and “Self-Efficacy Quiz” (DiBella-McCarthy, McDaniel, & Miller, 1995). These were chosen in order to provide descriptive data about the teachers’ tendency toward learner-centeredness as well as their overall teacher efficacy levels. Both of these instruments were completed at the beginning of the study, however, only the “The Teacher Beliefs Survey” was repeated at the end of the study. This was because the efficacy tool indicated that both teachers were highly efficacious from the beginning and there was nothing that happened during the course of this study to indicate that these high levels had changed. Further, the two instruments together took approximately 20 minutes to complete, so in the interest of using my teachers’ time wisely, I chose to forgo the final application of the efficacy instrument. In each case, I administered the instrument upon the completion of the interview for that session. The teacher filled out the form in front of me and I was able to take the completed form with me.

The first instrument, “Teacher Beliefs Survey,” was developed by Mid-continent Regional Education Laboratory (McCombs & Lauer, 1997). This tool was designed around the Learner-Centered Principles (Learner-Centered Principles Work

Group, 1997) and was designed to help teachers assess what they believe about learners, learning, and teaching. The instrument consisted of 35 five-point Likert scale questions. The responses range from “Strongly disagree” to “Strongly agree.” The questions for this instrument are drawn from three factors: learner-centered beliefs about learning, learners, and teachers; non-learner-centered beliefs about learning and teaching; and non-learner-centered beliefs about learners. This instrument has undergone a validation process that involved two iterations. The tool was tested on 908 middle and high school teachers from diverse geographic locations around the country. In both phases of the testing, the instrument proved valid in helping to understand what teachers believed about learners, learning, and teaching as well as how they saw themselves in their own classroom practices (McCombs & Lauer, 1997).

The second instrument I used was the “Self-Efficacy Quiz” by (DiBella-McCarthy et al., 1995). This instrument was designed to measure a teacher’s “teacher efficacy” — the teacher’s beliefs about his or her ability to affect student outcomes (Tschannen-Moran, Woolfolk Hoy, & Hoy, 1998). This scale was designed to allow teachers to examine their personal teaching efficacy rates as well as their teaching efficacy (DiBella-McCarthy et al., 1995). Further, this particular tool was designed as a reflective tool for teachers to use to raise their efficacy levels.

While it featured many of the same questions as highly regarded and thoroughly tested tools (i.e., Gibson & Dembo, 1984), it was written in a way that allows teachers to assess themselves and provides suggestions for raising low scores. The instrument was comprised of 32 five-point Likert scale questions. The responses range from “Strongly Disagree” to “Strongly Agree.”

The purpose of using these two instruments was not to generate numeric values for each teacher, but to paint a more thorough image of the teacher. While the instruments were brief and did not offer the same depth of understanding that the interviews and observations did, they provided information about each teacher that might otherwise have been unknown such as information about their efficacy levels and certain implicit beliefs about teaching and learning. Further, the use of the “Teacher Beliefs Survey” in a pretest and posttest format allowed me to see certain changes in the two teachers over time that the other data only begin to suggest.

Data Not Collected

As with any research project, this one revolved around decisions made and tradeoffs taken that limit the triangulation and generalizability of the data and strength of the cases. In this study, there are some areas of data that are not present that may have helped create a more thorough picture of the situation and/or increase

the triangulation prospects of the data. Those data missing include the students' voices and work, experiences from teachers outside of this school, and interviews with others about the participants' teaching styles. Although this research is qualitative, an argument could be made that the lack of quantitative evidence regarding the students' levels of thinking, writing, and communicating are also vital pieces missing from this work. After all the true test of the quality of teacher professional development ultimately lies in student performance. However, as pointed out by Barritt, Beekman, Bleeker, and Mulderij (1985), generalizability, in the end, is something to be discovered by the reader not told by the researcher. For that reason, the stories conveyed through this research and the findings offered, while extremely limited in their current form, may bear further consideration.

McCombs (1997) offers ample support for the notion that the true test of how learner-centered a teacher is rests in the students' perceptions of the classroom rather than the teacher's perceptions of her approach. Further, there are some questions about why the students did certain things that remain unanswered due to this lack of information. However, the decision to not use student interviews and surveys was a trade-off consciously made based on several factors including my limited access to the students in a school that was tightly tied to particular schedules and my desire to

focus on the professional development efforts from the participant teachers' perspectives.

Observer Effects

As with any qualitative study (Bogdan & Biklen, 1992), this one certainly included data that was affected by my presence in the classroom. While I paid particular attention to the questions asked and my own tendency to tell the teachers about the research, they were aware that it was a professional development effort and that it was a research report. Further, Ms. Collins and I cultivated a relationship in which we discussed things as peers, meaning that she did hear my opinions and views as time went on. In addition to these factors, Ms. Murray commented in our last interview that she had been doing more observation of her students because she thought it might be something I wanted to see (Interview, 2/25/99). Her behavior was undeniably influenced by my presence (Fraenkel & Wallen, 1993). However, even with these observer effects, it seems likely, based on my observations as well as the teachers' comments, that I provided the catalyst for their adoption of a style of teaching already being promoted within the school as described by Merriam (1988).

Further, observer effects worked on the observer as well as the observed (Merriam, 1988). There was no way for me to enter that relationship with the

teachers and the school without changing my own thoughts and beliefs. In a way, that was a part of the purpose of this research – for me to gain a deeper, richer understanding of the environment. There was no way to do this without being changed in some ways myself. The use of outside observers helped reduce the effects being in the school had on me by keeping me grounded in the theoretical base this research was exploring.

The observer effects, both on the participants and on the observer, were considered in the data analysis to the extent possible. There is certainly no way of confirming the extent to which these effects skewed the data. The length of the study certainly helped to eliminate certain effects because the teachers and students became accustomed to my presence in the classroom and the teachers became accustomed to my questions over time. Others were built into the study such as using reflective questions to help support teachers in evolving. These were approached as neutrally as possible allowing the teachers to answer in a number of ways. However, over time, they were certainly able to determine at least some factors of the teaching style I was interested in. This effect was expected, and, as part of the participation element of the research, necessary to generating the results.

Trustworthiness

Trustworthiness is at the center of the research report. As described by Stake and Mabry (1995):

The case study researcher, as all researchers, establishes a confidence in the accuracy of observations and trustworthiness of interpretations. Qualitative researchers follow a program of triangulation...The researcher employs a number of tactics to confirm data and to reduce irrelevant bias and interpretations, tactics such as repeated observations, multiple observers and vantage points, multiple methods, and interpretation of events from alternative theoretical positions. The research deliberately challenges her own emergent findings, pursues rival explanations, and reinforces conclusions about what is learned. (p. 300)

In order to achieve a high degree of trustworthiness, I employed several strategies. I used triangulation of data, member checking, multiple data collection methods, and multiple researchers as observers. All of these strategies together helped me create an accurate portrayal, I believe, of the research I conducted.

Triangulation, possibly more than any other method, helped develop trustworthiness. In order to achieve the maximum level of trustworthiness, I employed multiple methods of triangulation in this study (Denzin, 1989). In order to achieve data triangulation, I used data from multiple sources and collected through multiple observations. Further, I attempted to achieve investigator triangulation by including multiple observers in the classroom. The observers were:

- Dr. Thomas Duffy – Professor of Instructional Systems Technology and chair of this dissertation as well as a principal investigator for the IU/Classroom, Inc. research initiative;
- Jamie Kirkley – Advanced graduate student in Instructional Systems Technology at Indiana University and co-researcher on the IU work with Classroom, Inc.;
- Makoto Yoshida – ABD in Educational Psychology at the University of Chicago and former research associate on an internal Classroom, Inc. research initiative.

These observers visited the classroom and observed each teacher. One researcher, Jamie Kirkley, observed only one teacher one time due to scheduling conflicts. One, Thomas Duffy, observed Ms. Murray and Ms. Collins once each. The final research, Makoto Yoshida, observed both of the teachers twice. He was able to visit each classroom one time in December and one time during the final week of data collection

Each outside researcher prepared a report about what he or she saw during the observation focused on the teacher's style of interaction, the problem solving and thinking strategies being used, and the observer's perception of what was being conveyed as most important in the classroom. Further, each observer prepared an analysis of what happened and shared it with me before we discussed any classroom activities. Once the analysis was presented, we discussed our impressions including my opinions. I kept notes of these conversations, which were then used as another

facet of the analysis. The notes of my conversations with Makoto Yoshida were forwarded to him for validation with my remarks to help ensure reliability.

The use of multiple researchers, like the use of multiple data collection methods, served as a way of painting a different picture. It did not guarantee raised reliability, rather it expanded the interpretation and revealed elements that were not necessarily seen by a single researcher (Denzin, 1989).

Member checking (Merriam, 1988) at different levels was used with Ms. Murray and Ms. Collins at two different points. First, I created a summary of each teacher in December that included information they had shared with me about why they were teachers, the goals they had for their class, and other information that I had pulled from the interviews. Each teacher was given an opportunity to comment on their document, however both teachers felt that my representations at that time were accurate. Each teacher was also provided with a copy of a draft of her chapter from this report. In each case, three weeks was given for the teacher to provide feedback or raise any issues she had with the chapter and the findings. In both cases, the teachers provided no feedback. I chose to use this method for member checking based on Heron's (as quoted in Lincoln and Guba, 1985) assertion that, "My considered view of reality without consulting you is a very different matter from our considered view of reality" (p. 31). This method allowed the participants to comment

on my interpretation of their reality and clarify any points that they felt were inconsistent with their own beliefs about their world.

Analysis and Reporting

The analysis of qualitative data is a delicate and continuous process (Merriam, 1988). As pointed out by Stake and Mabry (1995), “We shape our understandings with our perceptions of reality. Our realities as well as our understandings are transient and inconsistent.” (p. 6). As with any qualitative research effort, this one included constant data analysis throughout the data collection effort. As expected in emergent research designs, the analysis shaped the methodology (Lincoln & Guba, 1985).

Throughout the data collection process, I kept a research journal that allowed me to reflect on my thoughts about the data as it was being collected. The journal addressed Spradley’s (1980) assertion that the participant observer should use introspection as a research tool. My notes about my observations as well as my interpretations and feelings about the observations provided valuable materials for developing the thick description necessary for this research report. In addition to using the journal as a reflective instrument for myself, it informed my interviews and interactions with the teachers as it allowed me a place to “talk through” my thoughts.

Further, I began to do preliminary analysis of my data during the collection process in order that it might inform my questioning strategies from week to week (Bogdan & Biklen, 1992). By doing this I was able to be more reactive to the incidents I observed in the classroom and more aware of both my findings and my biases.

During the data analysis phase, the data were analyzed through a series of approaches. First, I looked at the data and started assigning codewords to it (Coffey & Atkinson, 1996) during this phase, I also started looking for trends in speech as well as pools of meaning (Coffey & Atkinson, 1996) that might help me better understand what was happening throughout the data. During this process, I also began using a process of memoing (Strauss & Corbin, 1998). This process of examining each chunk of data, looking at what it meant, what possible interpretations might be, and how it fit with other information allowed me to gain a deeper understanding of my teachers and of the process that we went through together. Finally, once the data were labeled and memoed, I began grouping them into the pools of meaning that had emerged (Coffey & Atkinson, 1996). Once these larger groups had been constructed, I was able to create subcategories and used a sorting method (Creswell, 1994; Merriam, 1988). The categories that emerged were re-examined and regrouped several times throughout the analysis process, until

supportable assertions emerged. As these tentative assertions became apparent, I took note of them to use in the cross-case analysis. Further, I was able to develop more integrated understandings of the teacher's approaches by using Miles and Huberman's (1994) visual organizers. Specifically, I created charts that showed how the teachers beliefs and actions were interrelated. This helped me further my understanding of each teacher.

The cross-case analysis provided me with the opportunity to sort through the overlapping issues that emerged through the individual case studies in order to find the commonalties and differences between the teachers. Once I sorted through the assertions for each teacher, I found that there were certain key elements that seemed most important. I also found through this analysis process that I had started to develop a new understanding of how the pieces of the model fit together.

This report represents an instrumental case study designed to illuminate an issue. Therefore, the final report of this research is focused on describing the issues that emerged. As Miles and Huberman (1994) point out,

We consider qualitative analysis to be a very powerful method for assessing causality...Qualitative analysis with its close-up look, can identify *mechanisms*, going beyond sheer association. It is unrelentingly *local* and deals well with the complex network of events and processes in a situation. It can sort out the *temporal* dimensions, showing clearly what preceded what, either through direct observation or

retrospection. It is well-equipped to cycle back and forth between *variables* and *processes* – showing that "stories" are not capricious, but include underlying variables, and that variables are not disembodied, but have connections over time. (p. 147) [emphasis in the original]

While initially not intended to determine cause and effect, this report, in fact, examined certain factors, both situational and attitudinal, that affected the teachers' adoption of the strategies. Through this examination, it offers a single, plausible picture of what it meant to support these teachers as they moved toward being more learner-centered. The measures of success and growth are subjective – based on my interpretations of what occurred in these specific classrooms as supported by the various data collected. While this study cannot offer firm answers for developing professional development programs, it provides a hypothesis about professional development – specifically what kinds of elements should work together in a professional development situation. This report may be generalizable to other professional development efforts if the people involved in those efforts find that this report offers a logical validity (Eisenhart & Howe, 1992) that seems transferable to those situations. That is, if the study offers a hypothesis reasonably supported by the data and following from the data, readers should be able to determine the degree to which these findings generalize to their own situations.

As described by Geertz (Geertz, 1973),

From one point of view, that of the textbook, doing ethnography is establishing rapport, selecting informants, transcribing texts, taking genealogies, mapping fields, keeping a diary, and so on. But it is not these things, techniques and received procedures, that define the enterprise. What defines it is the kind of intellectual effort it is; an elaborate venture in, to borrow a notion from Gilbert Ryle, thick description. (p. 6)

It is the goal of this report to offer description that is rich to provide the reader with vivid descriptions of what this experience was like. Further, the report intends to provide the readers with enough information to decide whether the assertions derived from this research are applicable to their own situations.