EXPLORING HOW COTEACHING

IMPACTED

BEGINNING SCIENCE TEACHERS' AGENCY

by

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A thesis submitted to the faculty of the University of Delaware in partial fulfillment of the requirements for the degree of Master of Education in the major of Curriculum and Instruction

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ABSTRACT

This study examined how three beginning science teachers' agencies were impacted by both their experiences with the coteaching model of teacher preparation and their first year teaching environments. In addition, this study sought to examine the impacts of these beginning teachers' agencies on their individual general teaching environments. Situated within the constructivist paradigm, these beginning teachers' experiences are described in individual case studies in order to describe intricacies of their individual teaching context(s), including both preservice and in-service teaching experiences. Using a grounded theory approach (Strauss & Corbin, 1992), allowed Sewell's (1992) structure|agency dialectic to be used as a method to examine the relationships between the first year teachers agencies and their individual teaching environments. Teacher interviews, video observations of their classrooms, and teachers' self analysis of video observations were utilized as the data sources for this study. I concluded that the beginning teachers' coteaching experiences, as well structural motifs within their individual teaching environments impacted these beginning teachers' agencies, such that they chose to engage in collaborative teaching practices that addressed their teaching needs. In conjunction with the structure|agency dialectic, these beginning teachers' collaborative actions affected the structural composition of their general teaching environments.

Chapter 1

INTRODUCTION

> New teachers worry that they may not be adequately prepared to meet the needs of students from diverse backgrounds. Other problems creating fears such as school violence and discipline have been exacerbated by the media, while fears such as talking to parents, doing lesson plans, or an assignment to an undesired level, campus, or mentor can be traumatic (Wilson, Ireton, & Wood, 1997, p.1).

The disconnection between theory and practice within teacher education often occurs when preservice teachers' teaching identities as student teachers does not equate with their experiences during their student teaching practicum (Britzman, 2003). Widen, Mayer-Smith, and Moon (1998) identify that the difficulties new teachers face when they commence teaching can be countered "when close collaboration exists between players in student teaching" (p.152). The coteaching model of teacher education positions key stakeholders in student teaching, the individuals being student and cooperating teachers, to link theory and practice through the critical analysis of their teaching and leaning practices (Roth & Tobin, 2002).

Recent research examining coteaching has primarily addressed how this model of teacher preparation has functioned within urban education environments (Roth & Tobin, 2005). Murphy and Beggs (2005) have analyzed how coteaching has affected science learning within primary school settings. Wassell (2004) studied the transition

of a first year teacher from a coteaching environment into his first year of teaching. Still, there have been no studies that have examined the teaching progress of a cohort of first year teachers, nor investigated their perceptions of how teaching in a coteaching, preservice teaching environment affected their teaching practices during their first years of teaching. Thus, an examination of first year teachers' prepared within this model teaching experiences would offer insight into the coteaching model's effectiveness in preparing teachers for their beginning years of teaching. A study of these beginning teachers' experiences may provide further insight into addressing the fact that:

> Despite our understanding of the complexity of learning to teach, relatively few longitudinal studies of teacher education look at how beginning teachers adopt concepts and practices in the various settings of professional education and then modify and use them in their first few years of teaching (Grossman, Valencia, Evans, Thompson, Martin, & Place, 2000, p.2).

The purpose of this study is to examine how the coteaching model of teacher preparation impacted three beginning science teachers' first year teaching agencies. Specifically, this investigation intends to explore the beginning teachers' agencies through their interactions with the structures, composed of schemas and resources (both human and material resources), present within their general teaching environments of their first year teaching. The three beginning teachers' experiences are described in individual case studies that explore the actions and interactions of each individual within their specific educational contexts.

A teacher's first school year is an intense experience that influences how sh/e will function within their first year educational environments. Thus, it is critical to examine the methods used to prepare preservice teachers for their professions as educators. It is during the preservice teaching period that student teachers are attempting to transition from the position of a novice to that of a qualified professional able to engage in a variety of teaching situations. Accordingly, the methods employed to guide these individuals towards becoming qualified educators should be thoroughly analyzed and evaluated in order to obtain their value in preparing first year teachers to address typical beginning teacher concerns identified in the research literature, as well as to determine the degree of influence that they have on the identity formation of educators (Britzman, 2003).

In a discussion of teacher agency and its affects on surrounding teaching environments, Roth & Tobin (2005) state that preparation within the coteaching model provides teachers with "potential for enlarging the subjective possibilities and therefore the range of concrete actions available to the teachers to make changes in the situation as they see it" (p. 21). Current research identifies that beginning teachers describe having difficulties planning lesson content, managing student behavior, and formulating methods for content presentation (Adams & Krockover, 1997). Thus, an examination of the programmatic details of coteaching, as well as its effects on beginning teachers' teaching practices would provide an additional perspective from which to view the current research on beginning teachers' first year teaching experiences.

By using Sewell's (1992) theoretical framework of the structure | agency dialectic I sought to provide detailed accounts into these beginning teachers'

individual teaching agencies, while highlighting the structures that impacted their teaching practices. In conjunction with the dialectic nature of this framework, an individual's ability or choice to act, their agency, is identified as being directly influenced by the structural entities within their surrounding environment (Sewell, 1992). Because agency can also reshape structure, the beginning teachers' practices were examined in order to determine if the surrounding school structures were impacted by these individuals' agencies. Utilizing this theoretical lens allowed for an exploration of patterns of coherence and/or contradiction with regards to the current research findings of beginning teachers' pedagogical concerns, as well as the impacts of their preservice teacher preparation program on their first year of teaching practices.

There is limited information regarding how the individuals from a cohort who participated in the coteaching model of teacher preparation adapt to teaching in the solo teaching environment during their first year of teaching. Through the structure | agency dialectic I examined these teachers' descriptions of being science teachers and how their teaching agencies were affected by the structures of their prior coteaching experiences and their current teaching environments. Moreover, I also turned my attention to investigate how their individual teaching agencies affected the structural motifs in their first year teaching environments.

Chapter 2

LITERATURE REVIEW

This study examines the experiences of three first year science teachers who participated in a coteaching model of teacher preparation during the final year of their undergraduate collegiate careers. By examining their first year teaching experiences, this study attempts to determine how their teaching agencies were impacted by their coteaching experiences, as well as how these teachers' shaped their first year teaching environments.

The following review of literature is organized into six sections, first is an examination of the attributes of preservice teacher education programs that support student teachers' transition into the role of an in-service educator. The second section describes the coteaching model of teacher preparation and the theoretical and practical components associated with the model. The subsequent sections examine Sewell's (1992) theoretical framework of a structure | agency dialectic, Wenger's (1998) concept of communities of practice, and three forms of human capital (Bourdieu & Wacquant, 1992). These sections provide a theoretical understanding of the coteaching model's central tenets, as well as introducing specific components of the subsequent discussion concerning first year teachers' agencies. Finally, I review the current research literature regarding first year teachers' concerns and difficulties to examine the three participants' first year teaching situations.

Student Teaching

Anxiety, excitement, nervousness, and numerous other emotions run rampant during the months that college students transition into student teachers, and ultimately teachers (Osunde, 1999). During this transition, preservice teachers reformulate their identities as educators, as well as question their individual philosophies on what it means to be an educator. Thus, it is crucial to identify how preservice students will attain the skills they need to become educators. Osunde (1999) describes issues that generate various levels of anxiety during the transitional period. Examples of the latter include classroom management and discipline issues, interacting with students; parents of students; fellow faculty; teaching subject content, instruction and interaction with inclusion students, and how fellow teachers view the first year teachers' teaching practices (Osunde, 1999). Student teaching is meant to address these concerns by providing an environment in which students identify these issues and formulate strategies that they can apply when dealing with these matters as future educators.

Britzman (2003) notes that the process of teacher preparation is linked to student teachers' previous K-12 scholastic experiences. She describes student teachers' "first culture shock" and how they struggle to balance the discrepancies between their conceptions of their former teachers and their present perceptions of what it means to be an educator, while simultaneously incorporating their identities into this role. She identifies how this dual sense of identity may cause an initial alarm on the part of the student teacher. However, it is during this stage of unrest that student teachers begin to formulate what it means to become a teacher. Britzman (2003) describes this act of "becoming" in the following:

> … learning to teach is not a mere matter of applying decontextualized skills or of mirroring predetermined images; it is a time when one's past, present, and future are set in dynamic tension. Learning to teach – like teaching itself – is always the process of becoming: a time of formation and transformation, of scrutiny into what one is doing, and who one can become (p. 31).

Thus, if student teachers are to acknowledge their role as educators they must be reflective and open to the advice and feedback from their cooperating teachers, advisors, and fellow student teachers. Through self analysis of one's teaching practice, student teachers are able to isolate teaching practices that are both advantageous and detrimental to their interactions with students, as well as with their fellow educators and school administrators. As a result, student teachers may chose to act in ways that elaborate upon or remove specific practices from their teaching repertoires. Regardless, the implementation of the practice of self-reflection is a crucial step in student teachers' journeys to "becoming" in-service teachers.

Coteaching

Coteaching attempts to bridge the gap between the theory of and practice of teaching. As applied to pre-service teacher education programs, coteaching provides student teachers with both material and human resources to fully engage in the practice of teaching, have the opportunity to reflect on their teaching, and subsequently discuss their ideas with others (Roth & Tobin, 2002). These reflective opportunities oftentimes include communication with professional educators about issues such as employing proper classroom management techniques, developing methods of instruction, planning strategies, and practical knowledge concerning contact with parents, and experiences with a school's faculty and administration.

Applications of the Coteaching Model

Within the field of education, coteaching has been applied to a variety of content settings. Kluth and Straut (2003) identified the importance of coteaching in K–12 settings, specifically acknowledging the collaborative efforts of special and regular education teachers with respect to their needs in adapting to a wide range of students' physical and emotional needs, as well as cognitive abilities. They described how pre-service teachers who participate in teacher preparation programs that embrace teacher collaboration gain a wealth of invaluable experience that can be applied to teaching in "diverse, inclusive classrooms" (Kluth & Straut, 2003). Furthermore, Kluth and Straut (2003) provide an analysis of other inclusion-based classrooms, identifying a greater sense of confidence, motivation, and a sense of growth as a professional educator among the individuals who participated in collaborative teaching settings.

It appears that the coteaching model, when applied to inclusion classrooms situations, provides pre-service educators with valuable insights into teaching practice, as well as increasing their drive to teach effectively (Kluth & Straut, 2003). During their student teaching experiences, the participants of this study cotaught within both general education and inclusion classroom settings. Thus, it is of interest to investigate how student teachers, later first year science teachers, perceived their student teaching practice within these inclusive settings and how that practice has affected their overall sense of teaching.

Wassell (2005) provides a vivid account of how coteaching affected the first year of a beginning teacher, by analyzing the professional development of Ian, a student teacher who experienced the coteaching model in his student teaching experience. Wassell's (2005) study identified how Ian applied the practices that he

learned from his student teaching and curriculum development project experiences to his current classroom situations. Moreover, she analyzed how Ian adjusted to the new structures that he encountered as a first year teacher. This study identified how Ian was able to apply both the information learned while participating in the curriculum development project and, teaching methods learned from his student teaching experience, towards his primary year of teaching. Moreover, the findings of this investigation identified the effectiveness of the coteaching model to provide coteachers (i.e. students, teachers, and cooperating teachers in coteaching arrangements) with a "structure for beginning teachers to access the resources that foster enhanced opportunities for them to become reflective, proficient teachers" (Wassell, 2005, p. 138).

Roth and Tobin (2002) identify coteaching as an opportunity for "teachers to have shared teaching experiences (including planning, enacting, and reflecting on curriculum); these experiences then provide the ground for meaningful professional conversations" (p. 1). For preservice teachers the prospect of gaining a professional's insight on their teaching seems to be an invaluable asset to honing their teaching practice. Thus, the core endeavor of the coteaching model is to provide student teachers with the opportunity to learn to teach (Roth et al., 2004).

Murphy and Beggs (2005) identify that the biggest challenge to student teachers entering primary schools is a lack of confidence in their teaching abilities. They state that "teaching inquiry-based science, maintaining pupil interest in school science and the difficulty of some science content" causes these preservice teachers to view themselves as inadequate and unable to teach science content and related topics (Murphy & Beggs, 2005, pp. 207-208). Their research into the coteaching scenarios

employed the teaching setup of a student and inservice teacher, both active in the classroom, primarily within Northern Ireland primary schools. The latter included both rural and urban school settings. The results of their studies identify that student teachers reported a greater confidence in their abilities to teach science. Moreover, the student teachers in the cotaught classes were reported to be engaged in the specific science lessons being taught (Murphy & Beggs, 2005). Thus, this study's identified how coteaching counteracts student teachers' lack of confidence in teaching has important implications for other preservice teacher education programs.

Theoretical Constructs of Coteaching

The coteaching model for teacher education has been employed within U.S. urban school settings as well. In their research and participation in the coteaching model, Tobin and Roth (2005) have primarily analyzed the teaching practices of those coteaching within urban science classrooms. Ultimately, coteaching seeks to provide opportunities for both preservice and practicing teachers to improve their teaching practice by reflecting on, and subsequently discussing, their notions of what it means to teach science as well as how we know what we come to know. The latter statement identifies the need for science educators to formulate knowledge of how to teach science content. In addition, coteaching fosters an atmosphere to further analyze science teaching practices by encouraging educators explore their conceptions of what it means to teach science and thus be a teacher.

Coteaching allows participants to investigate the actual processes of constructing the knowledge of how to teach science, as well as the unconscious practices associated with teaching. The aspect of community formation allows the construction of teaching knowledge through conversations that occur between pre-

service and cooperating teachers, associated faculty, and research advisors. These conversations represent the core component for gaining insight into how to teach science. The coteaching model solidifies the linkage between the theories which propose ways of how one learns to teach and the actual practice of teaching. It is through their individual teaching experiences that educators are able to identify the practices which they utilize, and as active practioners, are able to reflect on the effectiveness of the methods that they have utilized. Coteaching addresses not only the methodologies which are useful in teaching, but also provides both pre-service and their cooperating teachers the opportunity for discourse about these methods. Communication of various teaching methodologies is intimately linked to teachers' personal philosophies of teaching science, the nature of science, the educational system, immediate and abroad, as well as interactions with students, parents of students, and individuals affiliated with these students' scholastic abilities. Thus, coteaching enables the construction of dispositions which the preservice teachers will utilize during their first year of teaching.

Coteaching strives to position science educators in a self-reflective frame of mind. The practice of cogenerative dialoguing is a central component to enabling participating educators to analyze their teaching practices. In their discussion of cogenerative dialogues, Roth and Tobin (2002) identify the direct relationship between understanding and experience and how each individual has a plethora of background experiences and therefore unique ways of comprehending various events and consequently responding to them. With this ideological stance, the importance of collective understanding becomes apparent when incorporating the numerous

experiences and modes of comprehension present amongst educators participating in a cogenerative dialogue, and within the greater coteaching context.

Eick, Ware, & Williams (2003) identify this necessary step for teacher preparation from their study analyzing how coteaching aided science methods students' initial attempts at teaching a lesson within a field placement. The students seemed to benefit primarily from the "logistical support" provided by their coteachers, as well as both "ongoing verbal assistance and interjection throughout the entire lesson," and after-lesson teacher feedback. It was determined that the science methods students involved in this study benefited from both their reflections on general teaching practice, as well as their integration into the actual teaching situations of the science lessons (Eick et. al, 2003). Thus, the need for preparatory methods to bridge this identity gap, as well as an introduction into the realm of teaching, is a quintessential aspect of investigating how coteaching functions as a method for preparing student teachers for their careers as educators.

Coteaching in Practice

The following example of coteaching is described to provide an example of coteaching "in action." I have provided snapshots of two separate instances of coteaching that include one of the beginning teacher participants of this study, Pat, myself, and our cooperating teacher, Vincent. Pat's content background is chemistry, mine is biology, and Vincent has a background in environmental science. Both examples of coteaching take place within an inclusion environmental science class at Biden High School. Absent from these snapshots, and during these two particular classes was our fellow inclusion coteacher, Joan. The first of these coteaching examples displays how Pat, Vincent, and I cotaught a class focused on the topic of

biomass fuels. I introduced this lesson using a PowerPointTM presentation. As the class progressed Pat, Vincent and, I supported each others' instructional practices, as well as the lesson's progression, by utilizing resources from our content backgrounds. Thus, within this coteaching arrangement Pat, Vincent, and I accessed each other as resources in order to effectively teach the lesson.

Figure 1 is a photograph displaying the physical arrangement of Pat, Vincent, and I at the onset of the lesson. Pat is in the foreground on the right hand side of the photograph, as you look from right to left, Vincent is standing next to Pat and I am in the middle with my arms folded.

Figure 1 Matt, Pat, and Vincent beginning an environmental science lesson on biomass fuels.

As I began to introduce the lesson, I walked to the front of the classroom to comment on a slide displayed on the television located in the upper let hand side of the classroom (not visible in this photograph). Upon my movement to the front of the room, Pat and Vincent repositioned themselves and their movement demonstrated their engagement in my action of introducing the lesson, as well as their support of my instructional lead of the class. Their physical positioning in the room and their stance in listening to my introduction of the lesson in relation to my movement communicated to our students that what I am saying is of relevance.

Within our coteaching arrangement Pat, Vincent, and I monitored and addressed our students' progress during the lesson. Figure 2 shows how Pat, Vincent, and I afforded a student respect by listening to her/his response regarding a question that I posed. Pat and Vincent's attention to the student's response demonstrated their mutual engagement in both my teaching practice, as well as the student's response to the question. By having multiple teachers (human resources) within the classroom, we were able to provide increased attention to students' learning needs, each other's teaching actions, as well effectively managing students' classroom behaviors.

As the lesson progressed, Vincent moved from his positioning (Figure 2) to directly across the room. His relocation provided a triangulation amongst our teaching arrangement, providing for an optimal student to teacher ratio (Vincent is not able to be seen in the subsequent photographs due to this location).

Figure 2 **Matt, Pat and Vincent coteaching environmental science at Biden High School.**

This physical arrangement provided both support for students' learning, as well as for the instruction of the lesson. Figure 3 shows, Pat reviewing his teaching notes regarding a topic of the lesson that I am discussing. The occurrence of these two actions displays the coteaching model's ability to support teacher instruction, while assuring that students are afforded accurate and clear content information. In this instance, Pat functioned as a resource for my teaching practice by assuring that I was providing accurate information concerning the lesson.

Figure 3 Pat consulting his teaching notes.

In conjunction with the subsequent photographs, the text of our lesson is provided to highlight the verbal interactions that Pat, Vincent, and I have as we continue to teach the lesson on biomass fuels. The remaining two figures and associated text offer a glimpse at our interactions within the coteaching arrangement, specifically focusing on the generation of multiple perspectives regarding a lesson topic. As I describe an example of a biomass fuel, ethanol, a student interjects, questioning what ethanol is:

> Matt: Ok, an example of an alcohol, biomass fuel is ethanol…or ethyl alcohol. An example of, the situation in Brazil [where] 2 million cars are utilizing ethanol.

Anthony (Student): Ethanol what?

From the student's perplexed phrasing of his statement, Pat offered support to my previous statement about ethanol as an alternative fuel source by providing an example of refueling a car at a service station that provided ethanol instead of gasoline as a fuel. As Pat continues to expand on the use of ethanol as an alternative fuel source, I direct my attention to Pat and walk to a position next to his (Figure 4). My choice to reorient my classroom positioning relative to Pat's demonstrated my acknowledgement of his discussion as an important component of the lesson.

Figure 4 Pat explains refueling an automobile that uses ethanol as a fuel source.

> Pat: You use ethanol as a fuel source. You go to the gas station, you don't pump out normal gas, you pump out ethanol. Do you guys remember the reason why I told you we can't use ethanol in your car right now?
>
> Savannah (student): Because it burns too high in your thing.
>
> Pat: It burns too high.

Figure 5 displays my engagement with Pat's question concerning ethanol use in current American-manufactured automobiles is immediately visible as both Pat and I react to Savannah's response. Both of our responses are similar in that we both nod our heads in agreement, while motion towards Savannah with our hands (Pat motions with both hands, while I motion with my right hand). The synchronization of our movements displays our mutual engagement in our students' learning, while simultaneously building solidarity amongst our teaching practices.

Figure 5 Matt and Pat jointly acknowledge a student's response to Pat's question.

After the student responds to Pat's question, I acknowledged Pat's example as relative to the lesson by integrating the previous discussion concerning ethanol into the next point that I wanted to discuss. Vincent supported my statement with additional details concerning the process associated with producing ethanol. This comment then allowed a student to voice his question concerning the applicability of a biomass fuel to be produced in the United States.

> Matt: Okay, however in this example in Brazil, this is their primary energy source, fuel source. They don't have that gasoline available, so they're using the one resource they have.

> Vincent: They're taking .. make the waste into energy. … It's taking the sugar cane leftovers and creat[ing] a sugar based alcohol which is burnt.
>
> Anthony (Student): Will [we] be able to do something like that?
> Vincent: We can do it with corn.
>
> Matt: Okay, another example of a biomass fuel, it's kind of a combination, last point down there, gasohol. In the parentheses we have four to one. Four to one ratio of gasoline and ethanol. There are engines that are able to burn this combination of gasoline and ethanol. So it's one way to reduce our dependence on the products of petroleum products. Incorporating some of these biomass fuels.…
>
> Vincent: So let's talk about advantages, disadvantages of alcohol. It's renewable. You can make more of it. You can constantly make more of it. It burns hot. It's a high efficiency fuel.

While the use of these video vignettes, photographs and lesson transcripts is meant to provide a comprehension of the practice of coteaching, it also highlights the affordance of resources (human and material) as a means of addressing students' learning needs, as well as expanding teachers' repertoires. In this example of a cotaught classroom, all three teachers were actively engaged with each other, as evidenced by our movements throughout the classroom relative to each other, as well as the applicability of our interjections. Using our content backgrounds, Pat, Vincent, and I were able to offer various perspectives on this topic while remaining cognizant of the lesson's objective. The resulting students' questions and responses demonstrated the utility of engaging in a collaborative discussion about the lesson topic.

The following example of coteaching "in action" illustrates some challenges to effective use of the coteaching model. The subsequent photographs (Figures 6-10) display Pat and I leading an activity that focused on population growth and in conjunction with resources usage on a global scale within the same inclusion science

course. During this activity, Pat and I chose students to represent the inhabitants of the global groups and provided them with a variety of materials that represented their areas "resources." Vincent and Joan were also present in the classroom, but functioned as support for students as they engaged in the activity providing Pat and I with the opportunity to lead the activity. Pat, Vincent, and I coplanned the "Food for Thought" activity. Vincent provided Pat and I with materials, as well as a pacing guide for the activity. Despite these resources, Pat and I did not review the activity notes, nor discuss our teaching of the activity until immediately prior to class.

Figure 6 displays our introduction and initial attempts of arranging students into the global populations. At the very onset of this activity, Pat and I are not engaged in each other's actions. Figure 6 displays me reviewing my planning notes, while Pat introduces the lesson to the class.

Figure 6 Matt and Pat introduce the "Food for Thought" activity.

My inattention to Pat's teaching instruction displayed my lack of engagement in his teaching practice, as well as the learning needs of our students. As seen in this photograph, my choice to review my notes caused me to ignore a student's motioning to ask a question about the activity. Thus, through my lack of engagement in Pat's introduction I removed myself as a resource for both Pat and our students.

As the class continued, Pat and I both struggled in our attempts to explain the details of the activity to our students, as well as communicate the activity's relevance to previous class's lessons. Our lack of preparation for the "Food for Thought"

activity was evidenced by Pat's and my constant breaks in our instruction in order to review our activity notes (Figures 7, 8, & 9). The following photographs also display students' lack of engagement in the activity during these periods of inactivity. Figure 7 shows Pat reviewing his note sheet while students wait to be directed to their specific global populations.

Figure 7 Pat reviews his activity notes while students wait for his instruction.

As the activity progressed Pat and I identified our lack of preparation to direct the distribution of students and resources for each global population group. Figure 8 displays Pat and I referring to our individual note sheets in an attempt to determine the correct ordering for the activity. During our conversations, it is apparent that the students in our class are not engaged in the activity through their off task behaviors (i.e. talking, sitting with arms crossed, etc.).

Figure 8 **Matt and Pat review their notes in order to determine the next step in the activity.**

As a final example of our lack of preparation for this activity, Pat and I review our note sheets before handing out the resources the students. Figure 9 shows Pat and I reading our notes while students are disengaged.

Figure 9 **Matt and Pat review their activity notes before distributing "resources" to students.**

Pat's and my reliance on our activity notes displayed our lack of preparation regarding the activity. As a result of our choice, to ignore Vincent's pacing guide and note sheets, Pat and I did not assume our teaching responsibilities to our students and fellow coteachers. Thus, our lack of preparation severely curtailed our students' abilities to engage in this activity, yet alone identify its connection to the unit on

alternative energy resources. During the coplanning session Pat, Vincent, Joan, and I agreed that Pat and I would lead the activity and Vincent and Joan would provide support for addressing students' needs once the activity got under way. Figure 10 shows Vincent and Joan choosing to alter these plans by stepping to assist Pat and I during the activity.

Figure 10 Vincent and Joan step in and assist Matt and Pat.

Pat's and my lack responsibility to prepare for this lesson demonstrated a lack of respect towards Vincent and Joan. Despite our actions, they chose to intervene, and

in doing so functioned as resources to address our difficulties with the activity. Directly after this lesson and during our weekly coplanning meetings Pat and I discussed why this particular teaching instance broke down. Due to the corespect and coresponsibility shared amongst our group, as well as the model's emphasis on self-reflective practice, Pat, Vincent, and I discussed the ineffective aspects of the activity, as well as strategies that we could employ to remediate these problems for future lesson and/or class activities. During an interview at the end of our student teaching practicum, Vincent reflected on his teaching experiences with Pat and I. He specifically recalled our difficulties with the "Food for Thought" activity and his initial choice not to intervene in the following passage:

> …the [activity] where Matt and Pat were sort of going awry. Me, stepping in at that point would [and] say[ing,] "hey, no, no we're going to do it this way." It would be embarrassing to them and then the kids would see that and kind of undermine their authority. That's just as bad as you know, because later on those kids don't have as much respect for them. It's hard enough getting respect from a teenager when your first coming in and doing that, especially when your so close in age (Vincent Interview, 5/04).

He further described our teaching abilities as we progressed throughout the remainder of the school year. In the following passage, Vincent describes the development of Pat's and my planning and teaching practices, specifically referring to the "Food for Thought" activity:

> In terms of Matt and Pat, I've seen them grow in terms of prep[aration], in terms of having an idea where the lesson should go. I remember the first lesson, we did the Food for Thought, where I kind of let them go off on a tangent and they want to burn the tape and I stole it back (laughs). Made sure that I wouldn't be able to play it again. (Interruption) To see them, towards the end, take a lesson and kind of go. And I made sure I stepped back to see where they've gone and how

> they handled things. From that lesson to the lesson that they did today, where they did a groundwater simulation with this model in the back. I let them do the whole thing and I kind of just sat in the back and I even left for a little bit. In my other two periods where Jaime and I did it and I did it my fourth period, I lost the attention of my kids, when I was doing my solo. [Matt and Pat] had them down and they had them all in their attention, and everybody's paying [attention], everybody's on [task]. They had everybody still fully into it. I'm like, "wow, that's much better than I did today." And looking back they had a better sense of how the group dynamics go and how the lesson should be run. They were leading questions, keeping them entertained and the whole thing was a demo, where if you just sit down and we're going to watch this how it goes, it would get very boring. They had the whole thing down. It was down to like a show. It was pretty funny (laughter), but yet learning. And they made a great connection, which I wanted them to make between a film we watched, *A Civil Action*. They plotted directly how water pollution can go underneath the river and affect the well on the other side of the river, which was the whole point of just doing this. And they hit it home and all the kids seemed to understand. That's what you hope for (Vincent, Interview, 5/04).

These two examples of coteaching "in practice" provide insight into how the conceptual elements of the coteaching were embraced by my fellow coteaching interns (student teachers), cooperating teachers, and myself during our student teaching practicum.

The need for quality educators is expressed in Paugh and Malley's (2002) study on teacher collaboration. They noted the need, "for educators who can support, challenge, and critique each other to extend their current ideas about their own beliefs and biases as well as to develop strong connections with their students" (Paugh & Malley, 2002, p.1). Their discussion identifies that the route needed to attain this goal originates from the process of continued learning on the part of the educators. The primary purpose of employing coteaching in the high school is to provide student teachers (also referred to as "interns") as well as in-service teachers (the term "cooperating teacher" is also used when describing coteaching interactions) with a

model which allows both groups to further develop their teaching practice by using a "horizontal (democratic) rather than hierarchical characteristic" (Roth et. al, 2001). In effect, this process allows a more balanced division of power to exist between student teacher and cooperating teacher. This teaching arrangement exists in an environment conducive to addressing the issues of anxiety identified by Osunde (1999).

However, coteaching occurs only when all parties present in the teaching situation are both active in the lesson and share the responsibility for all aspects of the lesson's progression and planning. These specific aspects include the planning or transmission of the lesson, managing the classroom (i.e. students behaviors, grading, attendance, etc.), and reflecting on the effectiveness of the teaching practice occurring and methods being employed (Roth & Tobin, 2005). The subsequent passage further highlights the critical facets of teaching within a coteaching setting and the practical results that abound regarding how teachers hone their teaching practice:

> Successful coteaching exists in a dialectical relationship with corespect, coresponsibility, and cogenerative dialogues. The foundational "co" of these is co-respect. The teachers must view each other as peers—with each person providing valuable insight and knowledge that will improve the group's coteaching. Additionally, successful coteaching requires co-responsibility. Co-responsibility occurs when each teacher assumes responsibility for all aspects of the classroom: the instruction, the students, and the teaching and learning outcomes. Coplanning is a form of cogenerative dialogue and requires the participation and involvement of all coteachers. Coplanning is time and labor-intensive as all teachers reflect upon lesson and program objectives and goals, relate the learning to standards and provide input on artifacts such as assessments or laboratories (Gallo-Fox, Scantlebury, Wassell, Juck, & Gleason, 2005, p. 6).

The last portion of this passage identifies the need for a time and place to reflect on teaching practices and evaluate the utility of each in accordance with various criteria. The question of this model's usefulness as a preparatory tool for preservice teachers is

an important issue that this study aims to investigate. In the subsequent sections, theoretical conceptualizations of structure | agency dialectic (Sewell 1992), capital (Bourdieu & Wacquant, 1992), and communities of practice (Lave & Wenger, 1991; Wenger, 1998) are examined in order to provide a theoretical lens from which to examine the beginning teachers' agencies during their first years of teaching.

Theoretical Framework: Structure|Agency Dialectic

Within social environments there are numerous structures that affect individuals' perceptions of events and consequently shape how they choose to act. In order to examine the beginning teachers' agency within their first year teaching environments, I have chosen to apply Sewell's (1992) theoretical framework of a Structure | Agency dialectic. This theoretical dynamic examines an individual's agency in relation to their knowledge of their surrounding structures (schemas and resources). The dialectic nature of this theoretical framework identifies that no action is regarded as chance or nonsensical, but rather an individual's actions are the result of their knowledge of and control over schemas and resources, respectively. Thus, in order to examine the beginning teachers' agency it is crucial to (1) examine the structures, specifically schemas and resources, that they experienced within each of their individual teaching environments and (2) examine how they chose to act with these teaching environments.

Sewell's (1992) notion of structure is inherently liked to individual agency, one's ability to act. While agency is identified "as much a given for humans as the

capacity for respiration," its enactment is quite distinct for each individual, being affected by the presence of historical and cultural norms (Sewell, 1992, p.20). Individual agency can thus be enacted to address and consequently be constrained by the structural components of a social setting. It "arises from the actor's knowledge of schemas that inform social life and have access to some measure of human and nonhuman resources" (Sewell, 1992, p.20). Thus, the reproduction of specific structural motifs is possible due to the individual's choice to employ their knowledge of schemas and control over various resources (human and non-human). By describing agency and structure as a dialectic, Sewell (1992) positions each component as a function of the other.

According to Sewell (1992), structures, comprised of schemas and resources, are dual in nature, such that "schemas are the effects of resources, just as resources are the effects of schemas" (p.13). It is critical to note that schemas are not readily apparent in physical form, but rather exist in the personal and cultural perceptions of those individuals who are interacting in a particular environment (Sewell, 1992). Thus, schemas encompass socially held norms, personal ideologies, and/or beliefs that afford or rebuff an individual's action within a particular social setting. The transposable nature of schemas allows for their activation in other environments, thus having the possibility to produce structural patterns that are analogous to those present within a previous setting. Ultimately, their reproduction is dependent upon an individual's control over and application of resources.

Resources, the second element of the structural component, are comprised of human and nonhuman (material) resources. Resources function as a means to provide an individual with the power to act within a social setting. Human resources exist in "the observable characteristics of real people who live in particular times and congregate in particular places. And it is their actualization in people's minds and bodies that make them resources" (Sewell, 1992, p. 10). Thus, the range of human resources varies with respect to the context in which an individual is engaging. Nonhuman resources refer to both "objects, animate and inanimate, naturally occurring or manufactured" (Sewell, 1992, p. 9). As with human resources, nonhuman resources are utilized for their ability to perform a desired action, but differ form the former in that they "have a material existence that is not reducible to rules or schemas, but the activation of material things as resources, the determination of their value and social power, is dependent on the cultural schemas that inform their social use" (Sewell, 1992, p. 12). For the purpose of this study, I will examine the cultural schemas and both human and material resources present within the beginning teachers' school settings, as well as those from their recent coteaching experiences in order to examine their teaching agencies.

Capital

Teacher education programs are means by which individuals prepare to becoming professional educators. Active participation in the teaching practices and associated activities are primary means for preservice teachers to become engaged in

the culture of teaching. The concept of capital is useful in investigating how an individual may become an active participant within their unique teaching environment. Bourdieu's theoretical application of human capital, identifies four aspects; these include economic, cultural, social, and symbolic capital (Bourdieu & Wacquant, 1992). In relation to the scope of this study cultural, social, and symbolic capital will be primarily examined in relation to the participants' engagement in their immediate teaching cultures.

"Social capital is the sum of the resources, actual or virtual, that accrue to an individual or a group by virtue of possessing a durable network of more or less institutionalized relationships of mutual acquaintance and recognition" (Bourdieu & Wacquant 1992, p. 119). This form of human capital identifies the collective sharing of information and entities amongst members of the group and thus is reserved to this particular group. Tobin and Roth (2005) have identified the role that social capital has in forming respect between new teachers and their students within urban school settings. They further identify that social capital "is the precursor to earning respect for one another" (p. 68). The importance of social capital in educational settings is also apparent between fellow educators as well. Bourdieu described social capital as ""energy of social physics"" (Bourdieu & Wacquant, 1992, p. 118). The term "physics" of this statement appropriately depicts the physical aspects of social interactions between individuals. The degree of social capital attributed to each person in specific social settings appears to be a direct effect of the social groupings in which individuals interact with one another. Bourdieu and Wacquant (1992) describe the latter in that "a capital does not exist and function except in relation to a field" (p.

101). Thus, social capital is constructed through the interactions amongst individuals, forming a stable currency that both individuals utilize as a media for their interactions.

Scantlebury (2005) identified the formation of social capital between groups of both student teachers ("interns") and cooperating teachers which were divided along gender lines. These gender differentiations originated as a function of lunch period groupings in which the interns and cooperating teachers participated. In particular, she identified the "strong social connections" between the male interns and their male cooperating teachers. The social network that the male student and cooperating teachers had formed seemed to positively influence the teaching relationships between two interns who were coteaching with the male chemistry cooperating teacher. However, there was an apparent dismemberment of the coteaching situation between the same two male interns and their female cooperating teachers of another chemistry class. Thus, the varying degrees of social capital established between male and female cooperating teachers and interns appears to have had lasting effects on the quality of the coteaching experiences in both classes.

Bourdieu and Wacquant (1992) identify cultural capital as related to aspects of inherited status. Accordingly, those individuals who possess this form of capital are enabled to interact with others privy to the specified culture. As a consequence of having the status as a member, the individual is able to impart their point of view regarding a certain topic in which the cultural group is immersed. Thus, cultural capital has significant effects when attempting to communicate one's ideas or suggestions about a topic within particular venue.

Positioning oneself within a particular cultural setting oftentimes causes a tension due to the discordant cultural backgrounds of the individuals present. Roth

and Tobin (2005) provide an example of this disharmony in their discussion of coteaching in urban science classrooms and the associated severe learning curves that preservice teachers experience. Roth and Tobin (2005) acknowledge the difficulties associated with teaching within unfamiliar cultural settings, but offer solace, stating that "learning to identify the students' cultural capital, create appropriate learning environments and effectively resolve problems as they emerge" (p. 61). Within this specific urban environment, preservice teachers must strive to comprehend the students' cultures if they are to engage the students in the science content they are attempting to teach.

Cultural capital is a central tenet of an individual's functioning within specific scholastic communities of practice. Sumsion and Patterson (2004) have identified attributes that are commonly found when community formation occurs. These attributes include interaction, participation, interdependence, a shared interest, concern for minority and individual views, and meaningful relationships. They further state that these attributes are also commonly associated with the communities found in conjunction with preservice teacher preparation programs (Sumsion & Patterson, 2004). In effect, the development of community becomes the environment in which cultural capital becomes fully embraced and subsequently utilized.

The final form of capital examined, symbolic capital, represents the "status" of an individual within a particular culture (Bourdieu and Wacquant, 1992). Symbolic capital is a crucial tool that preservice educators must develop when they are forming their identities as educators in order to function within a particular cultural grouping. Symbolic capital allows individuals to embody particular positions that are specific to

their immediate social environments. These positions are recognizable by other members of the culture and affect the interactions within the social grouping.

The degree of capital that an individual holds within a particular environment functions as a resource specific to the culture. Moreover, it enables the individual to act within the cultural setting and thus affect the overall structural motifs present. Extending the concept of capital to this study allows for the examination of the participants' degree of participation within their first year teaching environment. Through an investigation of the first year teachers' capital and its effects on their teaching agency, it is possible to investigate the impacts that these teachers had on the structures present within their teaching environments.

Communities of Practice

Lave and Wenger (1991) investigate the process of knowledge distribution within a communal environment with their concept of legitimate peripheral participation. Ultimately, their viewpoint of learning is one of an inherent connection to the social aspects, occurring within communities of practice. The structure of this concept allows for actions within communities of practice to be analyzed in relation to various interconnected aspects of the community, such that there are multiple ways of participating within a particular community of practice.

The concept of legitimate peripheral participation conveys the sense that there is no exact peripheral or central location in participation, but rather a "full participation" (Lave & Wenger, 1991, p.37). By positioning periphery as a progressive aspect of their analytic perspective, incoming members to the community are afforded the opportunity to access resources which may aid in their learning. Thus, it seems that this theory of learning is applicable to various educational settings and

enterprises, specifically useful in investigating how the practice of learning is afforded or constrained, i.e. the development of scholastic and local knowledge, how knowledge is learned in the "school" and "adult" worlds, as well as how schools become organized into communities of practice and community membership (Lave & Wenger, 1991, p.41).

LaVan (2005) identifies the applicability of the concept of a community of practice within classrooms, calling for a reconceptualization of the structures that afford knowledge. From this community perspective, the roles of teachers and students are viewed as equivalent with respect to knowledge distribution, such that each community member is able to contribute to the generation of the group's knowledge. The latter is consistent with the call for a reformation of learning activities to become more inclusive of the social and cultural aspects of learning (Bielaczyc & Collins, 1999; Lemke, 2000; Pea, 1997). The use of cogenerative dialoging is posited as a means by which teachers and students are able to communicate both their learning needs, as well as their personal knowledge of a topic (LaVan, 2005; Tobin & Roth, 2005). Thus, this activity allows for a more equal distribution of learning, while also enabling individual reflection of teaching and learning practices.

LaVan's (2005) research recognizes the use of collaborative research and cogenerative dialogue in formulating change within classroom environments, stating that "it (reformation of roles within the classroom) enabled a new division of labor in the classroom where there develops an ethos of collective responsibility toward learning" (p.117). The development of a "collective responsibility" is congruent with Brown, Ash, Rutherford, Nakagawa, Gordon, & Campione's (1997) primary quality

of responsibility for collective learning within a community of practice. Thus, with the latter in place, a community is able to function as a set of resources which can be tapped by those engaged in the collective learning activities.

Peering into the "practice" component of the community of practice concept highlights the effects of resource use within a specific community and thus provides a rich description of the social roles afforded to community members, as well as the influence that these individuals have on the process of individual and collective knowledge distribution. Wenger (1998) identifies that the concept of practice is the defining force in the emergence of community. Three factors: (1) mutual engagement, (2) a joint enterprise, and (3) a shared repertoire, form the crux of what practice within a community entails. Mutual engagement involves active participation through constant work aimed to cohere the community around "what they are there to do" (Wenger, 1998, p. 74). This purposeful action solidifies the community's identity and their unity as a group. Out of this mutual practice individual identities become realized such that they are defined in relation to others in the community of practice. Joint enterprise provides a negotiation in response to the various situations and holds these individuals accountable for their actions within the specific community. The shared accountability thus becomes a constantly evolving process in which the participants' engagement "is generative as it is constraining" (Wenger, 1998, p. 82). As this process continues, resources are amassed and used in negotiations concerning the implications of communal practices. The shared repertoire component identifies that the processes of constructing meaning occur from the shared knowledge being constantly constructed within the community, i.e. various routines, phrases, actions, etc. Through the knowledge of these shared "resources" it becomes clear that there

are an infinite number of practices that may evolve resulting from the mutual engagement and shared responsibility associated with the community's activities.

From Wenger's (1998) description of communities of practice, it is apparent that resources are a major component in the construction of communities of practice. Moreover, Lave and Wenger (1991) identify that learning processes and content is shaped by the structured resources within communities of practice. Horn (2005) highlights the importance of the specificity of resources for a learning community in the comparison of two teaching communities. The development of resources that are unique to each learning community displays the social and cultural needs of the community. This study accentuates that the process of resource production and use of a community-constructed artifact is more significant than the actual resources themselves (Horn, 2005). It is through the actions and interactions of the community members that knowledge of resource use is constructed and communicated. In addition, the researchers reported that the use of "teaching replays" and "rehearsals" were major critical resources that aided in teachers' abilities to reflect on their practices. Thus, these conversations served as a means of investigating their teaching values, beliefs, and ultimately impacted how the participating teachers viewed themselves as teachers.

Horn's (2005) descriptions of resource use within a community of practice and engagement in professional development discourse provides further evidence as to the importance of a community's resources for teacher learning. Even though a vast array of resources may be present within the community, the new individual must exhibit a desire to engage in the activities that of the community (Pea, 1997; Horn, 2005). Through the active participation in the community an individual is able to both learn

from their experiences as well as affect the ways in which the community addresses future learning issues. An individual's "full participation" within a community is of crucial importance, such that they come to be identified as members of the community.

In terms of membership, Lave and Wenger (1991) posit that the individual is able to engage in the community's practices through their adoption and construction of resources. The issue of access to the resources is the most crucial aspect of attaining knowledge of a specific community practice. As Pea (1997) notes, "social agents" are able to engage in and transform the practice into something that has meaning for their specific situation. The use of language in a particular community has implications in how an individual engages in the practice of these communities. "Talking about a practice from outside" and "talking within it" (Lave & Wenger, 1991, p.107–108) have direct implications for the individual's action within the community. Acquiring the language used to talk "within" a community ultimately allows the individual to integrate themselves as a member into the community and thus form their identity within the specific community of practice. Identity formation serves as a means for an individual to progress to full participation within the community of practice. It is the interplay of language, a desire to interact, and the formation of one's identity within the community that an individual is able to gain access to the resources provided by that community. It should also be noted that the appropriation of these resources and the practices involving them may also serve to curtail other learning opportunities for those engaged in the distributed practice, clearly denying access (Pea, 1997).

Little's (2003) research on professional community as described during out-of-classroom interactions serves as a perspective from which to view the individual and collective natures of teacher learning. The portrayal of classroom practices is represented by the specific terminologies and condensed, narrative accounts which are regularly described during these out-of-classroom meetings. The individual teachers' verbal recollections function as resources for others' individual teaching situations, but also serve as a means for constructing their individual identities within this community of practice (Little, 2003).

The ebb and flow of conversation amongst teachers within a community of practice displays how the construction of teaching knowledge is collaboratively constructed with the use of the specific language of the group. Clearly, each group meeting allows for innovations in the construction of teaching practice due to the constantly changing practices of these individuals and their subsequent discussion. Little's (2003) research provides a crucial insight into how the language of a particular community affects an individual's level of engagement in the discussion of practices. In this instance the developed language functions as a resource for novice teachers' when seeking veteran teachers' opinions or experienced with similar teaching situations. Moreover, it supports Salomon's (1997) call for a comprehensive look into individual cognition as a function of the collective. Further research into the "participation patterns" is needed in order to examine how the regular participation within communities affects individual learning, and in turn the group's learning (Little, 2003).

The occurrence of conflict also functions as a resource which individuals can utilize in expanding their learning capacities. The shared opinions and beliefs that

arise from conflict are able to function as resources for subsequent issues that arise within a community (Lahti, Etelapelto, & Siitari, 2004). The use of conflict as a resource allows those involved in the discussion to not only reflect on their personal beliefs and practices, but also to refine their social skills and communicate their position on the topic being discussed. Ultimately, the occurrence of conflict offers individuals alternative viewpoints on an issue that may expand or curtail their knowledge of the subject.

Research of conflict in group situations reveals the difficulties that result from collaborative learning efforts (Lahti et al., 2004). Membership and personal identities within the group become assessed when certain ideas are challenged. Thus, the individual's perceived identity has major implications on the degree of participation within the group (Lave & Wenger, 1991) as well as for their subsequent practices (Wenger, 1998). Consistent with the overarching theme associated with resource use, conflict affords and constrains individuals' learning, as well as that of the community. Thus, the degree and occurrence of group conflict within a community of practice stands as a volatile resource affecting knowledge distribution.

The various perspectives discussed shed insight onto some shared themes concerning situated learning, community of practice formation, and the prominence of resources in affording and / or constraining knowledge distribution (Lave & Wenger, 1991, Pea, 1997, Wenger, 1998). Access to these resources is dependent upon the individual's ability to utilize language, as well as other verbal devices, to identity themselves as a member of the community (Salomon, 1997). It is through membership within the community that the individual is afforded the choice to learn about and simultaneously engage in the practices of the community (Pea, 1997,

Wenger, 1998). The application of the community of practice concept has implications for how teachers engage in learning about teaching practice, share their knowledge, and are provided with opportunities to modify this knowledge (Little 2003).

Beginning Teachers' Concerns and/or Difficulties

To investigate these three beginning science teachers' agencies it is crucial to examine how beginning teachers have described their first year teaching experiences, as well as the impacts of pre-service teacher education programs on their ability to function as first year teachers. For the scope of this study, I rely on research articles that have examined beginning teachers' perceptions of their first years of teaching and associated teaching difficulties during this time period. The following research studies provide insight into the needs of beginning teachers, as well as suggestions to improve the resources used to transition pre-service teachers into the role of in-service educators.

In his review of perceived concerns of beginning teachers, Veenman (1984) provided an analysis of 83 international research studies from 1960 through 1984. While much has changed in the realm of educational research since the publication of this study, I have chosen to include these findings due to their continued relevance as concerns of beginning teachers. He identified that the most frequently identified problems included the following: "classroom discipline, motivating students, dealing with individual differences, assessing students' work, relationships with parents, organization of class work, insufficient materials and supplies, and dealing with problems of individual students" (Veenman, 1984, p. 160). Two suggestions were prescribed to curtail these problems, specifically identifying the role that preservice

teacher education programs should play in addressing these issues. The first suggestion included an extension of the time period in which student teachers participate in their student teaching practicum. The second identified the potential benefits of collaboration between cooperating teachers and their novice counterparts in addressing these teaching issues (Veenman, 1984).

Relating Veenman's (1984) findings to the current research on beginning teachers' concerns regarding their initial years of teaching reveals common themes. To elucidate areas of difficulty concerning beginning teachers' first year teaching experiences, Meister and Jenks (2000) interviewed 42 beginning teachers (one to three years of teaching experience) at secondary and elementary levels of private and public school institutions. The results of this study parallel the previously identified concerns of teachers during the transition from preservice to in-service (Meister & Jenks, 2000).

The results of this study indicated that beginning teachers identified managing student behavior and the diversity of students' needs as their primary areas of concern. However, the beginning teachers interviewed also indicated that a substantial amount of their time was directed toward addressing issues of time management and conflicts with parents. In response to these findings, Meister and Jenks (2000) described the importance:

> to implement a teacher education program that focuses on the preservice teachers themselves rather than to try to instill pre-made models of classroom practice that many not fit their context or their self-image of who they are or want to be (p. 9).

In addition, they call for "numerous field experiences" that extend "over a long period of time" to be present within preservice teacher education programs; these experiences

intending to introduce beginning teachers to “the messy uncertainty of teaching” (Meister & Jenks, 2000, p.9). Ultimately, Meister and Jenks (2000) identify the utility of the practice of reflecting on their teaching practices and the need for its presence as an active learning tool in preservice teacher education programs. They state that:

> This kind of reflection includes several essential components. First, preservice teachers need skills in observation. They need to know how to collect data systematically and how to analyze those data to draw conclusions that will lead them to sound judgments in their own practice. After collecting data and analyzing them, they need someone experienced in data collection and analysis to ascertain if they gathered appropriate data and analyzed them well in the confines of the context. They need help learning to think aloud through their own beliefs and values and to realize that what they think and believe may differ vastly from the people--pupils and other adults--with whom they will work in the schools. They need to articulate their biases, weaknesses, and fears so that they can work through them before they become an issue of contention in the classroom (p. 10).

The subsequent reviews of various studies also identify the crucial role that preservice teacher education programs play in addressing the transition into teaching through their discussion of beginning teachers’ reported concerns and difficulties associated with their first years of teaching.

Adams and Krockover (1997) interviewed 11 beginning (< two years experience) secondary and middle school science (8) and mathematics teachers (4, one teacher was dually assigned to science and math classrooms) as part of the Salish research project at Purdue University. This research project was designed to examine the impacts of national preservice teacher education programs on beginning science and mathematics teachers’ transitions into becoming in-service teachers. The findings

of these interviews indicate that beginning teachers were primarily concerned about (1) their classroom and time management skills, (2) curriculum development, and (3) issues with presenting content materials.

Furthermore, their study reported that beginning science and mathematics teachers described being responsible for developing much of their course curricula. Moreover, they identified that preservice teachers' undergraduate coursework was "too narrow" in scope, such that it did not provide with opportunities to examine curricular planning associated with related fields of teaching; those outside of their specific content area. From these findings the Adams and Krockover (1997) suggest that preservice teacher education programs could remediate this area of concern by "providing experiences of teaching outside of a given content area, thereby providing an opportunity to learn the teaching techniques of the various science and mathematics disciplines" (p. 48). In addition they state:

> That the teachers have a need to not only develop content knowledge but pedagogical content knowledge. It seems then that preservice programs need to be examined in order to modify the coursework to reflect the realities of public school teaching, while at the same time redesigning the pedagogical and/or curriculum to promote the development of pedagogical content knowledge " (Adams & Krockover, 1997, p. 48).

Thus, it seems crucial that preservice programs prepare teachers to acknowledge their role in curriculum development. Providing preservice teachers with a variety of teaching experiences, specifically amongst the multiple content areas of a general subject area (i.e. Science: biology, chemistry, physics, anatomy and physiology, etc).

Kagan (1992) further investigated the beginning teachers' first year teaching difficulties in her analysis of 40 research studies investigating how beginning teachers learned to function as professional educators. She noted that beginning teachers identified a need for better knowledge of (1) classroom management techniques, (2) planning skills, and (3) classroom instructional procedures. The difficulties listed above were attributed to the beginning teachers' prior beliefs about teaching and their self images as to who they were as teachers (Kagan, 1992).

This study also identified that student teachers bring their prior conceptions of and experiences with teaching into their preservice teaching environment. Thus, it is crucial to examine whether these beliefs are transferred to these individuals' first year teaching experiences. If left unexamined, these images and beliefs may transform into problematic ideals concerning teaching and associated educational issues. Tobin and Roth (2005) similarly describe the emergence of unconscious teaching practices due to the lack of both reflections on and dialoguing about these practices. They suggest that engaging in the practice of a, "cogenerative dialogue, a conversation between stakeholders about a shared experience, can identify and review practices that are unintended and unconscious while discussing the power relationships and roles of the participants" (p. 67).

Kagan's (1992) study supports the notion that preservice teachers' conceptions and knowledge of classroom management techniques, classroom instructional

procedures, and course planning procedures are incongruent with the realities of teaching in an actual classroom. She states:

> Almost every one of the 40 studies reviewed in earlier sections of this article indicates that university courses fail to provide novices with adequate procedural knowledge of classrooms, adequate knowledge of pupils or the extended pratica needed to acquire that knowledge, or a realistic view of teaching in its full classroom/context" (Kagan, 1992, p. 162).

She further identifies the need to examine the effects of preservice teachers' images of themselves as teachers on their abilities to develop classroom practices that address their student' learning needs. Borrowing Veenman's (1984) terminology, the transition from preservice to in-service teaching seems to cause quite a "reality shock" for beginning teachers. Thus, encouraging and providing preservice teachers with opportunities to reflect inward, on their "own behaviors, beliefs, and image as a teacher" may support their attempts to hone their classroom management skills, as well as instructional and planning practices (Kagan, 1992, p.162). Kagan (1992) also calls for increased opportunities for these individuals to exercise their "procedural knowledge…promoting the acquisition of standardized routines that integrate management and instruction" (Kagan, 1992, p.162).

Research examining beginning teachers' initial teaching experiences has revealed that new teachers report difficulties associated with classroom and time management, procedural knowledge of their classroom, addressing the individual needs of their students, and communication with their students' parents (Veenman, 1984; Kagan, 1992; Adams & Krockover, 1997; Meister & Jenks, 2000). In his

research on beginning teachers' perceived teaching difficulties, Veenman (1984) identified that beginning teachers problems arose from the disconnect between their preservice teaching experiences and their experiences as a first year teacher. In particular, he refers to beginning teachers as having to reorient their world-view of teaching, using the terms "reality shock" and/or "transition shock" to highlight the distress that beginning teachers often identify as they initiate their teaching journey (Veenman ,1984, p.143).

Thus, it appears that beginning teachers commonly encounter difficulties associated with addressing the diversity of students' needs, issues of classroom and time management, conflicts with parents, curriculum development / planning skills, and the development of classroom instructional procedures (Adams & Krockover, 1997; Kagan, 1992; Meister & Jenks, 2000; Veenman, 1984). The continual emergence of these difficulties / concerns conveys a sense of urgency in how teachers are being prepared to function as educators. The continuity of these themes regarding beginning teachers' difficulties provides a sound basis upon which to investigate the three beginning teachers' experiences with the coteaching model of teacher preparation.

Chapter 3

METHODOLOGY

Theoretical Basis

This study, positioned within the constructivist paradigm, posits that there are "multiple realities" which individuals create from their lived experiences, and through these experiences are inherently socially constructed (Guba & Lincoln, 1989). Thus, if these realities are to be analyzed, they must be done so with due regard to the context(s) of the individual reality being examined. In order to view the first year teachers' teaching realities, their experiences are presented as case studies. The investigation of each individual case reveals intricate relationships with other teaching professionals, everyday happenings, and other subtleties that occur within each beginning teachers' educational context(s) (Stake, 2000). Adopting this organizational format highlighted the specific context(s) in which each these beginning teachers' described her/his teaching experiences, including both preservice and in-service teaching experiences. Moreover, this approach allowed for comparison of common themes, while retaining the individual context(s) associated with each beginning teacher.

This research study uses the grounded theory form of qualitative research. In accordance with this theoretical framework, emergent themes were analyzed from the data in order for the theory to "resemble the "reality"" of the beginning teachers' experiences rather than "putting together a series of concepts based on experience or

solely through speculation" (Strauss & Corbin, 1998, p. 12). This study investigated how first year science teachers, who participated in the coteaching model of teacher preparation during their student teaching, adapted to teaching in non-coteaching environments. Using grounded theory to frame the study allowed Sewell's (1992) structure | agency dialectic to be used as a method to examine the relationships between the first year teachers and their unique teaching environments. Utilizing this research approach, I focus on what occurred during the participants' first year teaching experiences and attempt to identify how coteaching affected their teaching agencies.

Sampling

The three participants of this study were purposely selected due to (1) their participation in the coteaching model during their student teaching experience, (2) their current teaching position representing their primary year of teaching, and (3) ability to video tape their classrooms and reflect on their teaching practices. The participants participated in a secondary science methods course in the fall semester during their senior year of college that introduced the theoretical and practical foundations of coteaching. In the following semester, these individuals participated in coteaching during their student teaching practicums. The participants' involvement in the study was confirmed after they agreed to discuss their first year teaching experiences, their school administrations were notified about their participation within the study, and permission to videotape their course lessons was obtained by their

school administrations. Each of the participants in this study was provided a summary of the interview and video taping requirements and their participation was voluntary.

Data Collection

I interviewed the participants three times, one focus group interview and two individual interviews, each approximately one to two hours in length. The primary group interview occurred approximately two months after the beginning of their academic school year (November 2004). This interview was conducted with the three participants and three researchers associated with the coteaching teacher preparation program at the University. During the 1st round focus group interview, the beginning teachers' were asked a series of questions regarding their schools' general demographics, their thoughts about their first year of teaching, and in what ways they felt coteaching had affected their teaching practice. The nature of the group interview was "open" in the sense that each of the participants was able to respond to interview questions, ask each other questions, and share their experiences in conjunction with their peers' first year teaching experiences.

During the subsequent interviews (2nd and 3rd round interviews) each participant was interviewed once during the months of December 2004 through February 2005 and the once during the months of March 2005 through July 2005. These specific time ranges were intended to provide equal spacing between interviews in order to capture a holistic view of the participants' first year of teaching. I conducted all of the interviews, with the exception of one conducted by a research associate. These interviews occurred at the participants' respective schools, at the conclusion a school day or during a planning period in their individual classrooms.

No interviews or taping sessions occurred prior to obtaining the participants' schools' permission to participate in the study.

During the December - February 2005 and March - July 2005 time ranges, the three beginning teachers were observed a minimum of two classes, one during the months of December 2004 through February 2005 and the other during the subsequent spring months with the exception of Jaime. Both of her video observations occurred during the 2nd round of interviews due to scheduling issues that occurred during the 3rd round of interviews. In addition, the participants reflected on two of the videotaped lessons. The participants were then asked to review their videotaped lessons and respond to a series of questions that attempted to identify: (1) perceptions on how the surrounding structures and agency, impacted the lesson; (2) perceptions as to whether coteaching influenced their instructional approach with the class; and (3) reasoning behind choosing the teaching methods they employed in the class.

All transcriptions were sent to the participants for member-checking to assure that the data were accurate (to increase the study's reliability). The transcriptions were subsequently modified if participants identified any discrepancies in contextual meaning or wished to remove certain portions of the interview due to personal privacy concerns. I also stated that all information obtained from the interviews and video tapes would be kept confidential, with their names, the names of associated teaching professionals at their schools, and the names of their schools replaced with pseudonyms. In order to protect the identities of these teachers, as well as their schools, the direct online reference to the school's website and/or school biography is not provided. In its place, the general hyperlink* to the school's state department of education is provided. This hyperlink still provides a source that is associated with

the referenced information, but with no direct identification of, or connection to, the participants' schools.

Data Analysis

Approximately two months prior to the group interview, I constructed my research question regarding the effects of the coteaching model and general teaching environments (structures) on their teaching agencies. I subsequently extended this question to examine the effects of the beginning teachers' agencies on the general teaching environments of their respective schools. I then began constructing interview questions for the group interview that addressed my research questions. After the conclusion of each round of interviews, the interview data were transcribed and I constructed a subsequent set of interview questions until the conclusion of the third round of interviews. The interview questions were constructed in relation to the themes emerging from the interviews.

All audio data was transcribed by an individual not associated with this study. With the use of HyperResearch© software, I coded both the participants' interview responses and videotaped lessons according to emergent themes that were specific to the participants' teaching experiences, as well as concepts described in my review of current research literature. The former included logistical information related to the beginning teachers' first year teaching positions (i.e. class sizes, students' demographics, content taught, presence of science department, and participation in mentoring programs) and the relationships between the latter and the participants' teaching practices. The coding schemes related to the literature reviewed included structures (schemas and resources) and agency (Sewell, 1992), capital (Bourdieu & Wacquant, 1992), community (Lave & Wenger, 1991; Wenger, 1998), coteaching,

coplanning, corespect, coresponsibility (Gallo-Fox et al., 2005; Roth, 2005; Roth & Tobin, 2005), and concerns of beginning teachers identified in the current research literature; specifically issues related to classroom and time management, planning, and instructional techniques (Adams & Krockover, 1997; Kagan, 1992; Meister & Jenks, 2000; Veenman, 1984). The themes were then coded in relation to the research questions regarding structure and agency.

As an example of this coding process I will examine the progression of code construction regarding Pat's interactions with his science department. Upon review of the interview data, I identified that Pat regularly engaged in conversations with his science department members regarding his chemistry courses, as well as the nature of his teaching practices at Beagle High School. I created codes for these instances that included: "Pat science department," "Pat courses," "Pat teaching methods first year," and "Pat community first year." In relation to the research questions, I subsequently recoded this interview data as "Pat human resources first year," "Pat material resources first year," "Pat planning first year," and "Pat agency." These codes were then used to develop the case study of Pat's first year teaching experiences and address the research questions of this study. The video observation tapes were similarly analyzed with the use of the coding schemes developed from the interview data.

Coding and analysis of the interview data began after the completion of an entire data set for each round occurred. For example, the 1st round data were coded after the completion of the interview and its subsequent transcription. The same analysis process occurred for the two subsequent interview data collection rounds. The video observations were reviewed after the coding of an entire data set for each

round was completed, but were not clipped and coded due to timing issues associated with the progress of interview data analysis. The beginning teachers' reflections were collected after each observation was performed and reviewed in accordance to the questions that were posed.

Reviews of research literature occurred while the interview and video observation data were being collected. Construction of the individual case study sections began after all of the interview and video observation data were collected and analyzed. However, the composition of the case studies varied in accordance with the beginning teachers' member checking of the interview data. However, composition of all three case studies began approximately 1 year after the initiation of the 2nd round of data collection (January, 2006).

Case Studies

Each case study allowed common themes to be examined across cases, while still retaining the individual context(s) associated with each beginning teacher (Stake, 2000). The constructivist paradigm posits that there are "multiple realities" that individuals socially construct from their lived experiences (Guba & Lincoln, 1989). In relation to the latter, I chose to include interview data from both Jaime's, Pat's, and Lisa's student teaching and first year teaching experiences. By including data from their student teaching experiences, I attempted to provide the "multiple realities" of their teaching experiences (Guba & Lincoln, 1989). Moreover, this background information provided a view into these first year teachers' coteaching experiences, and in turn how these experiences affected their first year teaching agencies. The case studies include sections describing the beginning teachers' agencies and the effects of the coteaching and|on general teaching environments addressed Strauss & Corbin's

(1998) emphasis on theory to "resemble the "reality" (p.12), the "theory" in this study being Sewell's (1992) theory of structure | agency as a dialectic.

Researcher Role(s)

From my experiences as a member of the same coteaching cohort as these three beginning teachers, I can provide an insiders' perspective on their coteaching experiences, providing my perspective on issues associated with coteaching and/or my opinions regarded certain educational topics as a graduate of the program. Thus, from my prior professional and social experiences with these individuals I was able to function as both an educational researcher and professional teaching peer. I would argue that due to the social and cultural capital that I shared with these individuals, I was afforded a wider range of access into their first years of teaching than a non-associated researcher would have obtained. Through my shared experiences with these individuals, as well as my knowledge of the teaching culture present at Biden High School (student teaching placement), I was able to engage in conversations about their preservice and in-service teaching experiences (Bourdieu & Wacquant, 1992).

My roles as both a researcher and a fellow coteaching peer allowed me the opportunity to reflect on my coteaching experiences with the participants of this study, as well as how these individuals transitioned into their first year of in-service teaching. As I reflected on these instances, it became apparent that my participation within the coteaching program affected how I chose to conduct this study (agency). In particular, I engaged in the process of reflecting on my coteaching practices during the interview sessions with the participants. During these interviews, we discussed the participants' first year teaching experiences, but regularly, and quite spontaneously, compared these instances with theirs' and my own coteaching experiences. Thus, my choice to reflect

on both the participants' and my own coteaching experiences afforded me the opportunity to extend my comprehension of how their teaching agency was affected and/or affected their first year teaching environments.

In the subsequent chapter, I provide interview transcripts from one of the participant's cooperating teachers, Tim, and the University supervisor, Kate. These interview transcripts are meant to provide insight into the personalities of the participant's in this study, as well as provide additional perspectives on these individuals' teaching actions/interactions during their coteaching experiences. Immediately following the latter are three case study chapters that describe Jamie's, Pat's, and Lisa's experiences as first year science teachers. Their agencies were examined in relation to the structural impacts of both their coteaching experiences and the teaching environments of their first years of teaching. A discussion of the case studies follows in an attempt to identify various themes that emerged from the data collected, including any contradictions. Finally, I conclude with a chapter summarizing the themes identified from the previous chapter's discussion. I compare Jaime's, Pat's, and Lisa's first year teaching experiences in relation to the concerns and/or difficulties of beginning teachers identified in the review of literature, relating these findings to the preparatory value of the coteaching program for preservice teacher education.

Chapter 4

PARTICIPANT PERSONALITIES

In order to provide some insight into the personalities and/or personal teaching beliefs of these three beginning teachers I have provided two transcripts from the participants' student teaching interviews. These interviews include comments concerning the three participants of this study, as well as the other two members of the coteaching cohort. The latter two individuals are not included in this study because of restrictions on video observations and geographic distance from my research location. The first passage includes interview data from an interview that occurred at the conclusion of the spring student teaching practicum. It provides a glimpse into Pat's personality as perceived by one of his cooperating teachers, Tim. The interviewer is a researcher associated with the coteacher program:

> Interviewer: Do you think that they've gotten—have you seen any changes in them as the semester has gone on?
>
> Tim: I think that Pat's more comfortable in front of people. So I've notice that for the other two, there's a comfort level. You can see that they are a little more relaxed. So they are kind of adjusting to being in the power position, the vocal position.
>
> Interviewer: So do you usually just have one other intern, or do you have three people in the room with you at any point? How does it work with those different numbers?
>
> Tim: It's weird. And I think some of it plays off personality. Like Pat and I for whatever reason, we just play off each other real well and it started at an early stage where we could just — there wasn't an awkward break. We just flowed right from one to another. I think we

> did a good job from a coteaching standpoint. I want ask some of the kids actually and see what they think. You just have to adjust to each other's personalities and figure out how to play off of each other. But there's times when I still have trouble reading Chris a little bit and maybe even Sam a little bit. I feel at times I talk over them. Like they start to say something right as I do. Whereas for whatever reason, I don't know why —Pat and I, it just flows better. So, but I don't see it as a problem. It's nice.
>
> Interviewer: Of the interns, but also with the teachers. Like has there been any bonding and connections that…
>
> Tim: Well, I can comment on the boys, because they eat lunch with us. So it's me and Vincent. We are the only two there from the science department. Then we have a math teacher, a special ed teacher, an english teacher, and a social studies teacher. So they all eat lunch with us. So they interacted with them and kind of joined in our little lunch clique. I think the three chemie guys as a group, work pretty well together. Like I said they are like, "I've got this one. You've got that one. And I'll grade these, you grade those." I think they are doing good like that. I think that they've been able to get ideas from each other. They bounce ideas off of each other. Like I said Pat, Chris, Matt and Sam will come up and eat lunch with us, and they're razzing the other teachers. They've been accepted in, so to speak. I don't know beyond that. They've met a couple other people, because they'll come out on Fridays with us and there's another teacher who teaches history. So, Pat and those guys have interacted with them (Tim Interview, 5-5-04).

The second passage includes the coteaching teacher education program supervisor's comments about the student teachers personalities as she perceived them after the completion of their fall semester science methods course. This passage is included for a glimpse into the personalities of both Jaime and Lisa, as well as the coteaching interactions of the other student teaching interns. Again, the interviewer is a researcher associated with the coteacher program:

> Kate: I can see Pat and Sam taking more of the front role most of the time in a coteaching setting than Chris. The biology people, they're more of a balanced blend if you will, personality wise. My only

concern is that Lisa, because she is so hyper, and so task orientated, would drive the other two nuts. And it's not as if they're not well planned and thoughtful. Lisa is an overachiever and she's happily, self-admitted overachiever. I think she's going to find it difficult because she likes to be in control and run things. And cooperating with colleagues, it's not that she's uncooperative but, if you watch the group as they plan, she's the driving force and it's not because the other two are lazy, it's just because Lisa is overwhelming. So, at the moment when I've talked to Matt and Jaime, they're fine. And they're laid back about it and they're just going along and I heard one conversation where Lisa was saying, and this has to be done by Wednesday and Jaime said no it doesn't have to be do until Wednesday week and I have some other things and I will get my part done by Monday. So Lisa was pushing, she likes to finish an assignment within two days of getting it. And the others have other classes. She [Lisa] does too, but because she had to spend an extra year, she's taking some graduate level classes, so she's not finishing up her undergraduate requirements in the same way Matt and Jaime are. But I don't really think that makes any difference. I think that would just be Lisa. She's very anxious. She worries. She's a worrier. She's a perfectionist, she's an overachiever. And even if she wasn't coteaching I would worry about her because of all those characteristics. And I'm just concerned how the stress of student teaching is going to impact her and even more so what the stress of the first year of teaching is going to do to her. She blows it off. She says both her parents are teachers and she understands what teaching's about. That I shouldn't worry about it. I'm just worried that she'll go into a breakdown because she' so, doesn't take deep breaths about anything.

Interviewer: Do you think that the coteaching model might help her with that?

Kate: I actually do, because, and especially because of the two colleagues she has, who are both dedicated and hard working. These aren't people that are just going to sit back and let Lisa do everything. If I think about some of the people I had last year, I mean one student in particular would have done that. Matt and Jaime are not like that and nor are they shrinking violets. They're quiet, but they're assertive. So she's, they won't let her take over in that regard (Kate Interview, 11-12-03).

Chapter 5

A "VETERAN" IN THE FIELD

Jaime and I met three times over the course of eight months to discuss how her first year of teaching was progressing. During our first meeting, we discussed her first year teaching experiences within the company of four other members of our coteaching cohort. It was during this group meeting that Jaime described the classes that she was teaching, as well as the nature of her teaching environment. She further identified her membership within a planning group that included two other seventh grade science teachers. It was within this collaborative group setting that Jaime was initially given the role of a veteran teacher, providing her fellow group members various methods of instruction, modes of assessment, and ways to plan course curricula. Jamie and I subsequently met two more times to discuss her first year of teaching. In addition to our interview sessions, I observed two of her science classes during the remainder of her school year. During our interviews, Jamie described the impact that her coteaching experiences had on her first year teaching practices.

The teaching knowledge that Jaime gained during her coteaching experiences provided her a plethora of pedagogical knowledge that she drew upon during her first year of teaching. It was also apparent that several aspects of her school environment, including her fellow science teachers, affected her teaching practices. In particular, I focused on how her teaching agency was affected by both her prior coteaching experiences and structure of the general teaching environment at Mendel Middle School. From her descriptions of her first year of teaching, Jaime chose to integrate

the practice of coplanning into her regular teaching routine. Moreover, her ascribed status of a "veteran" science teacher and her use of both human and material resources originating from both her immediate school environment and from her coteaching experiences allowed Jamie to incorporate the coplanning practice into her fellow science teachers' repertoires. Thus, Jamie chose to initiate the practice of coplanning with her fellow seventh grade science teachers. The presence of a shared sense of corespect and coresponsibility amongst the members of the planning group enabled this practice to become an established component of their teaching repertoires. These informal planning meetings afforded each participating teacher the chance to reflect upon their teaching practices, while sharing and obtaining teaching advice from their teaching peers.

Jaime

During her undergraduate career, Jaime majored in Biological Sciences Education and was awarded the distinguished student teacher award. In addition, she held the position of president within her University's chapter of a biological science honor society. During her coteaching experience at Biden High School, Jaime cotaught courses which included biology, environmental science, anatomy and physiology, and coordinated science II (Inclusion course). I had the opportunity to coteach one period of Anatomy and Physiology and Coordinated Science II (Inclusion course), with Jamie.

Coteaching Experiences

During her student teaching experience, Jamie functioned as an active member of the coteaching community within her science methods course and subsequently at

Biden High School. The term "intern" was used in the coteaching program to emphasize the student teachers' embodiment of the role of a science teacher, acknowledging the responsibilities and actions associated with teaching. Jamie was one of three biology interns who began planning and interacting with one another during their science methods course prior to student teaching. Jaime's and her fellow interns' course activities focused upon collaboratively planning unit and lesson plans, as well as composing assessments and course activities. It was during this course that Jamie, the biology interns, and associated chemistry interns began forming their professional, as well as social relationships. The science methods course thus became an environment that encouraged the interns and course administrators to share knowledge of teaching, past and current classroom experiences, and opinions concerning the latter. It should also be noted that the science methods course was cotaught by the University supervisor of Secondary Science Education and the chairperson of science department at Biden High School.

The interns' initial experiences with group collaboration began with coplanning three content units for the three of the courses which they would be teaching during their field placement at Biden High School. Midway through the science methods course, Jaime identified the practical use of these coplanning sessions in formulating her pedagogical content knowledge. She described the usefulness of the practice, stating:

> We are able to bounce ideas off of each other. Each of us has our own strengths and we have a lot of different ideas about the different types of activities we can do and different ways to present the material (Jaime Interview, 11-04-03).

During the methods course, the teaching interns were consistently encouraged to self reflect on both their theoretical conceptions of teaching, as well as their actual teaching practices. Through regular discussion of educational research topics and their teaching experiences, the science interns constructed a community of practice whose focusing on methods to expand their knowledge of science teaching.

Jaime's identity as a member of a community of practice within the coteaching group was initially formed during her participation in the methods course, and specifically within her content planning group. Jaime described her interactions and sense of group cohesion with her fellow biology coteachers, stating:

> We've got a lot of faith in each other. We've been in the class for a while together now, so we've gotten to know each other. And I think we work together pretty well. We have a good idea of what we all expect of each other (Jaime Interview, 11-04-03).

The presence of a collaborative respect and shared teaching responsibility amongst Jaime and her fellow coteachers was a prominent factor that affected her teaching practices during her student teaching practicum. As will be subsequently described, Jaime transferred the ideology that group collaboration was an effective means to improve one's teaching practice into her first year of teaching.

When she began coteaching at Biden High School, Jaime identified the formation of a community of practice that included not only her fellow coteaching interns, but also their associated cooperating teachers. She described how the interns, cooperating teachers, and college administrators functioned as a collective unit focused on generating a shared sense of responsibility for the mutual generation and

comprehension of pedagogical content knowledge. Jamie described her relationships with her fellow coteachers in the subsequent passage:

> We all get along really well. We all meet in a group, we can socialize, we can share ideas—we always do. I mean, I'm always running off to another teacher being like, "I don't know what to do." [As an example] I was discussing with Pam earlier, we were trying to figure out what to do with the juniors after the seniors leave. I think there's a really good sense of community (Jaime Interview, 5-24-04).

Biden High School's science department exhibited a strong sense of community through their communication with one another concerning students' learning needs, shared curricula topics between courses, as well as school-related issues. In addition, several of the teachers had prior educational experiences with the faculty administrator directing the coteaching program. Thus, the integration of the interns' and cooperating teachers' communities of practice enabled the formation of a new community grouping that provided resources to both the preservice and practicing teachers to improve their teaching practice. The members of this community shared both individual and collective responsibility for planning and teaching their respective content, as well as adjusting the latter to their students' needs.

Ultimately, Jamie's and her fellow interns' memberships within this community of practice provided them with content specific resources which they utilized and to expand their teaching repertoires. These resources were not limited to materials pulled from file cabinets, but included the interns' cooperating teachers. Through her coplanning and coteaching experiences, Jamie garnered an understanding of her own, as well as her coteachers teaching philosophies and practices. In the following passage, Jamie compared coteaching to that of a traditional student teaching arrangement. She identified that the coteaching arrangement provided resources and teaching experiences that supported the expansion of her teaching knowledge:

> The first day we come in we start teaching and I know in standard student teaching a lot of times they sit around for the first few weeks watching getting to know everything. Even [though] we're thrown in, we still have that life preserver of somebody around that can jump in if we start to flounder too much. We still have all of the [teaching] responsibilities and I think that because you do have the help you can do more. I mean, you can do several different classes and have three preparations, so I think it gives you a more varied experience. I definitely recommend it for next year (Jaime Interview, 5-24-04).

The support from her cooperating teachers was a key component of Jaime's ability to function effectively as a student teaching intern. However, the knowledge gained from the teaching community allowed Jaime to expand her teaching knowledge and subsequently impact the teaching practices of her fellow cooperating teaches and interns. Thus, it seems that while each coteacher was responsible for their individual teaching practices, there was a shared, responsibility to support other teachers within the coteaching community. It was through both the individual and collective responsibilities of the program that all participants were afforded the ability to expand their teaching knowledge capacities. The continued emphasis on group collaboration within her community of coteachers supported Jamie's ability to function as an active member of her first year science department. The structural framework of the coplanning sessions was transferred to Jaime's first year of teaching, particularly during her planning sessions with Greg and Rose.

Mendel Middle School

After the completion of her student teaching experience, Jaime obtained a teaching position as a seventh grade, middle school science teacher level. Her science classes were four sections of standard science, one section of inclusion science, reading in the science content area, and a preparation for Science Olympiad that replaced the latter mid way through the school year. Jamie was also a member of a four person teaching team that consisted of seventh grade math, social studies, and ELA teachers. Within her science department, she was one of four seventh grade science teachers. The latter included two alternative route teachers, Rose and Greg, Jake, Jaime's mentor and a veteran teacher of ten years, and Jaime.

Mendel Middle School is located in a suburban area and has just over 1,000 students. The 2004 – 2005 student population was ethnically diverse, composed of approximately 41% White, 39% African American, 16% Latino/a, 4% Asian American, and less than 1% American Indian. In addition, 46% of students were identified as coming from families with "Low Income," 5% of students were classified as "Limited English Proficient," and 15% as "Special Education" (*http://www.doe.state.de.us/).

Of the total instructional staff (including librarians and pupil support positions), almost three quarters were female (n = 45, 74%), 69% are White, 27% African American, and 4% Latino/a. The student to teacher ratio was approximately

17 students per teacher. The school's online profile reported that approximately 22% of the teaching staff had less than three years of teaching experience, 34% had 3-9 years, and 31% had 10-19 years experience. The remaining 13% of teachers classified as serving 20 years or more. Of the 61 teachers, approximately 86% are classified as "Highly Qualified" and 14% as "Qualified" according to the "No Child Left Behind" Act. The school's DSTP scores were such that the school received the status title of "Academic Watch – Under School Improvement" (*http://www.doe.state.de.us/).

First Year Teaching Structures

Two primary structures impacted Jamie's first year teaching practices. I will identify and describe these structures in terms of their elemental schemas and resources and their effects on Jamie's teaching agency. Jamie's coteaching experiences functioned as a significant structure, particularly affecting her first year planning practices and associated interactions with fellow science teachers. Jamie particularly adopted the schema of collaboration and the material resources that she garnered during her coteaching experiences. The second of these structures was her school's general teaching environment. Jaime identified her school administration's desire to make differentiated instruction a primary focus of the teaching staff. Jaime described that despite such a strong influence to employ this form of teaching practice, the school principal did not provide adequate support for teachers to integrate the practice into their repertoires. This lack of support was combined with the fact that almost a quarter of her school's teaching staff had less than 3 years teaching

experience. Thus, the lack of human and material resources was a prominent theme throughout Jaime's descriptions of her teaching experiences at Mendel Middle School. In addition, Jamie's mentor, Jake, represented another instance in which Jaime's access to human resources was constrained, his absence being particularly significant during the seventh grade science teachers' group planning sessions.

Thus, the lack of administrative support regarding the integration of differentiated instruction, as well as her lack of access to her school-appointed mentor influenced Jaime's choice to incorporate the coteaching schema of collaboration into her first year teaching environment. Jaime specifically employed the practice of coplanning with the two other seventh grade science teachers. Due to these individuals' lack of teaching experiences and her comprehensive coteaching experiences, Jaime functioned as a human resource for her fellow science teachers. Through her appropriation of these coteaching elements, Jamie constructed a structure within her first year of teaching that offered a stable set of both human and material resources. Moreover, Jamie positioned herself as a stable resource that her fellow seventh grade science teachers could utilize in the development of their teaching repertoires. Her central role was explicitly identified with her fellow science teachers deeming her a "veteran" science teacher. The coteaching model's theoretical underpinnings, namely the utility of group collaboration to produce resources, impacted Jamie's choice to incorporate the schema of collaboration as a method to develop stable resources for both her fellow seventh grade science teachers and her.

General Teaching Environment

Jaime's general teaching environment represented a structure that affected her teaching agency during her first year of teaching. Within the general teaching environment of Mendel Middle School, Jamie identified her school administration's emphasis for the use of differentiated teaching instruction. While there was a specific administrative demand for the use of this schema, Jamie described the lack of supporting resources, stating:

> It's not a great environment. They're disorganized. A lot of the teachers are unsatisfied. New teachers feel unsupported and kind of thrown into things. And veteran teachers are getting frustrated. So you don't always even have another teacher that you can go to that will be very encouraging (Jaime Interview, 4-01-05).

Jamie immediately identified a lack of support and organization regarding the administration at Mendel High School. In addition, she identified a difficulty in obtaining feedback regarding her teaching practices. Jaime described her school administration's lack of support and feedback about how her instruction of her reading class was proceeding. She stated:

> I have no idea if I'm actually doing what the school expects me to be doing [be]cause they never really told me what they expected me to be doing with the reading class. [It was just like,] "here you're teaching reading...have fun!" So [I teach reading] one period a day. [It's] not fun, but the science classes I enjoy. (Jaime Interview, 11-6-04).

Reflecting on her initial experiences with her administration, Jaime described a school environment that was not only disorganized, but unresponsive and aware of the needs of their teaching staff. She stated that:

> I don't think the principal has a lot of classroom experience. I mean he was a teacher for a few years, but I think [he taught] driver's ed. or something that's totally different, so he doesn't really know what's going on. I mean he's one of the one's who's really pushing for

> differentiated instruction and he doesn't know what it entails, so he can't give us the support we need. To be honest, from what I heard, he's one of the reasons we have so many new teachers this year. I was told the teacher whose classroom I'm in now got so upset that she was like, "I resign." He gave her three hours to get out. That's what I've heard. I don't have a whole lot of contact with him. The assistant principal who's in charge of the science [department is] really good. He's very supportive, but he's very busy because he does get a lot of responsibility put on him (Jaime Interview, 4-1-05).

In addition to the issues of her administration's lack of support, Jaime also identified the negative impact that the school administration's mismanagement of a new course scheduling software program had on her own, as well as other educators, teaching practices at the start of the school year. Due to the technical difficulties associated with this program Jamie and her fellow teachers had to alter their teaching schedules, as well as their lesson plans for their classes. Jaime described the impact of the scheduling problems in the following passage:

> There was a lot of adjustment just getting used to a new school. [Then] they got a new scheduling program that the state staring implementing and it didn't work very well. So for the first two weeks of school, every couple of days they'd say, "okay just keep your homerooms all day, stay on teams, and do what you can while we try and fix the scheduling" because there were so many problems (Jaime Interview, 4-1-05).

The irregularity of class schedules affected Jaime's teaching practices such that she was unable to progress into her course content. She described these irregularities in scheduling and their affects on her teaching, stating:

> [I] couldn't really get into content very early on, I mean I did some of the basic safety stuff, but the way my team handled it is we kept our homerooms, which is about 32, 33, 34 kids and they just rotated amongst the teams. So I'd have them for about an hour and a half at a time, which is a long time for seventh graders especially when you are doing the basic intro stuff, like safety. There's not that many fun

> activities. I mean I tried. I did laboratory equipment bingo and stuff (Jaime Interview, 4-1-05).

Thus, the initial disruptive effects caused by the scheduling difficulties combined with a "disorganized" school administration did not afford Jaime a set of stable resources, both human and material, that she could utilize in developing her teaching praxis, yet alone integrate differentiated teaching strategies into her repertoire. Jaime also recognized that there were a significant number of new teachers to Mendel Middle School. With almost a quarter of the school's teaching staff considered novices, the availability of human and material resources, in the form of teachers with several years of teaching experience, were limited.

Jamie's feelings of being unsupported were shared by two other beginning, seventh grade science teachers, Rose and Greg. Ultimately, Jamie chose to apply her knowledge of group collaboration as a means of addressing the issue of the lack of resources amongst she and the other beginning, seventh grade science teachers. The notion that collaborating with other teaching professionals afforded both new teaching knowledge and practices was a central theoretical tenet of the coteaching model (Roth & Tobin, 2005). Jaime chose to incorporate the schema of collaboration into her first year teaching repertoire, specifically in the practice of coplanning. As she coplanned with Rose and Greg, Jaime recognized that these beginning teachers regarded her as a veteran science teacher, due to her varied teaching experiences as relative to theirs. As a result of her appointed status as a veteran teacher, Jaime was able to function as a resource for her fellow science teachers, but also acknowledged the resources present in their ideas and experiences. Her "veteran" status was solidified by the fact that Jake, Jamie's mentor, and the most experienced seventh grade science teacher, chose

not to coplan with the other science teachers, choosing leaving school grounds immediately after classes ended.

Science Department: Veterans and Non-veterans

> The biggest thing with my science department is [that] we're very new. We have four eighth grade teachers, four seventh grade teachers, one eighth grade TAM teacher, and one seventh grade TAM teacher. We have one veteran seventh grade teacher that's been there for ten years. We [have] one veteran eighth grade teacher who has been there for two years. [He] is our department chair [and] this is his second year. Our department chair still needs to be mentored himself because second year teachers are still required to be mentored. He's very capable as a department chair, but I mean he's only in his second year of teaching. The teacher who's been there for ten years [is a] very good teacher but doesn't have the time to do all the department chair activities. So, of the other new teachers they pretty much treat me like a veteran because I'm the one with the most experience. Most of the other [science teachers] are alternative route (Jaime Group Interview, 11-6-04).

Within her science department, Jaime described her fellow science teachers in terms "veterans" and those who were not. Jamie's mentor, Jake, and Bob, an eighth grade science teacher who served as the science department chairperson, represented the two "veteran" teachers of the department. Of these two veteran teachers, Jake had the most teaching experience with ten ears of teaching as compared to Bob's two years. Regardless of his experience Bob held the role of the department chairperson. Jaime identified that while her department chair was a very competent department director, he was somewhat overextended in terms of the quantity of activities in which he participated as head of the science department. Oftentimes he was unavailable as a resource for Jamie and the other beginning science teachers due to his commitments as department chairperson. The lack of human resources, in the form of experienced teachers, was further felt due to Jake's absence after the end of classes. Jamie

identified that Jake was typically available during school hours, particularly during her planning period, but his choice to leave directly after school affected his ability to function as a resource for Jamie.

As a result of both her mentor's and department chairperson's absences during after school planning meetings, Jaime recognized that her fellow seventh grade science teachers were her primary set of human resources. Thus, Jamie and the two other beginning teachers identified their collective need to obtain feedback concerning their current teaching practices, as well as establish a setting in which they were able to share their resources, experiences teaching at Mendel Middle School, and discuss ways to incorporate new teaching practices into their teaching repertoires. As a result of her peers' need for assistance in planning their courses and their conferral of Jamie to the status of a veteran teacher, Jaime chose to enact the role of an experienced teacher during the coplanning sessions. She specifically embraced her veteran status by providing the other beginning teachers with specific ideas, resources, and examples of her teaching practices that they could utilize during their lesson planning while still adhering to their school's curricula.

Collaboration: The Practice of Coplanning

Due to her role as a veteran teacher amongst the other beginning seventh grade teachers, Jaime functioned as the group leader during initial planning meetings, providing them with material resources that they could incorporate into their teaching repertoires. Her veteran status became further solidified by Jake's absence as he typically left school right after classes ended, espousing Jamie's role as a teacher leader both within the planning group and science department. In the following passage, Jamie specifically described her teacher leader role during the start of her

teaching career at Mendel Middle School. She identified how her assessments were adopted by both her mentor, Rose and Greg, and their associated seventh grade TAM teacher.

> I pretty much do the seventh grade planning. Every test that the alternative route teachers have given has been one that I've made. The TAM teacher had passed [the tests] out to them saying, "this is what Jamie did, you can do something similar." The veteran teacher [Jake] has decided he likes a lot of my tests and activities better than his own, so he's replacing the activities in his binder with mine (Jaime Interview, 11-6-04).

Jamie's choice to share her course assessments with the other teachers endorsed her role as a veteran teacher, as well as laid the ground work for future collaborative planning meetings amongst she and the two other seventh grade science teachers. She recalled the nature of her rapport with Rose and Greg, the two alternative certification route science teachers in the following passage:

> I feel like I have more of a sharing back and forth with the two alternative route teachers because they are new at this. They're struggling as much as I, more so probably because I've got experience. You know we'll stop by each other's rooms and say, "hey I came up with this lesson. It worked really well for me, here try it if you want." There's not [that] much support, we had close to thirty new teachers in the building. That's a lot. The two alternate route people and I and the inclusion teacher we all go to the kit trainings together. So we talk a lot there. We tend to get through the activities pretty quickly because we all have some science background and a lot of the people at the kit trainings don't. So we tend to talk some there. Rose, she's one of the alternate route people; [we] usually drop by each other's rooms. We take turns at least three times a week after school, we'll stop by, talk about what we're planning on doing, what problems we're having, stuff like that. A lot of the times Greg, the other alternate route, will stop by [also] (Jaime Interview, 4-1-05).

As their professional teaching relationships developed, the interactions amongst Jamie, Rose, and Greg became more regular. As they engaged in their group

coplanning sessions, Jaime further acknowledged the respect that she gained from her fellow teachers by their requests for lesson guidance. In the following excerpt, Jaime described her central role in planning a unit that she had never taught before and in which she had not been trained. She stated that, "it was funny because everybody started coming to me on the watersheds unit. Like, 'What should we do Jaime?' And I was like, 'because I've done this before. Okay' (Jaime Interview, 6-12-05). Thus, despite her lack of experience teaching the watersheds unit, Jamie coplanned with the group, constructing their curriculum for the unit. Jaime identified that:

> The other new teachers they pretty much treat me like a veteran because I'm the one with the most experience because most of the others are alternative route. I'm like a veteran pretty much…they treat me like a veteran. I'm supposed to have one of the TAM teachers in my classroom because they have a homebase classroom but they moved it to another teacher because they were like, "Well, we don't think you really need an extra hand in here" (Jaime Interview, 11-6-04).

Jamie's ability to function as an effective science teacher was immediately recognized by her teaching peers. She was able to address their initial teaching needs by providing them with guidance in their teaching and planning practices, as well as with teaching materials from her personal resources during coplanning meetings. As the school year progressed, the groups' planning relationship evolved such that all teachers were able to share resources and offer advice from their teaching experiences. Jamie described the change in her planning relationships with her fellow science teachers in the following passage:

> In the beginning it started out [that] I was just giving them something to start off. They had no idea where to start in the beginning of the year. Even with the lab safety stuff, they were like, "what do I need to cover with them." So it started off me just giving them stuff and once

> they got more comfortable with it, it got more of a sharing back and forth sort of thing (Jamie Interview, 4-1-05).

A Lack of Collaboration: All Teachers Not Included. Jaime's interactions with her fellow science teachers typically involved collaboration amongst she and the two alternative route teachers. Jamie also had the opportunity to interact with other science teachers, but declined to do so. Within her TAM classes, Jaime regularly met with her inclusion teacher, but identified a general lack of responsibility in planning for their class. In addition, the inclusion teacher implemented management strategies that escalated classroom behavior issues, rather than remediating the problems and returning the focus of the class to the day's lesson topic. Jaime stated that:

> She focuses more on classroom management than helping the students that she's there to help. Her classroom management style does not work with these kids. She sees them doing something and she yells "So-and-so, sit down!" very loudly, partially confronts them, [then] very outright, and then the kids fight back. But I can go up to the same kid and say "Hey, you need to get started, if you take your seat we can do that." And they're like, "Ok, Ms. Beck, I'd be happy to. She spends half the period getting into power struggles [with students]. She insists that I send her lesson plans all the time, which I do, every Sunday. I send her my lesson plans for the week, and then every day, she comes in saying "What are we doing today?" She doesn't know the science content. She tells them wrong information all the time that I have to correct. She's been to the kit trainings, but I don't thing she's picked much up from them. She obviously isn't studying the content at all at home. She focuses so much on classroom management, We were doing a reading activity yesterday, and I had to tell her, "This student" the one that can barely spell his own name, "he needs help, he cannot write, he cannot read." And I had to tell her to pull him aside and help him because she was helping students that have no problem with reading, but are just being lazy (Jaime Interview, 11-6-04).

Within this passage, Jaime identified a lack of coresponsibility regarding her inclusion teacher's preparation for their TAM science class. As the school year progressed she further described difficulties in their teaching relationship, citing major issues related to her comprehension of their students' learning abilities. As a result, Jamie chose not to collaborate with her when planning for their class. Jamie stated:

> The inclusion teacher doesn't always come to class prepared. That's the biggest thing. She asked me to print her lesson plans, but then she doesn't read them. So she comes in everyday saying, "what are we doing?" She jumps ahead sometimes or she goes into too much detail. She wanted to go into deep detail on the cell theory and I was like, "that's not really so much in the standards at this age level." She's taught [science] before and she really likes like biology and stuff, but again she tries to go into too much detail on things that we don't really want to go into detail. I mean if a [student] brings it up, I'm more than happy to talk about it, but I don't want to give them a lot of information they don't need because it's just going to confuse them and overwhelm them (Jaime Interview, 4-1-05). She's not very familiar with the standards. She gets very frustrated with me because she always asks, "can I help you prepare something," mostly. She tries to help out a lot. And I've tried to let her whenever possible, but when it comes to actually making up materials, teaching materials, I usually say, "no I've got it," which I hate doing because I'm used to the coplanning. I would love to have a hand making the stuff, but like she once made a "Jeopardy" game and I declined to take it because I liked Power Point "Jeopardy" we did at Biden High School. I used that a couple of times, but she doesn't, you know she laminates it and makes magnets that stick on the board. But I was glad I did [use the Power Point version because] once I heard her using it with another teacher and some of the questions were like, "what was the title of the lab that we did with corn syrup and oil and water. She doesn't pick out what's important all the time, which confuses the kids. There were other times we did labs and she was actually giving them incorrect directions. I said [to her], "that's incorrect" (Jaime Interview, 4-1-05).

Jaime's choice not to collaborate with her inclusion teacher was a contradiction to her other collaborative interactions with Rose and Greg. Although the inclusion science teacher offered to help Jaime prepare materials for their class, her lack of responsibility in reviewing lesson plans, ineffective classroom management techniques, and use of ineffective teaching techniques gave Jaime cause not to not collaborate with her. The inclusion science teacher functioned as an impediment (anti-resource) in the way of Jaime's teaching practice. Jaime enacted her teaching agency by choosing not to collaborate with her inclusion teacher. This action displayed Jaime's identification of a teaching structure that was not effectively expanding her teaching repertoire. Jamie's lack of access to her mentor Jake represented another instance in which Jamie lacked a human resource. However, in this instance Jake was the individual who chose not to coplan with Jamie.

A Mentor, Some of the Time

Jaime described Jake as a reliable resource that she utilized to address various issues regarding her teaching practice. She commented on her mentoring relationship with Jake, stating, "He's a veteran science teacher, so he is a big help. Any time I need him I go to him" (Jaime Interview, 4-1-05). Clearly, Jamie valued Jake's expertise and experience in teaching science. However, his absence after school due to family commitments stained their mentoring relationship. Jamie acknowledged his absence and its effects in the following passage:

> My planning period is during [his] Science Olympiad class. They work on the different events and stuff. He's pretty free during that period, so I usually stop by quite a bit. He asks me to stop by, partly because he's

> trying to coerce me into giving up my planning period to help. He does come and check up on me in the mornings and in the afternoons before he leaves. [He] stops by [and] asks me if I'm having any issues. We do meet once a week to check up on everything. And anytime I run by with questions he's always available, but like I said unless I ask him ahead of time to be available in the afternoon he's usually out of the building at 2:40, so I have [found] myself doing quite a bit of the planning (Jaime Interview, 11-6-4).

It was during this after school time period that Jaime, Rose, and Greg met to discuss their current teaching practices and plan for future lessons and activities. With Jake absent from the group planning sessions, Jamie assumed the role of the primary veteran, seventh grade science teacher due to her coteaching and substitute teaching experiences. Jamie still valued Jake's advice, but recognized that he was a resource which she could utilize when needed, stating that:

> He's been teaching for ten years. He's pretty set in his ways. I mean he's got his curriculum, he's willing to share it, but he doesn't really discuss different ways of doing it as much because he likes the way he's been doing it for ten years himself. And you know if I say, I was thinking about doing this, he'll give me his opinion whether he thinks it will work and improvements (Jaime Interview, 4-1-05).

Jaime acknowledged Jake's expertise as a result of his teaching experience, but also recognized that his absence after school did not offer her a resource upon which she could depend, further describing his absence, that "He doesn't really spend a lot of time after school. He's a very good teacher, he's my mentor, and anytime I need help he's there, but he usually leaves at 2:40 on the dot or a few minutes before if he can sneak out without the principal seeing him" (Jaime Interview, 11-6-04). Thus, do to the lack of access to her mentor, and likewise a human resource, Jamie chose to collaborate with Rose and Greg. The collaborative planning efforts amongst Jamie and these two other beginning teachers provided each with a stable set of resources,

both human and material, that they could utilize in developing their individual teaching repertoires.

Summary: Structures Affecting Jaime's Teaching Agency

Within Mendel Middle School, specific factors affected Jamie's teaching agency during her first year of teaching science. Specifically, the increased number of inexperienced teachers within the school, an ineffective scheduling program, the disorganized school administration, Jamie's mentor, and her fellow science teachers represented resources that affected her teaching practices in specific ways. Jamie's use of these resources was consequently affected by her school administration's emphasized integration of differentiated instructional teaching practices. The relative inexperience of almost a quarter of the school's teaching staff impacted the degree of teaching support available for Jaime and the other beginning teachers. Due to a limited number of experienced science teachers, Jaime chose to apply the teaching strategies that she gained from her coteaching experiences to her first year of teaching. The disorganization of her school's administration, as well as their limited awareness of the needs of the schools beginning teachers represented additional factors that influenced her embodiment of the role as a veteran science teacher. Moreover, her ability to reflect on the needs of her students, as well as on her teaching practices afforded Jamie the means to overcome the lack of teaching supports within her first year of teaching.

In addition to the lack of support from the school teaching body, Jamie's relationship with her mentor, Jake, did not prove a stable resource in addressing her attempts to further develop her teaching repertoire. Due to the lack of access to Jake, Jamie chose to collaborate with the other seventh grade science teachers. Initially, the

arrangement addressed the curricular needs of the two alternative route teachers, but subsequently developed into mutually collaborative planning meetings. During these coplanning meetings Jamie and her fellow science teaches shared their teaching experiences, offered advice regarding one another's teaching practices, and shared material resources.

Jaime's choice to collaborate with Rose and Greg highlighted the usefulness and importance that she attached to the practice of coplanning. It is interesting to note that the other two practicing teachers deferred to Jaime's experience even though they were actively teaching on a daily basis. By transferring her knowledge and experiences with the practice of coplanning to her first year teaching situation, Jamie was able to function as a human resource for Rose and Greg, ultimately providing them with teaching advice from, as they identified, a veteran science teacher.

Within her coplanning meetings with Rose and Greg, Jamie was afforded respect for her teaching experience, as well as an environment in which she could share her teaching practices and obtain feedback regarding their improvement. Despite their lack of teaching experiences, Jamie respected her teaching peers' lesson designs and feedback regarding her teaching practice. The lack of coresponsibility between Jamie and her inclusion teacher directly contrasts this previous example of collaboration. This disconnection resulted from Jamie's perception that her inclusion teacher did not adequately engage in lesson planning activities. In addition, Jamie identified her use of ineffective classroom management and teaching techniques. The corespect shared amongst Jamie, Rose, and Greg encouraged these teachers to acknowledge the responsibility that they shared with one another, such that they were able to reflect on their individual teaching practices, actively participant in the

planning meetings, and to share their teaching resources. Thus, their coplanning meetings fostered an environment that utilized the concepts of corespect and coresponsibility in mutually developing the teaching practices of each participating teacher. Ultimately, Jamie's introduction of the coplanning practice afforded she, and the other two beginning seventh grade teachers a support system that addressed their teaching needs.

Jamie's first year teaching scenario conveyed the effectiveness of the coteaching program in preparing beginning teachers to teach, as well as to collaborate with their fellow teachers. Jaime's prior coteaching experiences must be taken into account when discussing her actions as a beginning teacher. It seemed apparent that the community-like environment, present within the coteaching model of teacher preparation, afforded Jaime with the necessary resources to assume her appointed role as a veteran teacher during her first year of teaching. Moreover, it appears that Jamie's initiation of the practice of coplanning amongst the seventh grade science teachers provided each of these individuals with innovative and useful teaching practices, as well as a sense of group cohesion that reinforced the schema of collaboration and the generation of teaching resources. Thus, the emergence of this practice was evidence of Jamie's teaching agency, such that she responded to her administration's focus on developing teaching practices that addressed students' individual learning needs.

Through the use of the collaborative schema and the resources from her coteaching and first year teaching experiences, Jamie employed her agency to establish a structure that was attuned to the general teaching environment of Mendel Middle School, as well as a mode of integrating new teaching practices and resources

into teachers' repertoires. Examining the structures surrounding her experiences as a first year science teacher, primarily her coteaching experiences and her general teaching environment at Mendel Middle School, allowed for an expanded understanding of Jaime's agency, specifically how it was impacted by these structures and simultaneously enacted during her first year of teaching.

Chapter 6

FREEDOM OF CHOICE: TEACHER AND STUDENT SUPPORT

Pat and I discussed his first year of teaching three times over the time span of nine months. Pat participated in the group interview session 3 months after the start of the school year, providing the group with details of his first few months of teaching, as well as the nature of his teaching environment. During these months, Pat allowed me to observe his classroom twice for the entire school day. At the conclusion of each day, Pat and I initially conversed about what had occurred in some of his classes, as well as about his students and teaching practice. During the initial group meeting, Pat identified himself as the only chemistry teacher within his high school. Despite his seemingly solitary teaching situation, he described the existence of a support network that stemmed from his professional, as well as social relationships with his science department members.

The social and collaborative nature of the coteaching program encouraged the coteaching interns to utilize other coteachers as resources to expand their teaching agencies and likewise their teaching repertoires. Pat chose to employ this schema of collaboration during his first year of teaching, by communicating with chemistry teachers within both his school and the surrounding state county about various chemistry activities, modes of instructions, and issues related to teaching within Beagle High School. Through his application of the schema of collaboration and his utilization of various resources within these previously mentioned environments, Pat

functioned not only as an effective chemistry teacher, but also as an active member of his high school's science department.

Pat

At the start of his undergraduate college career, Pat attended a community college on the western coast of the United States. He completed the requirements for an Associate's degree. Pat then obtained an athletic scholarship to attend the University. It was at the University that Pat declared his major in chemistry education and during the summer session breaks, participated in summer college programs as a chemistry teaching assistant. He enrolled in the science methods course during the fall semester of his fifth year as an undergraduate and subsequently participated in the coteaching model of student teaching during his spring student teaching practicum. During the spring field placement, Pat and I cotaught an inclusion environmental science course in conjunction with our cooperating teacher and inclusion teacher. In addition to the environmental science course, Pat cotaught chemistry and 4 coordinated science II courses, one of the latter being an inclusion course.

Coteaching Experiences

Pat's experiences with coteaching afforded him the opportunity to function as an active member of the communities of practice formed during both his science methods course and his student teaching experiences at Biden high school. These actions included his mutual engagement in lesson planning and instruction, generating resources (shared repertoire) that he and his fellow coteachers applied to their individual teaching practices (joint enterprise) (Wenger, 1998). Pat was one of three chemistry interns who planned unit and lesson plans, solo and cotaught microteaching

lessons, and participated in group cogenerative dialogues during the University's fall semester science methods course. The science methods course functioned as the initial environment in which Pat focused on continuing to construct his teaching repertoire and identity as a chemistry teacher, as well as establishing social relationships with both his fellow science teaching interns and Pam, one of his future cooperating teachers. Midway through the science methods course Pat identified coteaching's utility as a preparatory teaching model through his observation of a variety of teaching styles. Reflecting on his experiences within the science methods course he stated:

> It's been good. I get to see the different teaching styles. It's weird, because no two teachers are the same. I'll observe one and be like, "Yeah, I like that about it, but that's not me. I like the way other people do it, but that's not me. So, it's kind of weird. Finding out, I guess effective ways of teaching, but also I haven't seen effective ways to go that have my personality or my twist on it. So that's, that's going to be an interesting thing (Pat Interview, 11-17-03).

From his observations of other teachers' styles, Pat quickly identified the resources present in his fellow coteachers. Pat's experiences with the coteaching model during his science methods course afforded him the opportunity to construct a teaching style that would accentuate his perceived identity as a chemistry teacher.

Pat described the applicability of the resources afforded to him from his coteaching experiences in the following account. He specifically described the teaching perspectives of his cooperating teachers and their role in his choice to construct and employ a mode of classroom management during his first year of teaching.

> The whole thing with the classroom management I think like, it was weird, because I was bouncing from, from Pam to Tim to Vincent and so it was like whenever I talked to [a student] in that class, I mean in

> Vincent's class I had to do it by Vincent's guidelines, Tim's went by Tim's, and Pam's by Pam's. Now, [during my first year teaching at Beagle High School], I can pick and choose whatever I want to do. My kids know not to talk up in my class because I'll call them out on it (Pat Interview, 11-6-04).

While it seemed that Pat's ability to enact his own style of classroom management during student teaching was limited, he was able to capitalize on his coteaching experiences by synthesizing these management techniques with those of his own teaching style to effectively manage his first year classrooms. He further described the utility of his coteaching experiences in the following passage:

> I don't know that I missed out on anything. I think, if anything, [coteaching] helps you to work better with others and I think that's a really good thing. People are in and out, it is kind of nice…you get your solo time, you get your coteaching time. Like I said, you don't really get the full experience of doing it on your own. And that's a step that—I think that would be the next step. As far as the old student teaching model where you observe and then you teach, I like this one how it's like you coteach and then you work [solo]. Because by the end, Pam was phasing out, almost, she was allowing us to handle more. It was a lot of fun. It was still coteaching but, she was kind of phasing out and we would take the lead on more things. It would be like Chris and I going back and forth, or Sam and I going back and forth, and then Pam would jump in as well. But usually we had the lead in it (Pat Interview, 5-18-04).

Pat's coteaching arrangements functioned as a primary structure that critically affected both the construction of his teaching repertoire and associated practices. The collaborative nature of the program positioned Pat as a member of a teaching community that provided him with a variety of teaching resources applicable to his content area. Pat was thus able to transfer the pedagogical content knowledge and general teaching strategies from his coteaching experiences and apply them during his

first year of teaching. In the subsequent passage, Pat described the teaching benefits he gained as a result of his membership within his coteaching group.

> I definitely pulled a lot from other people, but I was so ready. I mean with planning with somebody the else the entire time, as far as the coplanning goes you got three different point[s] of view, three different ways to do it. I felt like I came in with three times the amount, the amount of stuff that I needed, which was awesome. I had three different ways of teaching it. All these different perspectives and different strengths of each person, you try and rope them all together. That's the thing I loved about the coteaching because my explanation might get ten kids. Tim's explanation might get ten. Sam's or Chris' might get ten. You know, so that's forty kids right there. And that's the whole class. Whereas if I just used mine [I'd only reach] one fourth (Pat Interview, 5-3-05).

Pat's coteaching experiences significantly influenced the teaching strategies he employed in his first year chemistry classes, classroom management techniques, and his confidence in his teaching ability. The experience of teaching with a diverse set of teachers equipped Pat with both a vast array of resources and a schema of collaboration that he utilized in his teaching first year of teaching. In the subsequent excerpt, he identified the value of the collaborative teaching environment and its effects on his teaching philosophy and first year teaching practices.

> Actually coteaching made me more open to asking other people for ideas. I had a better sense of how somebody else would shoot [down or] not shoot down an idea, help me construct [the idea], or be open to having two people build a lab as opposed to one. It just made me more open to asking people for advice and taking the advice (Pat Interview, 7-21-05).

Pat's participation with the coteaching model of teacher preparation provided him with a variety of material and human resources that he utilized in constructing his teaching repertoire and identity as a chemistry teacher. The effects of these resources

and the collaborative schema afforded Pat the opportunity to observe other teachers' teaching practices, as well as reflect upon his own teaching practice. Pat's coteaching experiences shaped his first year teaching agency particularly in his choice to collaborate with other teachers within his science department, as well as throughout his state county. Pat also identified the use of reflecting on his first year teaching practices and discussing his thoughts with other teaching professionals. Thus, Pat's choice to apply the schema of collaboration within his first year teaching environment enabled him to develop a set of human resources that he utilized to improve his first year teaching practices.

Beagle High School

After the completion of his student teaching practicum, Pat obtained a position as a high school chemistry teacher at Beagle High School. As the only chemistry teacher at the high school, Pat was responsible for teaching all of the chemistry courses offered at the school. These included CM (Certificate of Merit), honors, and AP (Advanced Placement) chemistry. Pat's science department consisted of 7 science teachers and offered courses including biology, chemistry, zoology, and biochemistry. Pat's county school district did not conduct state standardized assessments in chemistry (*http://www.marylandpublicschools.org/MSDE).

First Year Teaching Structures

Two primary structures impacted Pat's teaching agency during his first year of teaching. I will examine these structures and identify how they affected Pat's teaching agency. Pat's coteaching experiences represented the first structure that affected his teaching agency, specifically in the development of his teaching repertoire and

identity. From his coteaching experiences, Pat applied his knowledge and experiences with the schema of collaboration to his first year of teaching at Beagle High School. The second structure that affected Pat's teaching agency was his school's general teaching environment. Within his general teaching environment, there existed an intense focus on providing students with a supportive learning environment. The focus on attending to student's educational and personal needs was a cultural schema that Pat identified at the onset of the school year. In addition, he described a variety of resources that he utilized to address this cultural schema, as well as support his teaching practices. Pat's science department and mentors represented the primary set of human resources that affected his teaching practice. Pat identified additional resources that affected his teaching practice such as the county chemistry curriculum (guidelines), fellow chemistry teachers throughout the county, and the social and cultural capital that he forged amongst he and his students.

The combination of Pat's coteaching experiences and the general teaching environment at Beagle High School represented structures that affected his teaching agency. Pat enacted his agency by applying his knowledge of and experiences with the schema of collaboration into his first year teaching environment at Beagle High School. In accordance with the dialectical nature of the structure | agency framework, the structure of his general teaching environment affected his teaching practice and were thus impacted by his teaching actions. In particular, his effect on this structure was such that student enrollment in chemistry classes at Beagle High School increased significantly for the subsequent school year. Before one of our interviews, Pat described a discussion about the increased enrollment that he had with Anthony, his department chair. He stated that Anthony described the increased enrollment as a

result of the engaging teaching methods that Pat used in his chemistry classes. In conjunction with the increased chemistry enrollments the science department chairperson, Anthony, took on the responsibility of teaching a second set of chemistry classes. Although his content background was in physics, Anthony identified that he would follow Pat's planning of the chemistry courses and model how he taught the content.

I began investigating Pat's first year teaching agency by examining his coteaching experiences and the significance that he attributed to the practices and theoretical underpinnings associated with the program. In the subsequent section, I will examine the impact that the general teaching environment at Beagle High School had on Pat's teaching agency. In particular, I will examine the cultural schema of addressing students' learning and personal needs, as well as the resources present within Pat's general teaching environment. I begin by examining Pat's descriptions of his science department and the effects they had on his teaching practice. The subsequent sections include descriptions of other resources present in Pat's general teaching environment, as well as how social and cultural capital amongst Pat and his students affected his teaching practices.

Science Department

An issue of particular importance to the Beagle High School science teaching staff was the need to convey a sense of involvement and care in the both students' academic and personal lives. Pat described his teaching philosophy in conjunction with his science department's perspective on the students' learning abilities in the subsequent passage.

> The stress is on getting the kids, there's no [stress], it's more of an open teaching style. [The science department are] a crack up. They're hilarious. It's the most student centered environment I've ever seen. Everybody here has the notion that the kids are inherently good. The kids are good; it's just sometimes they get on the wrong track (Pat Interview, 5-3-05).

The significant emphasis on attending to students' educational and emotional needs impacted both Pat's teaching practices and identity as a chemistry teacher. Thus, while Pat's science department did not identify precise teaching methods that he should employ in his chemistry courses, the overall departmental attitude was one that encouraged the use of teaching methods that would engage students in course content. This perspective on teaching provided Pat with the opportunity to utilize teaching practices that were innovative and interesting for both he and his students. Moreover, the science department's community-like environment enabled Pat to utilize his fellow science teachers as human resources that he could use to develop his teaching repertoire. Pat reflected on his interactions with his science department during his first year of teaching at Beagle high School:

> It's always nice. Everybody's just so, everybody's so laid back. Oh, they're always willing to help you out. I mean it's one of those things where everybody's so approachable. [It is easy to] find help or to ask questions and you know it's one of those things where if you're friends with somebody it's that much easier to talk to. We're the only department that actually hangs out outside school (Pat Interview, 5-3-05).

Beagle High School's science department fostered a sense of community that was Pat found present during their departmental meetings, professional development activities, and non-academic, social gatherings. His science department represented an atmosphere in which he could express his ideas and questions regarding his teaching practices and obtain feedback from his fellow teachers. As the school year

progressed, Pat developed relationships with his fellow science teachers on both professional and social levels. These relationships afforded Pat membership into this community of practitioners ultimately granting him access to a cache of both human and material resources.

Pat utilized his membership within this community of practice by communicating with his fellow science teachers about his self-reflections of his teaching practices and issues related to teaching within Beagle High School. His membership within this community combined with his past experiences of collaborating with other teaching professionals enabled Pat to capitalize on the resources present within his science department. Thus, Pat enacted his teaching agency by choosing to engage in discussions with his science department, offer his experiences and advice concerning various departmental topics, and tap into the human resources present within this community in order to improve upon his current teaching practices.

Pat's science department functioned as resource that he utilized to address his teaching practices within Beagle High School. Moreover, it was an influential factor that emphasized the teaching staff's role in attending to students' academic and personal needs. In the subsequent section, I identify Pat's choice to address this cultural schema, particularly in the ways that he constructs his course curricula and the resources he utilized to do so.

Social and Cultural Capital amongst His Students

Pat identified that the student populations within his chemistry courses consisted of individuals who had varied motivations for taking the course. He further described his views on teaching such a diverse population of students, stating, "I take

chemistry because I'm interested in it. Kids take it because they have to. They want to do something else and they figure it looks good on an application" (Pat Interview, 5-3-05). Through his identification of the variation amongst his students, Pat acknowledged that by interacting with his students and showing his awareness of their interests, both curricular and extracurricular, as well as what was going on in their personal lives he was able to develop a rapport with his students. In the following passage Pat describes his interactions with the students in his chemistry classes and there effects on his teaching identity.

> I definitely have a different rapport with the students then I did at Biden [High School]. There's more of a father figure role there than anywhere else, they know I care for them. Half of my kids don't have both parents. A lot of the kids don't have both parents. Their parents are in prison until they're about fifteen, its just, it's a different demographic than I'm used to. It's weird. I mean it's hard to see some of the things the kids go through. (Pat Interview, 7-21-05).

The students' motivations for participating in Pat's chemistry course, as well as their personal needs were issues that Pat took into account when planning his curriculum, as well as the teaching methods that he used in his classes. He reflected on his planning practices and its impacts of his students' learning capacities in the following passage:

> I plan day by day, [well] not day by day, but like by week. Because I'll come in one day and be like you know the kids aren't understanding this as well as I need to, so I'll do a lab. I've probably done this semester, at least, at least fifty labs. The way I teach it, the things I emphasize, I don't know where the kids are going to have necessarily problems yet. So I leave a lot of room for growth or to expand on things (Pat Interview, 5-3-05).

Pat's choice to alter his planning practices in accordance with his students' learning progress displayed his acceptance of the cultural schema that focused on

attending to students learning and personal needs. Moreover, his application of self-reflective practice demonstrated his teaching agency; specifically in his choice to utilize resources from his coteaching experiences and those within his first year teaching environment to alter his teaching practices to meet the needs of his students. Pat was able to enact his teaching agency because of the social and cultural capital that he amassed amongst his students. In the following passage Pat described his interactions with his students and the impacts that they have had on his teaching practices.

> It's one of those where the successful teachers here, the kids know that they care about them. And they're the most successful teachers here. And it's one of those of things where the science department's probably the most successful department in the school because we're all firm but at the same time we want, we all go out of our way to make sure the kids know that they're cared for (Pat Interview, 5-3-05).

In addition to his teaching responsibilities, Pat participated as the head coach of his schools wrestling team, as well as an assistant coach for the football and track teams. As both a teacher and a coach, Pat was able to interact with a variety of students, including those in his chemistry classes and continue to build a rapport based on their academic and extracurricular needs. In conjunction with his role as a teacher and coach, Pat established a scholarship award for student athletes that were planning on applying to college. Pat identified that by placing trust in his students and giving attention to their successes in their academic and extracurricular interests, he gained their respect and ultimately motivated them to become active participants in his chemistry classes. He described a variety of techniques that encouraged his students' engagement in his chemistry courses. The following passage highlighted Pat's attempts to a stable and supportive structure in his students' lives.

> We have to work nine mandatory hours of duty. Duty is like you sit at a soccer game and tear tickets. When the kids see you there and you're at an athletic [event], or you're at a musical performance make a note of your students that are there. Make a note of it during class, what you saw. The other kids start realizing that you care about more than just their class. Not a lot of the kids care about science. A lot of kids care about their football game, and if they know that you care about that too, they make more of an effort to care about your class. And that was one thing that I really noticed. Try and find out the different programs in the school. It definitely builds rapport. If they see you outside of the class and you're actively involved in them, they'll try to be actively involved with you. Which is a great thing. It curbed a lot of problems. I never had a problem with a student that I coached, and I never had a problem with students that I went and watched. And it was just something that I noticed. If you comment on it, it's just getting involved with them, the tiniest little thing. It takes an hour or two out of a Wednesday afternoon or a Friday night and then go out on the town and do your thing. But if the kids see you, it's sold. It makes everything so much easier (Pat Interview, 7-21-05).

Pat's reflections on the effects of his interest in his students' lives demonstrated his use of self-reflective practice as a way to both address his department's focus on attending to students' academic and personal needs, as well as a means to improve upon his teaching practice. Pat's use of the schema of collaboration enabled him to view his students as resources that he could utilize in improving his teaching practice and their learning potential:

> Well as far as coteaching, where you're bouncing things back and forth, I guess it made me more willing to ask questions or give somebody else the floor and not worry so much about it. If a student answers a question, it's one of those where in coteaching you had to learn that the way somebody else was going to say it isn't always the way you're going to say it. But, it doesn't mean it's wrong. So you have to wait, see where it goes. And I find myself a lot more willing to interpret what somebody else is saying. So when my student answers a question, it might not be the way I would say it, but they've learned that you can interpret it in certain ways (Pat Interview, 5-3-05).

The academic and personal needs of his students represented significant factors that affected Pat's teaching practices and his interactions with students, both within and outside of his classroom. Pat's choice to engage in his students' academic and personal needs afforded him the opportunity to gain social and cultural capital amongst his students. Pat chose to utilize these forms of capital to enact his teaching agency, specifically in his choice to modify his teaching strategies to address his students' academic and personal needs. Pat further described the impacts of incorporating alternative teaching practices on both his and his students' learning in the following passage:

> Teaching, teaching's a game. That's just the way I see it. You [have] to attack thirty minds at the same time. And it's just, it's so fun. There are days when you want to pull your hair out, but the other days it's just like…I had some lessons where I just walk away going "you know that was probably the [most] fun lesson I've ever done. I had one where all we did was write stories. It was the best introduction to thermo chemistry that I have ever had (Pat Interview, 5-3-05).

Pat's metaphor of teaching as a "game" displayed his choice to constantly reflect on and improve his teaching practice, while simultaneously encouraging students to participate in his classes. By displaying an interest in their personal interests and connecting chemistry content to his students' lives, Pat was able to attend to his students' motivational, academic, and personal needs. Thus, through continuous reflection of his teaching practice and utilizing the social and cultural capital that he gained amongst his students, Pat was able to enact his teaching agency, modifying his teaching practices to address the learning needs of his students, as well as himself.

Despite the social and cultural capital amongst his chemistry students, as well as his departmental support for his teaching practices, Pat identified his position as the only chemistry teacher within the department left him with no other teaching

professional that he could discuss his specific content questions. As a result of this isolation, Pat chose to communicate/collaborate with a variety of chemistry teachers throughout Galapagos County in order to expand upon his current strategies for teaching and planning chemistry.

County Resources: Chemistry Curriculum and Teachers

Since Pat was the only chemistry teacher at Beagle High School he did not have the same set of resources, namely fellow content teachers, as would a biology teacher at Beagle High School. Pat describes his initial experience being the only chemistry teacher at his school.

> I kind of went from the coplanning and the coteaching to now I'm the only chemistry teacher in the school, so the only person to talk to is up at Finch High School. We just bounce ideas off of each other…Oh yeah, cause we're the two big lab guys. It's like talking with Tim (Cooperating teacher from student teaching) (Pat Interview, 11-6-04).

After being at Beagle High School for a few months, Pat forged stable lines of communication with other chemistry teachers throughout the county. He initially gained access to these teachers through a professional development workshop required by his school. Pat subsequently identified that it was within these professional development sessions that he shared activities and techniques for teaching chemistry. Pat recounts his interactions within the professional development sessions in the following excerpt:

> We'll all talk. We'll all throw ideas back and forth. They've all been around for a while, [teaching in Galapagos County]. One of our professional developments was sharing different strategies used for teaching. [One example given during the professional development workshop was having students write a story from keywords.] You tell a story; you just give [the students] the key words [and tell them],

> "okay write a story about this stuff." Some of the stories you get. So, a lot of stuff comes from other places (Pat Interview, 5-3-05).

The Galapagos County chemistry guidelines also impacted Pat's interactions with his fellow chemistry teachers within the County. The chemistry curricula that Pat followed were designed as a set of guidelines to direct chemistry educators to include core chemistry concepts that were crucial for a student's comprehension of chemistry in their course curricula. Since chemistry was designated as an elective course within his school county, there were no state assessments associated with the subject. Ultimately, the county chemistry curriculum functioned as a resource for Pat, in that it directed Pat's curricular planning, but did not restrict him to teaching according to a set of specific objectives. Thus, Pat was able to choose how he would organize his course curricula in order to address the core chemistry concepts while adapting the curricula to his students' particular learning needs.

In addition, the nature of the county curriculum afforded Pat the opportunity to plan his courses in ways that that would complement his style of teaching. He described his feelings about the county curriculum in the following passage:

> I love the freedom. If I want to do a lab one day, like there have been days when I go home at night and been like, "you know, I really want to do a lab tomorrow." I'll write it up that night, go in the next morning, mix chemicals, and we're doing lab" (Pat Interview, 11-6-04).

Pat immediately identified the value of the county curriculum as a valuable resource that he could utilize in developing his teaching repertoire. As part of the county guidelines, various laboratory activities were provided to supplement the core chemistry concepts. However, Pat identified that some of the laboratories listed chemicals that were unavailable to him. Thus, while the county curriculum served as

a general resource for Pat's teaching practice, it did have its limitations. To circumvent this problem Pat chose to design his own labs that used "a lot of just very simple chemicals" (Pat Interview, 5-03-05), as well as borrowing applicable laboratory activities from the chemistry teachers throughout the county.

Pat's choice to seek out additional human resources in the form of other county chemistry teachers displayed his application of the schema of collaboration as a means to counter his content-related isolation and lack of applicable resources. Throughout the course of his first year of teaching, Pat maintained communication with these teachers, integrating their laboratory activities and teaching strategies into his chemistry course curricula and teaching practices. Pat acted agentically by choosing to collaborate with the chemistry teachers throughout his county. Thus, through his application of collaborative schema Pat was able to obtained feedback, as well as content-specific teaching strategies from his chemistry peers that supplemented the county curriculum, and served as a way to address the "student-centered" focus of his science department.

In addition to his science department members, students, and fellow county chemistry teachers, Pat's mentors functioned as a final set of human resources that he utilized in refining his teaching practices, as well as addressing his students' academic needs in his classes. I examine Pat's mentoring relationships and how his teaching agency was affected by these resources in the subsequent section.

Mentors

At the start of his first year teaching at Beagle High School Pat was assigned an official mentor, Helen. He identified that the mentoring relationship between he

and Helen was useful, specifically in that he was able to interact with Helen regarding pedagogical issues that arose in his classrooms.

> I could go ask her to come into my room and count how many times I said "um" during a lesson or how many times I called on students. Just little things that as you go through a period you don't always think about. And she'll come back and be like, "well you know what, you asked this half of the room a lot of questions, but you didn't ask this half of the room a lot of questions. You asked the front of the room, not the back of the room. The kid[s] in the back talked to each other this many times." It was really kind of cool to see, to have somebody sitting there just watching the students and it wasn't an evaluation of me, it was data that would help me out. I mean that was fun, and it makes you more aware of certain things. You could always go [and ask] for suggestions, like, "where could I put this person?" It was very helpful to have another set of eyes in the room. Plus, they could come in and tell you how understandable I'm making the material (Pat Interview, 7-21-05).

Pat identified Helen as a human resource that allowed him to improve upon his teaching practice. Furthermore, his interactions with Helen displayed his acknowledged efficacy of the self-reflective practice in improving his teaching practices. Although Pat identified Helen as his official mentor, he viewed her more as a resource that he could use when needed. Due to her position as a non-science teacher Pat felt that she did not provide him with support that was content specific.

In order to address his content needs, Pat adopted two teachers within his science department as mentor teachers. As the year progressed, Pat began to meet regularly, yet separately with Anthony and Jody discussing issues that Pat faced within his chemistry classes. Anthony's and Jody's roles as unofficial mentors and fellow science department members allowed Pat to interact and discuss issues common to their content areas on a regular basis, however, neither of the two were

chemistry teachers. In the following passage, Pat described his conceptions of his two self-appointed mentor teachers:

> I call [them] my mentor teachers…Anthony, who's the guy I was telling you about with all the preps, he's awesome. He gives me lots of ideas. The teacher next-door, Jody [is] always good for a laugh. She's very good at what she does. [She] probably has the best classroom management in school, but it's just like, with the kids who are very good, they love her, the kids who are knuckleheads, they hear [about it] because she calls them out on it. So, I would say those are more my mentor teachers than the other one" (Pat Interview, 11-6-04).

While Pat identified each of his unofficial mentors' strengths, he particularly noted Anthony's support for aiding in his attempts to incorporate new teaching practices into his teaching repertoire. He described Anthony's assistance in the following passage:

> [Anthony] was the one that if I had any questions I asked him. Or if I wanted to come up with anything I asked him. If I came up with a new idea, I had to run it by him. He would help me troubleshoot it…from somebody that's taught for like eleven, twelve years" (Pat Interview, 7-21-05).

Along with the other science teachers in the school, Pat viewed Anthony as a resource which he could utilize to support and expand his pedagogical prowess in chemistry. Anthony taught physics, biochemistry, a SAT preparatory course, and zoology. He was also the head coach of the lacrosse team. Thus, Anthony's more than 10 years of teaching experiences within a variety of content courses provided Pat with a valuable set of resources. Pat chose to utilize these teaching experiences and advice to improve his teaching practices in his chemistry courses. Pat acknowledged Jody's competency in commanding a classroom and dealing with specific school related issues. The differences in Pat's and Jody's content areas, chemistry and biology, respectively, may have been a reason for Pat's description of Jody as a resource used solely for

refining his classroom management techniques. Still, his collaboration with Jody demonstrated the high degree of value that Pat placed in her as a teaching resource.

Pat's mentors, both official and nonofficial, functioned as resources that enabled him to sculpt his teaching practice in ways which aligned with his personal, as well as the science department's schema of attending to students' needs, both academic and personal. In addition, these human resources provided Pat with the opportunity to employ the practice of self-reflection and obtain feedback regarding his thoughts on his teaching practices. Thus, Pat enacted his teaching agency by choosing to adopt Anthony and Jody as unofficial mentors. His choice to collaborate with Anthony and Jody within a mentor relationship further displayed the importance that Pat placed on the schema of collaboration as a way to further develop his teaching practices.

First Year Teaching Chemistry: In His Own Words

The following passages are Pat's self-reflections to one of my video observations of his teaching practice. I have chosen to add his comments of these video observations in order to provide Pat's voice regarding his teaching agency and the structures that affected it. His comments address the resources and schemas that were present during his first year of teaching, as well as his self-reflections of his teaching practice and its effects on his students' learning needs. In particular, I find that Pat's reflection of this lesson provided deeper insight into his identity as a chemistry teacher. The statements Pat provided represented his conceptions of what teaching chemistry meant to him as a high school chemistry teacher at Beagle High School. From my perspective, Pat's teaching practice focused on teaching his students chemistry for the content's practical application to their lives. Reflected in

his statements, were his personal motives for teaching chemistry as well as the impacts that his science department's student centered approach to teaching science had on his teaching practices.

> Chemistry is not an assessed area in the state of Maryland. With it being a college prep class I try to keep it challenging, however I pick and choose what I would like them to learn. I am more concerned with how they are thinking than how they are using a calculator. Through the first year of chemistry I focus more on qualitative chemistry. As far as reaction rates I stay away from the rate law and focus more on what happens when the conditions of a reaction change. This day was more of a collective think tank discussion or even a Socratic seminar class.
>
> I like to throw a lot of topics at the students. We focus on one concept, yet learn to explain so many phenomena in the world. This helps to bring a more conceptual thought to the class and make it more practical and useful to the students. It also aides the students when formulas and calculations are introduced to the concept to quantify it. These concepts help to bring sense to the numbers. Many chemists will say numbers don't mean anything without a unit. The same goes for numbers not backed by a concept. When the students in this class get into AP chemistry, they will better learn how their situations quantitatively affect their rates their equilibrium and their reaction in general. This is not something that many students of this age can grasp in numbers, that is why it is saved for AP, but qualitatively covered in general chemistry.
>
> I have found through my own experience, that people remember funny things. Whenever I teach I try to put a little humor in to let chemistry stick in their brains. When students remember the lines to a movie, the lines are the funny ones. That is why I tend to bring about funny situations in teaching and in the practical applications I bring about.
>
> This is also done because a concept tends to sink in and stay much better than a mathematical process. If a concept is turned into common sense then when it is brought up a year later, the concept will still be [there] and the math will have been erased from existence. That is why I teach the concept, and not the math in the fashion that I do (Pat Video Analysis, February, 2005).

Summary: Structures|Agency

The previous passages displayed Pat's reflections of a classroom video observation that I conducted when observing his classroom approximately mid way through his first year of teaching. Pat's teaching agency was primarily impacted by two structures, the first being his coteaching experiences and the second his general teaching environment at Beagle High School. The coteaching program's effects on Pat's first year teaching agency was present in his application of the collaborative schema, as well as the various resources that he had acquired during collaborative teaching experiences. This structure impacted Pat's first year teaching practices by affording him the knowledge of collaboration as a resource that could be used to refine his teaching practice. From the interviews conducted during his coteaching experiences, Pat acknowledged the coteaching model's utility as a means of affording him a multitude of resources that he used to expand his teaching repertoire. During his first year of teaching, Pat specifically employed the schema of collaboration in the form of discussions within his science department, his sharing of teaching and planning practices with chemistry teachers throughout his state county, as well as his use of his students as resources in explaining chemistry concepts and phenomena.

The second structure affecting his teaching agency was the general teaching environment at Beagle High School. This structure consisted of his science department's appropriation of a cultural schema that focused on attending to students academic and personal needs. The science teachers within Beagle High School's science department functioned as a series of human resources that reinforced the presence of this cultural schema amongst its teaching staff. Pat's inclusion in the community-like environment of his science department encouraged him to engage in the student centered cultural schema and utilize both the human and material resources

afforded to him. Pat employed his teaching agency by choosing to engage in this cultural schema through the use of various resources present within his science department community, as well as the chemistry teachers throughout the county, the county curriculum (guidelines), his mentors, and his students.

His use of the various resources present within his first year teaching environment and those from his coteaching experiences aided him in addressing the cultural schema of teaching chemistry within a "student-centered" environment. In addition, his use of these resources enabled him to expand his teaching repertoire such that he utilized practices that engaged his students in the content topics, as well as incorporated his students' voices into their classes. Pat cited his coteaching experiences, specifically his use of collaboration as a means of developing his teaching practices in ways that addressed his students' learning capacities. As a result, Pat developed a significant amount of social and cultural capital based on his attention to both their curricular and extracurricular activities and learning needs. The degrees of social and cultural capital that Pat held amongst his students were evidenced by the student enrollment increases for his chemistry courses for the subsequent school year. He described this occurrence in the following passage:

> I come up with most of my labs, [they] have to do with a lot of just very simple chemicals. Some of the ones we have, [we] are not supposed to have. The amount of calcium carbide that I have is probably beyond OCEA regulations. That's why I try and dispose of in as readily as possible. I blow a lot of stuff up. It's fun. As far as, like the impact it's had on the students. Like I told you the numbers are up [for next year]. Next year's obviously going to be bigger than this year. As far as the class, the student population's going to be bigger. As far as the percent that enrolled in chemistry, they're saying that they've never had this kind of percentage. And people are telling me it's a lot because I've made it entertaining for them. Next year I won't be [the only one teaching chemistry.] Next year Anthony, my

> department chair, is taking on two sections of chemistry. He's just going to kind of mimic what I do [because his content area is physics.] So, they'll be about a day behind me (Pat Interview, 5-3-05).

Pat's choice to utilize teaching practices that engaged his students in specific content topics, connected chemistry concepts to their lives, as well as allowed his students to provide their explanations of various lesson topics ultimately affected the structure of his general teaching environment. His effects are visible in the restructuring of the number of chemistry course sections offered by Beagle High School. Moreover, the effects of Pat's teaching agency is found in Anthony's, his department chairperson, choice to teach two sections of chemistry and plan these sections in accordance with Pat's course planning. Thus, while Pat's teaching agency was impacted by both his coteaching experiences, the general teaching environment at Beagle High School, and the schemas and resources associated with each structure, he chose to enact his teaching agency in such a way that altered the organization of the chemistry courses offered by the science department.

Chapter 7

ACADEMIC PRESSURE AND SUPPORT

Lisa and I met twice over the course of her first year of teaching. During the group interview session, Lisa described her experiences teaching at Franklin High School. She described the high school's immense support for integrating innovative teaching practices into teachers' repertoires, as well as strongly emphasizing students' academic success in their academic courses, on Standardized Achievement Test (SAT), and on Advanced Placement (AP) assessments. Lisa allowed me to observe her classrooms twice during the second half of her first year teaching. At the conclusion of each day, Lisa and I initially conversed about what had occurred in her classes, as well as about her students, science department, and teaching practices.

Lisa identified that she chose to collaborate with the other biology teachers within her school to address the planning needs associated with weekly double lab periods. Specifically, Lisa described that the lack of resources used to compose laboratory exercises, as well as the amount of time required to prepare, clean up, and write portions of each laboratory, were the primary reasons for her choice to collaborate with the other biology teachers within her school. Lisa's use of the schema of collaboration that she experienced during her coteaching experiences as well as the resources within Franklin High School provided her with the necessary support to address the school district's requirement for weekly double laboratory periods.

Lisa

Lisa graduated from the University with a major in biological science education. In addition to her undergraduate coursework, Lisa was employed as a resident assistant at a local apartment complex. She also was a member of the campus Emergency Medical Technician team. Lisa and I cotaught a biology class during the field placement portion of our student teaching semester. She also cotaught a biochemistry class and three anatomy and physiology classes.

Lisa began interviewing for biology teaching positions during the second half of her student teaching practicum. After several interviews with district, administrative, and departmental representatives, Lisa was offered a teaching position at Franklin High School, pending successful completion of her student teaching practicum and subsequent degree conferral. Lisa accepted the teaching position at Franklin High School and began her first year as a teacher, teaching three sections of college preparatory (CP) biology and one section of environmental science. The CP biology classes were composed of eleventh and twelfth grade students. The environmental science course was composed of only senior year students due to its classification as a senior elective.

Coteaching Experiences

Lisa's experiences with coteaching began during her enrollment in the science methods course at the University. It was within this course that she met her fellow biology interns and other science student teaching interns. At the start of this course Lisa was unclear as to the nature of the coteaching model. She stated that:

> I honestly don't know enough about coteaching. I don't feel comfortable with the topic. And maybe that's because other than [the] experience [of the science methods course], I've never experienced this. So, it's hard to

> visualize it, like what it would actually look like (Lisa Interview, 11-12-03).

Despite her initial difficulty with visualizing how coteaching should "look," Lisa began participating coplanning sessions with the other biology interns, Jamie and myself.

Over the course of the science methods course, Lisa's initial relationships with the other biology interns were focused around coplanning three unit plans for anatomy and physiology, biology, and environmental science. These unit plans included lessons focusing on digestion, plants, and fossil fuels, respectively. The coplanning sessions involved the collaborative planning of a unit plan for three separate content units. In addition to identifying the topics addressed in the specific lessons, Lisa and her fellow biology interns composed a unit test, designed or adopted activities for each of the unit lessons, and reflected on assessment questions, categorizing them according to the knowledge that each question sought. Thus, Lisa and the other biology interns spent a significant amount of time not only sharing their thoughts and opinions in the methods class, but also during their coplanning sessions. The latter represented a structure that impacted Lisa's ultimate comprehension of the coteaching model.

In addition to her apprehension about the coteaching model, Lisa identified a feeling of uneasiness concerning her ability to adequately teach her individual class content material during her spring student teaching practicum. She described the utility of the coplanning sessions, but also identified areas of weakness in the planning sessions, stating:

> I think [coplanning] works. I think that we are going to fulfill the assignment, but I don't know that I've learned as much. I don't feel comfortable teaching the plant & environmental science unit because I

> haven't been as engaged with them as I was with digestion. If I was more actively doing the unit tests, and the alternative assessments, and actually reading all the chapters, I would just have a better basis of the material than just my week. Because all I had to do was my week. Instead of learning the material I need to teach while planning, I'm going to have to learn it by reading the textbook before I teach it. It's going to be interesting. I don't know. It's going to be an interesting semester with doing that. Just with everyone's schedules being busy. I don't only have student teaching to deal with. There are other responsibilities that I will still have on top of teaching. So, hopefully it'll get done in school when we are all there and not have to be brought home separately— that we can all sit and do it together (Lisa Interview, 11-12-03).

Lisa expressed a final concern for the effectiveness of the coteaching model regarding its effects on students' learning. She specifically related this concern with having multiple teaching styles present within a classroom. She stated that:

> I definitely think [coteaching] has strengths. Instead of students learning from one teacher, they are learning from both. I have also noticed that the students get to see different perspectives of the material. The coteachers often have different examples or methods of explaining things, allowing for the different learning styles of students to be reached. I think that if both people that are coteaching are strong in their subject matter and have points to add to each other—I think it does have a lot of strengths. But I also think those two people have to be compatible in their teaching styles, because I think the kids can get confused as to how they're taught; what's expected. I think that the expectations need to be similar between both teachers (Lisa Interview, 11-12-03).

Lisa's concerns regarding the coteaching model and issues associated with student learning potential was assuaged as she began coteaching. Lisa recalled her initial experiences participating in the coteaching model in the following passage.

> I think I was more concerned for the kids' sake because I didn't think they would handle it well, but they have. I haven't seen any issues with styles of one doesn't match the style of another and the kids are lost, because they're not. If someone does something the first [period] and someone else is doing step two on the second day, they'll follow

> from day one to day two. Even if it's a different person. That was actually a surprise that they didn't have that issue. The whole situation [with coteaching] has been better than I expected. I heard so many nightmare stories from so many people [regarding student teaching]. I got emails from friends that said "how is student teaching going? If it's bad, it'll get better." It's not bad at all. I can't believe two weeks have gone by already (Lisa Interview, 2-24-04).

Lisa's apprehension regarding a clear vision of what coteaching would "look like" in her spring field placement was directly linked to her concern for the effects on her students' future learning. As the spring semester progressed, Lisa identified that she began to identify what coteaching should look and feel like. Unfortunately, this understanding came as a result of two ineffective coteaching / coplanning scenarios that involved both of her cooperating teachers.

The difficulties that Lisa faced were specifically related to issues of lack of corespect and coauthority. Due to a scheduling conflict, Lisa switched to teaching biochemistry instead of environmental science. Tim, her biochemistry cooperating teacher, had a content background in chemistry and taught chemistry and coordinated science at Biden High School. Initially, this particular coteaching situation was functioning very well. With a content background in biology, Lisa brought her biology expertise to this teaching scenario. However, Tim's motivation to teach the course declined when he received a notice that the biochemistry course would be dropped from the science electives at the start of the subsequent school year. At this point, Lisa identified that the coplanning and coteaching aspects of her teaching situation with Tim ended abruptly.

> In the beginning it was great, and we did teaching together and really played off of each other a lot. I had a lot of the biology examples and he had a lot of the chemistry examples and it really made it a biochemistry class. But slowly that drifted and there was no coteaching and he also found out that he wouldn't be teaching

> biochemistry the following year. He was out of [content] so he no longer needed to learn the [biology content], and that was the end of it. I made a comment to Jill the other day and she sat in the classroom and watched what was going on, and he never turned around from his desk. Never. I don't [think] that he knew who was in class that day. It seems like he has no interest and it's really a shame because so I've heard from the "Chem. Guys," he's a great teacher. And I haven't gotten to experience what he has to teach me as well as the kids in coteaching. I know he is full of ideas but I haven't gotten anything. I don't plan with him. I tried to do that in the beginning, but he was so oriented on the chemistry stuff, that he didn't have a period to take out of his chemistry time and show me where we needed to go next. I had an issue with timing. I didn't know how much I could get into a day. So I started doing it with Anne because she had already taught the stuff, and then that stopped too and I just do it on my own and there is really no coplanning. It's become a frustration because most of the kids are seniors and they have really bad "senioritis". They have no interest in the class and it's hard to get them to have an interest when their regular teacher has none. It's been a struggle. I don't even have access to his computer. When they ask for grades, I can't give them to them. He's not here today or tomorrow and I can't take attendance or put in grades. So I feel, in some sense, that they have to look at me that way. He doesn't really communicate with me at all. There is little to no communication (Lisa Interview, 5-18-04).

As a result of the breakdown in coplanning and actual coteaching sessions, Lisa struggled for resources that she could utilize in addressing classroom issues. With Tim's self removal and a failed attempt of coplanning with Anne, Lisa simply accepted that she had to teach the class on her own. Lisa's teaching and planning difficulties with Tim represented a complex scenario in which students' senioritis, the effort taken to coplan a curriculum that would be discontinued, and poor communication amongst Lisa and Tim exacerbated the lack of coresponsibility and corespect in this situation.

The second of Lisa's nonfunctional coteaching scenarios involved her other cooperating teacher, Anne. This situation also involved a lack of corespect, as well as

issues dealing with coauthority. While she was able to continue to teach on a regular basis in the coteaching scenario involving Tim, Lisa's coteaching experiences with Anne left her with an unstable teaching schedule. In the subsequent passage, Lisa recalled specific issues that arose in this coteaching situation.

> I was fine with doing the work, but it got to the point of when she dropped papers on the floor, she asked me to pick them up. That's not cool. I'm not a slave and that wasn't my purpose in that class. I don't mind helping. I'm happy to come set up labs, but, it got to the point of, I wanted to…I felt like if I was going to be put in charge of the class then you need to give full charge to me. So I make the decision as to who is excused from what activity, who needs phone calls home, and what little numbers to put in for comments for grades; and it shouldn't have to be talked about with the other teacher if the other teacher is never paying attention to what's going on in that class. I have a problem when I'm teaching a coteaching class and every morning I walk in and the person says to me "I have grading to do so can you teach today?" My answer started to be, "Well I always teach" because I didn't know how else to respond to that. That's not what coteaching is supposed to be like (Lisa Interview, 5-18-04).

As a member of this coplanning group with Jaime, Lisa, and Anne, as well as through my coteaching experiences with Anne during two cotaught biology classes, I recall identifying similar issues with Anne's coteaching practices. In particular, I remember the frustration I had in relation to her constant requests for assistance in setting up laboratory activities during my planning period. Initially, I agreed to help her, even though the laboratory activities were for a class that we did not coteach together. However, her requests for my assistance and grading affected my personal planning activities, such that I was not having enough time to address my teaching needs. Without clear communication of the teaching responsibilities for the classroom, Lisa and Anne lacked a shared sense of coauthority within their coteaching class. Lisa identified that she welcomed the opportunity to help Anne prepare laboratory

activities for other classes. However, due to Anne's lack of coauthority and coresponsibility regarding their cotaught class, Lisa identified a lack of respect for her teaching abilities. Thus, the nonexistence of coauthority, coresponsibility, and corespect led to a breakdown of any coteaching opportunities and the nature of their coplanning sessions.

Lisa ultimately concluded that her coteaching experiences were useful, but that there was a difference between her coteaching relationships with fellow interns and those cotaught with a cooperating teacher. She further identified the effects that these experiences had teaching knowledge, highlighting her participation in teaching and planning lessons, but lacking experiences with classroom management.

> I'll be honest, I don't think I had a perfect coteaching experience. There were bits and pieces about things that were good, but I don't think I could say that it was good overall. I think both teacher and student teacher [have to] realize that they're on equal turf and I don't think I felt that. I found it to be very obvious that I was the student teacher or at least they treated me as such. They dealt with the problems. I did all of the prep, all of the planning, all of the teaching, and all of the grading and they did not. They wanted me to learn how to do those things so, "here, you do them all." It was much easier felt when it was another intern and myself. I think it was much more equally divided when it was two different students because we were both in the same boat. I think working with another intern, the work was much more divided. We both really took initiative for the most part especially with the administrative stuff. It was never a question as to who was going to grade. It was more, "I'll do it this time." It was never forced. So when I was teaching with another teacher (cooperating teacher), I never felt like I was coteaching. I felt like I was being told what to do and then doing what they felt like doing. So, in an ideal world [coteaching is] not necessarily 50 /50, but participation by both. In not just the classes and stuff, but the administrative stuff as well (Lisa Interview, 5-18-04).

Lisa clearly identified differences between her teaching practices and those of her other coteachers. Moreover, she found that she was more comfortable coteaching with

her fellow biology interns, than when coteaching with only her cooperating teachers. Despite the setbacks regarding coauthority and corespect, Lisa identified the coteaching model's effectiveness in encouraging teachers to share their teaching styles and philosophies amongst those participating in the coteaching program. Responding to the question of "what do you think the strengths of coteaching were?" Lisa stated:

> I think learning to depend on other people, asking their ideas, because I don't know a whole lot when it comes to teaching, and not relying on yourself to come up with every lesson was a great tool to learn. I've learned more and more to ask, "well what did you do for this, how can I do this." Tim's done labs in chemistry that I can do it biology, we've done labs in biology that I can do in Biochemistry, and it's been a really good tool to learn how to rely on other people. How to get ideas from other people, using the resources that other people have which are a whole lot greater than I have on my own. I think it's the combination. I think coteaching definitely helped because we were working with so many people that we could take ideas from one class and bring it to another class. I think also that the department is a nice department. All the people that work here for the most part communicate well with each other and don't have a problem with us asking them questions, asking them for ideas, asking them for help. You know, they're not trying to hide what they come up with. They're free and willing to say, "here, use it (Lisa Interview, 5-18-04).

Lisa began her student teaching experience feeling that she did not have a clear vision of what coteaching would "look like." She quickly grasped the concept and the need for the foundational components of coplanning, coresponsibility, and corespect. She identified the need for these constituent parts of coteaching to function effectively, so that both her students', as well as her own learning opportunities were fully maximized. Despite the difficulties experienced with her cooperating teachers, Lisa gained insight into the value of collaborating with other teachers as both a means to gain their professional teaching advice and resources her the instruction and

planning of her courses. From her experiences teaching within a collaborative teaching environment, Lisa was able to construct a multifaceted style of teaching science.

Franklin High School

Franklin High School is located in the Crick School District and approximately 100 miles from two major east coast cities. The school's student population consisted of approximately 1240 students. The school's average combined SAT score was 1244, including both junior and senior year students. Of the total student population, 79% participated in Advance Placement testing. The science department offered Advanced Placement courses in biology, chemistry, physics B, and physics C (electricity-magnetism and mechanics). During the 2003-2004 school year approximately 59% of the students enrolled in these AP science courses participated in the AP test (*http://www.new-jeresey-lawyers.com/resourcesstate/departments/education/index.asp).

The school's faculty population consisted of approximately 159 teachers, providing a student to teacher ratio of 12.8. Ninety eight percent of the core subject faculty at Franklin High School met the No Child Left Behind definition of a "highly qualified teacher." The percentage of degrees attained were 52.5 % for a B.A. or B.S., 46.1% for a M.A. or M.S., and 1.1% for a Ph.D. or Ed.D. The "2004 NCLB School, District, and State Report" stated that Franklin High School met their state Adequate Yearly Progress (AYP) for mathematics (55%) and language arts literacy (73%) (*http://www.new-jeresey-lawyers.com/resources/state/departments/education/index.asp).

First Year Teaching Structures

Two primary structures impacted Lisa's first year teaching practices. I will identify and describe these structures in terms of their elemental schemas and resources and their effects on Lisa's teaching agency. Lisa's coteaching experiences functioned as a significant structure, particularly affecting her first year planning practices and associated interactions with fellow science teachers. She particularly adopted and applied the schema of collaboration and the use of material resources from her coteaching experiences in her teaching experiences at Franklin High School. Lisa enacted the schema of collaboration in the practice of formal coplanning sessions with her fellow biology teachers.

The second structure that affected Lisa's teaching agency was the general teaching environment within Franklin High School. Lisa described both the administration's and teaching staff's strong emphasis on students' high academic achievement on SAT and Advanced Placement assessments. In order to address the demand for students' continued academic success, Lisa and her fellow science teachers were provided with a wealth of technological resources within their classrooms. These included smart boards, flex cameras, computer stations, and other technological resources. In addition, Lisa's science department, her mentor, and the lack of a permanent classroom also functioned as resources that affected her teaching agency in unique ways. The school culture of academic excellence and the before-mentioned resources comprised Lisa's general teaching environment. I will use Lisa's descriptions of her first year teaching experiences to describe each of these structures and examine how they impacted her teaching agency.

General Teaching Environment

> We are ranked number one in [the state] for AP Scores and number one in the nation for SAT scores. Their average SAT score for last year's juniors [and] this year's seniors was a twelve-fifty-four. We're highest in AP scores, eighty percent of the students that take AP scores get five… no I'm sorry, ninety, ninety-seven percent get threes or above, ninety percent get four or above, and eighty percent get fives. It's unbelievable how many kids are taking the test. So, we're number one in the state for AP's and number one in the nation for SATs. So, it's a very, very competitive district. It's not very [racially] diverse (Lisa Interview, 11-06-04).

In the previous passage, Lisa highlighted the impressive achievements of the junior and senior year students of the School District in which her school is located. This highly competitive environment affected the academic motivations of students and in turn Lisa's teaching practice. The students' motivation for success was clearly visible in the majority of her students' classroom actions. As Lisa described:

> And you will notice here (Franklin High School) that if you give a test back, and it's out of thirty points, and they get a twenty out of thirty, calculators, everyone rips out their calculators. Everyone needs to know, "Miss. Reynolds, what percentage is that?!" I don't know. I don't care what percentage it is. You got a twenty eight out of thirty. Pretty good as far as I'm concerned." They need to know what percentage [it is] (Lisa Interview, 3-14-05).

With such an emphasis on maintaining exemplary grades, Lisa was encouraged by the school to continually promote student success on their SAT and Advanced Placement tests. When discussing her school's primary educational focuses, Lisa described her school's encouraged incorporation of SAT study strategies in her teaching practices. She described one of these study strategies, stating that, "We have a word of the day because we push the SATs big time. Every day we have a word of the day. It goes up on the board with a definition and people are encouraged to use it

in class. I usually don't, but we're encouraged to use it" (Lisa Interview, 11-6-04). To further encourage students' academic success, each classroom at Franklin High School contained a maximum of 24 students, the purpose being to promote a learning environment with a high student to teacher ratio. In addition, the classrooms in which Lisa taught were equipped with a variety of technology. In her biology classes, Lisa described her efforts to engage students' active participation in lessons, stating:

> I don't lecture, there is no such thing. Notes are really kept to a bare minimum, when they do take notes its like I do jigsaws, where a group is an expert on something and the kids are taking notes from the other kids. They have a really hard [time] with retention, so we do lots of drawings and putting them up on the wall. I honestly find that they (school administration) want to see you do anything that you want to do that's effective for those kids. I mean, I whip around my classrooms like no other. I have so much technology at my fingers, I have a smart board and the kids are doing flex cam up on the board. And that's encouraged, but I'm doing that at the same time as half the kids are working on the computers doing a lab and half the kids are at the microscopes and then they switch. (Lisa Interview, 11-6-04).

Lisa identified these forms of technology as resources that she could incorporate into her teaching repertoire. However, she still identified some students' lack of engagement in class activities. As evidenced in the following statement, Lisa particularly identified a disconnect between parents' expectations for success and their students' performance and motivation for participating in Lisa's biology classes. The differences in expectations between parents and students were "especially [visible] when [parents] have kids in a CP bio class that are not doing well. And the parent is like, "this is what I want my child to do," and it's not what the kid wants to do" (Lisa Interview, 3-14-05). Moreover, Lisa described feeling that a significant population of her students sought specific aids in order to assist them in performing well on in-class

and external formal assessments, identifying the influential impact that the school district's stress for success had on students' educational opportunities.

> I do have a lot of IEP and 504 plan kids; however, I am totally convinced that if they go to another school district, [one] that was not as highly competitive, they would not be classified because I had kids like that in other classes. I have kids that say they need extended time; well they never need extended time. Their parents push for the extended time so they get extended time on the SATs. They get extra time on the AP, they get extra time on the SAT (Group Interview, 11-06-04).

Franklin High School's and the associated district's continued emphasis for high student academic achievement on SAT and AP assessments characterized a significant cultural schema within Lisa's first year of teaching high school biology. Moreover, the resources that the school afforded Lisa, namely those in the form of technology, encouraged her to encourage students to continue to expand their scientific knowledge, ideally aiding their performances on standardized assessments. The cultural reproduction of this schema, as well as the material resources provided by her school displayed support for Lisa to incorporate innovative teaching practices into her teaching repertoire.

Mobile Teaching Arrangement

While Lisa began her teaching career in a well funded and highly effective teaching institution, she did not begin teaching in a classroom of her own. As a result of the limited number of classrooms, she was provided with a teaching schedule that positioned her in 5 different classrooms. Lisa described how the lack of a stable classroom impacted the effectiveness of her teaching practices, stating:

> One of my biggest challenges is that I'm a moving teacher, as is the entire department, so I have four classes and five rooms a day that I teach in, which is challenging. I never have time to say, "I'm going to do a "do now," I'm going to put it up on the board." By the time I get there the whole class is there already (Lisa Interview, 11-6-04).

Lisa's lack of a permanent classroom affected the various activities and teaching practices that she chose to include in her teaching repertoire. Furthermore, Lisa had to transport all of her teaching materials to each of her classrooms via a movable cart. Thus, her ability to begin her classes on time was a combination of how quickly she could navigate through the hallways and the relative proximity of her classes from each other. Her attempts of beginning class promptly were further exacerbated by the fact that three of Lisa's classes were held in trailers adjacent to the school building. The latter were the result of increases in the student population as well as the school's policy regarding the maximum student capacity for each classroom. Ultimately, Lisa's mobile teaching arrangement curtailed her ability to implement specific teaching strategies. This lack of a resource had a significant impact on Lisa's choice as to which teaching practices she implemented in her courses.

Science Department

According to Lisa's department chairperson, Franklin High School's science department had more than doubled in a time period of seven years. During Lisa's first year at the high school, there were 15 science teachers and 3 special education teachers associated with the department. Lisa described her teaching relationships with her science department members, stating:

> I think it is a very well supported environment here. I think that the teachers are supported in their requests for what they want to do in a

> classroom by [the] administration, by the community, by teachers in the department. I want[ed] to take my environmental kids out to a stream to do a macro invertebrate section, and it's not something that I've ever done before. I asked one of the other teachers, Francis, if he would go with me so we could do it together. He was like "No problem, when do you want to go?" And that's not something we could do during school. That's an after school, on your own time kind of thing, you know, for us to do. I mean, I'll do it during school with the kids, but that's something that he didn't have to do. I mean everyone's ideas are supported (Lisa Interview, 5-18-05).

The presence of such a stable support system provided Lisa with resources, both human and material, that she chose to utilize in addressing the curricular demands of her biology courses. In particular, Lisa identified a difficulty in preparing weekly laboratories, stating that:

> The biggest change from student teaching and all my high school years to now is we have a required lab every week. So, we have six periods a week, we have five single periods and then once a week we have a double period and we are supposed to be doing a real lab. And that is my biggest challenge because I don't have anything to do. It's slim what I have to pick from, but we have done a lot of coplanning thank goodness. With the three other people that teach CP bio to set up the labs, we all meet and we all decide what we're going to' do. We rotate in a forming cycle, whose going to' prep and whose going to' clean up, and whose going to' write the lab…which finally got put together, by my push, because I couldn't do the labs by myself (Lisa Interview 11-06-04).

Lisa's "push" for collaboration amongst the four biology teachers regarding their weekly lab requirements displayed her need for activities and teaching strategies that would supplement those already present in her teaching repertoire. Lisa chose to incorporate the schema of collaboration as a way to improve her teaching practices at Franklin High School. In addition, she chose to utilize the supportive nature of the science department at Franklin High School to implement the practice of coplanning, specifically amongst her fellow biology teachers.

Lisa previously described how the coplanning sessions were major assets to her coteaching practices. During her first year of teaching, Lisa identified her personal need for this practice and strived to encourage her fellow biology teachers to identify a time in which they could meet and discuss laboratory activity ideas. She described the steps she took to integrate coplanning into her fellow biology teacher's regular course of teaching practices.

> There was [no coteaching and /or coplanning] going on at my school and I struggled with it at the beginning…I wanted it. I wanted the coplanning… Not to the degree of Wednesday afternoons [where] we're going to spend two hours…not like that. I wanted something; because I wrote what I wanted to do for the week, but I had no idea if that was good, if I was following the curriculum. I had no clue! Yeah, but timing, timing was a real struggle, because [with] coplanning we were like, "you do this and this and this, this day, and at the end of this you're done." And there wasn't, I was all on my own, I was on this own planet of "just do it." So I would write my lesson plans and then show it to someone and eventually the four of us realized that we really needed to communicate more because we come up with labs and the lab for this week is supposed to be cell differentiation. Well, I'm up to that, but some people are two weeks ahead and some people are two weeks behind because there was not communication. I said "even if we're doing this on email, why can't we spend ten minutes before a faculty meeting just throwing around, 'What are you doing this week? What are you getting up to?' so we can plan for the next week." and it worked. It's gone so much better since I did [suggested the need to coplan the course curriculum] between the four of us that are teaching the same subject Lisa Interview, 11-6-04).

Lisa's was able to address her self-identified need for feedback on her teaching and planning practices by incorporating the practice of coplanning into her teaching repertoire. Through her collaborative interactions with her teaching peers, Lisa was able to amass a stable set of human resources that she could use in her attempts of refining her teaching practices.

> It usually ends up being Rosalind, Marie, and I, that's it. [We] work on labs more than anything else, so that the three of us are doing the same lab every week. Like that corn lab. We're all doing that lab. So we all took pieces like, writing it up, analyzing the questions, are they appropriate questions, what do we need for set up, clean up, you know, that kind of stuff. In terms of day to day stuff, we share our resources, but we don't really sit down and write lesson plans as a group. More for labs than for anything else (Lisa Interview 5-18-05).

Lisa further identified how their coplanning practice enabled each participating teacher to share their material resources with one another. Lisa specifically identified her sharing of the resources that she gained from coteaching with Anne.

> I'm more of the type of "Can I go in your drawer and pull out what you have for this topic?" And they're more than willing to do that. If I come up with something, like a lot of Anne's worksheets, they don't have, and I'll photocopy them and give them. And they've used a lot of those diagrams because they're clear (Lisa Interview 5-18-05).

In addition, this practice enabled Lisa to address her school's emphasis on aiding students' academic achievement through innovative, technology-based teaching strategies by communicating with her fellow teachers about their teaching strategies and the materials they used in their classes. Thus, Lisa chose to act agentically by establishing informal coplanning sessions amongst her fellow biology teachers. By adopting the schema of collaboration from her coteaching experiences and utilizing her teaching counterparts as resources within their coplanning meetings, Lisa was able to spawn a new educational structure within the teaching environment of Franklin High School.

Mentor

As part of her state's education department regulations, Lisa was obligated by her teaching contract to participate in her school's mentoring program. In accordance with this program, Lisa was required to pay a portion of her paycheck to her mentor

for his participation in the mentoring program. After three years of teaching service in the district, Lisa would receive reimbursement for her participation in the program. Lisa described her relationship with her mentor, James, as ineffective due to his lack of participation in the biology teachers' coplanning sessions. Lisa described her mentor's choice not to coplan the group's weekly laboratory activities, as well as their midterm examination in the following passage:

> There are four of us teaching CP bio. And three of us work relatively well together. The forth has two very young children at home, he's here from seven thirty to two thirty, peace out. He doesn't stick around. We made our midterm and we were like, "James, are you going to do this?" Because it has to be 80 percent the same between all of the teachers and we ended up just giving it to him and saying, "Use it." And he would rather not do the work, he would rather just…he doesn't keep in sync with us because there's never any communication. The three of us that are always working together, even if we don't sit down like we did at Biden High School, [we identify,] "this is what we're doing Monday, Tuesday, Wednesday. This is our objective. This is what we want to cover. We're going to toss this out. We're going to add this in. Here is the video. This is what we're doing for lab kind of thing." Where[as] [James] just goes out on his own (Lisa Interview, 3-14-05).

James' choice to not meet with the other biology teachers portrayed a lack of respect for the teachers' coplanning sessions. Despite his absence during the latter, Lisa continued to meet with him due to the school's policy regarding her participation in the mentoring program. However, Lisa immediately identified the futility of their meetings. She stated, "we're supposed to meet every Tuesday, third period. And we normally do. He is very sarcastic and we usually get nothing done. He'll play pool on the computer while we're talking" (Lisa Interview, 3-14-05). While Lisa upheld her responsibilities as a mentee, mainly meeting with James and describing her teaching activities, James continued to disrespect their mentoring relationship by not attending

to his responsibilities of observing Lisa's teaching practices on a monthly basis. After 7 months of teaching CP biology, James observed Lisa's classes on only one occasion.

While Lisa's mentoring relationship with James never quite developed, she was able to gain specific advice and suggestions regarding her teaching practices from the other teachers in the science department. She particularly harnessed the utility of their professional teaching knowledge during their informal coplanning sessions. Lisa extended her collaborative schema beyond her fellow biology teachers in order to gain the teaching advice from Frances, an environmental science teacher at Franklin High School. Frances and Lisa were able to form a connection grounded in the fact that they both taught Environmental Science. Lisa only taught one section of Environmental Science and had no prior experience with the content area. Frances was also out of his biology content background, but due to his varied teaching experiences provided Lisa with various curricular activities, as well as himself as a readily available resource. Lisa described how Francis embodied the role of her mentor more so than James had. She stated:

> He's been more of a mentor than anyone. I can ask him any question, I can interrupt his classes, he just, we have a relationship that's much stronger than James and I do. We're always in [the same room] together for periods and we're the only two that teach environmental science. It's out of [content] for both of us. He has a much broader knowledge base than I do on it, but we shared a lot of ideas; so we just became comfortable with each other (Lisa Interview, 5-18-05).

Rosalind, Marie, and Frances functioned as definitive human resources that shaped Lisa's teaching practices and supplemented the lack of resources represented by James. These teachers' guidance of laboratory activities and content specific teaching strategies afforded Lisa the opportunity to choose how she would structure her course curricula, as well as the instructional methods that she implemented in classes. By

utilizing these individuals as human resources and the material resources they contained Lisa was able to optimize her teaching effectiveness in her limited physical teaching arrangements (i.e. mobile classroom).

Lisa's ineffective mentoring relationship with James prompted her to adopt Francis as a surrogate mentor. Despite his teaching experiences as a tenured biology teacher, James' lack of communication and interest in Lisa's and his fellow biology teachers' planning and teaching practices reduced his effectiveness of being a mentor to Lisa. Due to his solitary nature and lack of advisement, Lisa chose to collaborate with a group of teachers who were willing to share their teaching experiences, offer advice, and collaborate with her regarding their common science curricula. From her informal coplanning experiences involving with Rosalind, Marie, and Frances, Lisa identified her ability to obtain the feedback regarding her teaching practices. She identified the contrast in this collaborative, resource-filled teaching atmosphere with her lackluster mentoring relationship with James.

How Structures Affected Lisa's Teaching Agency: In Her Own Words

The following passages are Lisa's self-reflections to one of my video observations of her teaching practice. I have chosen to add her comments of these video observations in order to provide Lisa's voice regarding her teaching agency and the structures that affected it. Her initial comments are in response to the question of "how did classroom structures affect her teaching agency?"

> In the beginning of the school year, I allowed the students to choose their lab groups, explaining to them that each one of them is responsible for what goes on, or lack there of, in a lab group, so to choose carefully as there are times when their grade will depend on what other people have done. As typically seen in a classroom, I quickly figured out that the lab groups created by the students were not

only their friends, but the groups were also chunked by ability levels. It never fails that the students that struggle to pay attention and stay on task in lab are those that struggle in class to pay attention, that are often missing their homework assignments, and that do relatively poorly on tests.

The structure of the class in its entirety also plays a role in the success of the class. For whatever reasons, CP Bio is the lowest level of biology offered at Franklin High School, with only an honors course as the other choice. I have a few students who chose not to take honors this year due to the other classes or interests they may have and it is quite easy to pick them out of the group. I also have a number of students who would have benefited from a pull-out section of biology, as they are too distracted by 23 other students, and do not have the study skills, reading abilities, or organizational capabilities to succeed in my class. In addition, there are a number of special needs students in my class. Some are identified with 504 plans, [but] really need an IEP. [However, their] parents refuse to classify their children, [for example] one that has emotional issues and one has serious eating disorders. All of those needs play in integral part of the class as a whole, and how the class needs to be managed on a day to day basis.

In addition, the high expectations of both students and teachers set by the school community, including administrators and parents, play an important role in the structure of the class. Students are expected to do well and further their education, and quite a bit of what is taught in class is about how, what they are learning, or how they are learning, can be used in the future. I am expected to make references to how things we are doing are used in professional science labs, how study skills will be helpful in the future, and encourage outside involvement into my classroom, such as discussing how lab techniques that we are doing, such as chromatography, are used in a chemist's lab. In addition, using SAT techniques on an everyday basis is expected, as high scores are a simple expectation at Franklin High School.

The importance of technology also impacts the classroom environment, as students expect to see different forms of technology each day. Whether it is simply an overhead projector with a picture on it, or a smart board, or a microscope camera to show a specimen on a TV screen, using technology appropriately is both expected and impacts the way the class precedes each day (Lisa Video Analysis, December, 2004).

Lisa was also asked if any aspects of her coteaching experiences affected the planning or progression of the specific lesson video taped. She responded:

> I firmly believe that coteaching affects the way I teach on an everyday basis, not just the lesson that I taught that was caught on video. Learning to teach in an environment where there was more than one teacher I believe to be a critical reason why my first year of teaching has been so successful. I never felt as though I was thrown into a classroom and told to sink or swim; rather, I was supported either by professional teachers or other student teachers. Not only did I become the confident teacher that I hoped I would be, but I also had the opportunity to watch a number of other people teach. I was offered the chance to watch other teachers prepare lessons, share ideas, deal with behavior situations, and teach classes in ways I was unfamiliar with, uncomfortable with at times, and in ways I otherwise may not have thought of.
>
> I learned very quickly during coteaching that every teacher brings valuable experience to the classroom. I had the opportunity to learn various strategies for teaching any specific topic, especially the idea of differentiation of instruction. I'm confident that had I taught independently all day long, I would not have learned this invaluable skill of teaching. By discussing how each lesson was going to be taught with a number of teachers, we were able to gear each lesson to a number of different learning styles, trying to reach as many students as possible. The lesson I taught to my biology students is an example of this skill that I learned student teaching. I was able to create a lesson that allowed students use the various learning styles that they harbored; the linguistic learner as they had to describe to me what they had created, the logical learner as they categorized the materials they had and decided on how to use them, and the spatial learner that learns best making visual representations of pictures. It also targeted the kinesthetic learner, of which I have a lot of based on the intelligence test they took at the beginning of the year, as students were standing around lab tables free to move and touch what they were creating, rather than sitting at a desk in a teacher-centered classroom. This lesson also allowed interpersonal learners as they had the opportunity to talk to their lab partners about the ideas they had and how they would conquer this activity, as well as intrapersonal learners, as some groups decided to divide the assignment into sections, each person taking on their own smaller assignment (Lisa Video Analysis, ,2005).

Summary: Structures Affecting Lisa's Teaching Agency

Lisa's teaching agency was primarily impacted by two structures, the first being her coteaching experiences and the second her general teaching environment. The coteaching structure was substantiated by the schema of collaboration and surplus of human and material resources that Lisa had acquired. The structure of her general teaching environment at Franklin High School was comprised of the school's and surrounding district's expectation for student success. In particular, students were expected to excel on SAT and AP assessments. This cultural expectation for success was supported by the school's provision of various technological resources and a teaching staff that supported students' academic achievement by the incorporation of teaching strategies intended to engage students in each lesson's content material. In addition to these resources, Lisa encountered a biology curriculum that required weekly double-period laboratory, a supportive science department, the lack of a permanent classroom, and an ineffective mentor.

The expectations for academic success held by the school district, high school, and surrounding community, fostered an environment in which teachers' were expected to incorporate the school's, as well as their own study strategies for the SAT and AP testing into their teaching repertoires. In addition, Lisa was encouraged to incorporate the use of technology into her class curricula in order to address this cultural expectation. Thus, these cultural norms and the individuals who perpetuated them simultaneously bounded and promoted Lisa's teaching agency. In addition to both her school's and surrounding environment's pursuit for academic success, Lisa was also required to prepare a double period laboratory. She identified that this curriculum requirement represented a barrier to her planning and teaching due to the relative lack of laboratory activities in her teaching repertoire. In response, Lisa acted

agentically by enlisting aid from her fellow biology teachers, specifically by encouraging their participation in informal coplanning sessions that were focused on planning, testing, and preparing the weekly laboratories.

In spite of Lisa's collaborative efforts, her mobile teaching arrangement severely impacted the specific teaching practices and activities that she was able to integrate into her course curricula. Due to the instability of her classroom environment, Lisa was limited to utilize laboratories and activities that were already prepared by her fellow science teachers in the designated lab room. Despite her collaborative efforts of coplanning laboratories and sharing various teaching strategies with the other biology teachers, Lisa's physical environment critically limited her options for implementing innovative laboratory activities.

While attempting to plan these laboratory activities, Lisa utilized her coplanning group as a forum in which she could obtain feedback regarding her teaching and planning practices. Thus, Rosalind and Marie functioned to supplement James' self-removal in he and Lisa's mentoring relationship. Moreover, Lisa chose to adopt Francis, her fellow environmental science teacher, as her unofficial mentor. Lisa continued to meet with James, as was required by her teaching contract, but directed her content related questions to Francis. Thus, her decision to adopt an unofficial mentor, as well as establish the coplanning practice as a stable aspect of her teaching repertoire enabled Lisa to gain the teaching advice and feedback regarding her teaching practices that she sought at the start of her teaching career.

As a testament to Lisa's teaching abilities, Amelia, Lisa's department chairperson, commented on her teaching practices during her first year of teaching, stating:

> I have to say that I have been writing her latest evaluation for, I guess the twenty-week [evaluation]. I have not met, in my experience as a supervisor, a brand new teacher right out of college as confident and assured as Lisa was. It was great. So you guys did a really good job" (Lisa Interview, 3-14-05).

Lisa's experiences with the coteaching model of teacher preparation was an influential factor that affected her first year teaching agency, particularly in her application of the schema of collaboration in the practice of coplanning. The coteaching model's focus on collaboration as a resource for improving one's teaching practice was a crucial factor in influencing Lisa's first year teaching practices as she chose to create informal coplanning sessions amongst her fellow biology teachers. She described how the coteaching model of teacher education prepared her for her first year of teaching. Specifically, she identified its utility in equipping her with the resources necessary to become an active and reflective science educator. She described the influence of coteaching on her teaching practices during her first year teaching at Franklin High School, stating:

> That's something that coteaching absolutely prepared me for. It was, how many people walked into our classrooms on a regular basis and videotaped us, and watched us, and critiqued us, and at the beginning [of student teaching] I was nervous when people would watch and now I'm like "Go ahead." Like if I mess up, I mess up, and there's nothing I can do about it. I had my first real observation, my two kids got into a brawl in class, and I went like this {gives stern look} and when they looked at me, I said, "Are you done? Have a seat, see me after class." When I went on with it, and I think I would have been so upset [during student teaching] over that because I was being observed, and now I'm like, "Observe me. You want to videotape me, you want to do [it], I don't care, just do it." Because [during student teaching observations occurred] all the time, where the other teachers [at this school] are like, "I have to do this, I have to do this, and I have to do this, and I have to set up my room, and I have to get there early." And I'm like, "So, what's the difference really going to be? They want to see you really teach" (Lisa Interview, 11-6-04).

The combined influences of her coteaching experiences and the structure of her general teaching environment, encompassing her school's schema of expected student academic achievement and the material and human resources present in the various modes of technology and a supportive teaching staff, respectively, encouraged Lisa to enact her agency such that she sough to improve her teaching practice. Her county curriculum, science department, mobile teaching arrangement, and mentor teachers, all functioned as resources that provided Lisa with reason to enact her agency employing the schema of collaboration in the practice of coplanning.

Through her informal coplanning meetings Lisa utilized her teaching peers as resources that supported her attempts of refining her teaching practices. In particular, Lisa obtained the teaching advice, feedback concerning her planning and teaching practices, as well as laboratories activities that addressed the curricular requirement of a double-period lab. Her choice to adopt Frances as her unofficial mentor displayed her teaching agency in action. Lisa was thus able to supplement her loss of a human resource in the form of James by maintaining communication and engaging in discussions related to her teaching practice with Frances. Ultimately, Lisa chose to employ her teaching agency by forming a structure that provided her with stable resources that supported her teaching needs while simultaneously meeting her school's expectations for teaching practices that encouraged student learning and academic achievement.

Chapter 8

DISCUSSION OF CASE STUDIES

Structure|Agency: A Dialectic

Upon examining Jaime's, Pat's, and Lisa's first year teaching experiences I sought to focus on how their teaching agencies were affected by both their coteaching experiences and first year teaching environments. In conjunction with Sewell's (1992) structure| agency dialectic, I also examined how these individuals' agencies affected their teaching environments. The subsequent section provides a review of the theoretical framework applied to these beginning teachers' first year teaching experiences.

Sewell's (1992) notion of structure is dialectically linked to agency, that is one's ability to act. An individual's agency can be enacted to address and consequently constrained by the structural components of a social setting. It "arises from the actor's knowledge of schemas that inform social life and have access to some measure of human and nonhuman resources" (Sewell, 1992, p.20). Thus, the reproduction of specific structural motifs is possible due to the individual's choice to employ her/his knowledge of schemas and control over various resources (human and non-human). However, due to the heterogeneity of social settings, individual agency may be unique when enacted within each of these unique social environments. By examining an individual's agency, her/his knowledge of cultural schemas and control

over resources can be examined, as well as the effects of their agency on her/his surrounding structures.

Structures, comprised of schemas and resources, are dialectic in nature, such that "schemas are the effects of resources, just as resources are the effects of schemas" (Sewell, 1992, p.13). It is critical to note that schemas are not readily apparent in physical form, but rather exist in the personal and cultural perceptions of those individuals who are interacting in a particular environment (Sewell, 1992). Thus, schemas encompass socially held norms, personal ideologies, and/or beliefs that afford or rebuff an individual's action within a particular social setting. The transposable nature of schemas allows for their activation in other cultural settings, thus having the possibility to produce structural patterns that are analogous to those present within a previous setting. Ultimately, their reproduction is dependent upon an individual's control over and application of resources.

Resources function as a means to provide an individual with the power to act within a social setting. Human resources exist in "the observable characteristics of real people who live in particular times and congregate in particular places. And it is their actualization in people's minds and bodies that make them resources" (Sewell, 1992, p.10). Thus, the range of human resources varies with respect to the context in which an individual is engaging. Nonhuman resources refer to both "objects, animate and inanimate, naturally occurring or manufactured" (Sewell, 1992, p.9). As with human resources, nonhuman resources are utilized for their ability to perform a desired action, but differ from the latter in that they "have a material existence that is not reducible to rules or schemas, but the activation of material things as resources,

the determination of their value and social power, is dependent on the cultural schemas that inform their social use" (Sewell, 1992, p. 12).

In the next section, I will examine the relationships amongst the schemas and resources that Jamie, Pat, and Lisa utilized in their attempts to continue to improve their teaching practices, while addressing the structures that were present in their general teaching environments.

First Years Teaching: Agency, Schemas, and Resources

The coteaching program afforded Jaime, Pat, and Lisa the schema of collaboration, as a way to access resources that they could use to expand their teaching repertoires during their first year of teaching. Their knowledge of and choice to apply this schema enabled them to develop resources that addressed both their individual teaching needs, as well as the structural motifs present within the general teaching environments of their schools.

In particular, Jamie and Lisa enacted their teaching agencies by establishing collaborative planning sessions with their fellow science teachers. Jamie initially chose to engage in this practice because of her fellow science teachers' need for assistance in planning their curricula. As Rose and Greg gained confidence in their planning abilities, Jamie identified that the three teachers began mutually planning and sharing ideas about their science courses. Jaime's choice to employ the practice of coplanning resulted from her desire for feedback regarding her teaching and planning practices associated with her double-period biology laboratories. Pat chose to collaborate with his fellow science department members by discussing issues relating to teaching at his school. However, as the only chemistry teacher at Beagle High School, he did not have other chemistry teachers with which discuss content specific

topics. As a result, Pat chose to collaborate with other chemistry teachers throughout the county during professional development activities. Jamie's and Lisa's coplanning sessions, as well as Pat's collaborative interactions with teachers within and external to his science department afforded these beginning teachers the resources they sought in order to simultaneously address the cultural schemas within their teaching environments and their desire to gain feedback and advice regarding their first year teaching practices.

This discussion chapter will examine the dialectical relationships between the beginning teachers' teaching agencies and the structures (schemas and resources) within their individual school environments. I will further examine Jamie's, Pat's and Lisa's teaching agencies in relation to the beginning teachers' concerns identified in the research literature. The presence of symbolic, social, and cultural capital within Jaime's, Pat's, and Lisa's teaching situations, respectively, appears to have affected how these beginning teachers were able to enact their teaching agencies. Thus, these forms of capital will be examined in conjunction with the teachers' appropriation of resources and cultural schemas. Finally, by examining the coherences and contradictions amongst these beginning teachers' first year teaching experiences it was possible to identify aspects of their teaching environments that encouraged and/or impeded their teaching endeavors. These aspects of their first year teaching environments and the effects on Jaime's, Pat's, and Lisa's teaching practices will be identified through the descriptions of their enacted teaching agencies.

Enacting the Structure | Agency Dialectic

Jaime

Jaime's choice to collaborate with Rose and Greg resulted from the influence of her school's emphasis on incorporating differentiated instruction into her teaching practice (schema) and the lack of resources that they provided the beginning teachers to address this administrative request. As a result, Jaime chose to employ the schema of collaboration as a way to obtain the resources that (1) both she and her fellow science teachers needed to address their school's emphasis on the use of differentiated instruction and (2) to address her personal desire to improve her teaching practice. Jaime described her use of informal coplanning sessions amongst Rose, Greg, and herself as a means for discussing their current teaching practices and co-constructing methods of instruction to address the wide ranges in their students' learning needs.

These coplanning sessions thus functioned to supplement the lack of human resources at Mendel Middle School due to the combination of a relatively new teaching staff and a disorganized school administration. In addition, the symbolic capital that her teaching peers' afforded her supported Jaime's choice to engage in this practice. This form of capital was evidenced in Rose's and Greg's verbal appointment of Jamie to the status of a "veteran" teacher due to her prior coteaching experiences in comparison to their alternative route teacher training and experiences. Jaime's initially ascribed status as a "veteran" teacher by her beginning teacher peers was further solidified by the after school absence of Jake, Jaime's mentor and the science department's most experienced science teacher.

Structure|Agency Dialectic. Jamie specifically chose to enact her teaching agency by engaging in the practice of coplanning. Their coplanning sessions

typically occurred as informal meetings a few days after school each week. During these meetings Jamie, Rose, and Greg discussed their various teaching experiences of the week and would converse about the different activities and teaching methods that they were implementing in their courses. Over the course of the school year these interactions became more regular, allowing Jaime, Rose, and Greg to collaboratively develop her teaching repertoires. The emergence of the coplanning practice resulted from Rose's and Greg's self-acknowledged need for help in planning their course curricula, as well as their instructional techniques and modes of assessment.

Thus, Jaime initially functioned as a resource that Rose and Greg utilized in order to improve their teaching practices. The latter primarily occurred through Jamie's appropriation of material resources, as well as providing feedback to Rose's and Greg's ideas for lessons and class activities. However, as Rose and Greg gained confidence in their teaching abilities, all three teachers began interacting with one another on a mutual level, sharing resources, reflecting on their teaching practices, and offering teaching advice. Thus, their coplanning meetings functioned to generate resources that enabled Jamie and her fellow seventh grade teachers to collectively address one another's pedagogical needs, as well as the school administration's encouraged use of differentiated instruction.

Symbolic and Social Capital. The establishment of the coplanning practice as a regular aspect of these three beginning teachers' repertoires resulted from her choice to employ the symbolic capital that she held amongst her fellow seventh grade science teachers. Jaime aided in sustaining this practice by her prior knowledge and experience with coplanning from her coteaching experiences. However, the resources that this collaborative grouping generated were the primary factor in its

sustainability. The creation and use of these shared resources represent what Wenger (1998) described in the third component of a community of practice, a shared repertoire. I would argue that the practice of coplanning represented a community of practice due to the participants' choice to engage in the practice as a medium used to improve their individual teaching practices, such that they gathered around "what they [were] there to do" (Wenger, 1998, p. 74) (mutual engagement). Through group discussion of their teaching experiences these beginning teachers generated resources (shared repertoire) that they applied to their individual teaching practices (joint enterprise).

Within this community-like planning environment, Jamie further enacted her teaching agency by applying her knowledge of the coteaching concepts of corespect and coresponsibility. Regardless of their inexperience in teaching science, Jamie afforded Rose and Greg respect by choosing to collaborate with them and share the responsibility for coplanning lessons. Thus, her choice to afford her fellow beginning teachers the respect and responsibility for collaboratively planning their course curricula further cemented the practice of coplanning as a resource in both her own and Rose's and Greg's teaching repertoires.

Finally, the practice of coplanning was further solidified by Jamie's fellow beginning science teachers' choice to actively engage in the collaborative practice, aligning with Sewell's (1992) statement that, "sets of schemas and resources may properly be said to constitute structures only when they mutually imply and sustain each other over time" (p. 13). Through their participation in the coplanning practice, Jamie, Rose and Greg gained resources from the collective grouping and provided the other participants with resources associated with each planning topic. Moreover, their

social capital amongst their coplanning group enabled each teacher to share their planning ideas and maintain a sense of ownership over their planning practices. Thus, by acknowledging one another's teaching strengths and experiences, Jamie, Rose, and Greg collaboratively constructed a structure that allowed them to enact their teaching agencies while simultaneously garnering and affording resources to address their teaching needs and their school administration's concerns for the use of differentiated instruction, the latter referring to the implementation of a variety of teaching practices to address students diverse learning needs.

Beginning Teacher Concerns and/or Difficulties. As noted in the review of literature, the primary concerns/difficulties of beginning teachers involved issues relating to the development of classroom management techniques, classroom instructional procedures, course planning procedures, and communicating with students' parents (Veenman, 1984; Kagan, 1992; Adams & Krockover, 1997; Meister & Jenks, 2000). During one of our interviews, I asked Jamie how she would describe her first year of teaching. She responded in the following:

> Hectic. First word that pops to mind. It was good. I'm looking forward to next year when I know what regular classroom procedures and routines to have in place. First of all it's the first time I've been there for the beginning of the year. And that's the first time I've been in middle school, so another word would probably be surprising [be]cause I didn't know exactly what to expect from that age group. I mean the curriculum, as far as that goes I'm fine. I mean I use the kits and I've built onto them. So the curriculum's not a problem, it's just the regular classroom procedure. I was used to high school. You can be a little more lax [with high school students]. I learned [when managing] middle school [students] you've got to tell them exactly where they need to be every second. Homeroom is a huge [and] they spend a lot of time in homeroom at Mendel Middle School. And you know [at the start of the school year] I was like, you know just let in be social time, let them hang out, but I really need to, at the beginning of

> [next] year lay down very strictly, "you come in, you go to your locker. You sit down in your assigned seat. You stay there" (Jaime Interview, 6-12-05).

Thus, while Jaime identified her competency in planning and teaching her course content, she identified that the differences in managing high school and middle school classrooms were quite distinct. While she described her ability to manage her students during her first year of teaching, she also described her identified need to initiate certain classroom management procedures at the very beginning of the next school year.

Thus, the difference in her students' ages when compared to her coteaching experiences and the resulting management techniques that she employed appeared to be an area that Jaime focused a significant amount of attention to during the initial months of her first year of teaching. While she did not specifically state, during our interviews, that she utilized her coplanning sessions to address these managerial needs, the schema of collaboration and the human resources present within this structure may have provided support to Jaime's classroom management actions.

Contradiction. Jaime's choice to not collaborate with her TAM teacher represented a contradiction to her application of collaboration as a means to generate resources to improve her teaching practice. Due to her TAM teacher's lack of coresponsibility and corespect regarding lesson planning and being attuned to each lesson, Jamie planned activities and other aspects of the course curricula by herself. Thus, the contradiction to Jaime' engagement in collaboration displayed the difficulties associated with maintaining collaborative interactions amongst educators. The lack of corespect and coresponsibility between Jamie and her inclusion teacher

highlighted the issue of how teaching responsibilities, as well as how students' learning needs are being addressed within an inclusion setting.

Jamie's choice to apply the schema of collaboration (agency), in response to the general teaching environment at Mendel Middle School and her personal desire to improve her teaching practice, initiated the emergence of a structure | agency dialectic particularly when the resources that her coplanning group generated applied to the participating teachers' teaching practices. As a result of the cultural reproduction of the collaborative schema and applicability of these resources to the participating teachers' needs, the coplanning practice became established as structural component of Jamie's, Rose's, and Greg's teaching repertoires.

Pat

Pat's choice (agency) to collaborate with the chemistry teachers throughout his state county during professional development meetings and to continue communicating with these individuals over the course of the school year resulted from both his personal desire to develop his teaching repertoire and due to his isolated position as the only chemistry teacher at his high school. Pat also chose to collaborate with the members of his science department to address the cultural schema related to teaching within the science department at Beagle High School. Thus, Pat chose to utilize the schema of collaboration as a means to gain resources, both human and material, that would (1) afford him with methods to improve upon his current chemistry teaching practices and (2) address the cultural schema within his science department of developing a "student-centered" approach to teaching.

Structure|Agency Dialectic. Pat's teaching agency was apparent in his choice to collaborate with other teaching professionals. The conversations and social interactions with his fellow county chemistry teachers, science department, mentors, and students, as well as a flexible course curriculum afforded Pat with resources to address his department's cultural schema of developing a teaching repertoire that contained student-centered teaching practices while also adhering to his personal need to continually improve his teaching practice.

From his coteaching experiences, Pat clearly identified his appreciation of the model's use of collaboration as a means to support his teaching needs. Pat chose to employ the general practice of collaboration as a tool to obtain resources that would improve his teaching practice during his interactions with his science department and fellow chemistry teachers through out the county. In particular, Pat's choice to collaborate with other chemistry teachers within Galapagos County reflected his desire to integrate new laboratory exercises and associated activities that would engage his students in his chemistry course content. In addition, Pat's regular interactions with his science department within Beagle High School enabled him to share ideas regarding classroom management and general instructional techniques, as well as obtain feedback from his fellow science teachers.

The teachers within his science department, while not chemistry teachers, offered Pat a supportive environment in which he could share his ideas about teaching and gain feedback about his teaching practice from teachers who were attuned to teaching at Beagle High School. The members of this department represented a surplus of human and material resources that Pat utilized to optimize his teaching practices at Beagle High School. Through their combined experiences teaching

experiences at Beagle High School, Pat was able to navigate the issues he faced being a first year teacher, the latter ranging from classroom management techniques to where the he could obtain laboratory equipment. Included in his science department were Pat's two self-appointed content mentors. These two teachers, in addition to his official, school-appointed mentor functioned to aid in Pat's development as an educator, specifically by affording Pat a variety of material resources, themselves as human resources, and feedback to improve his overall practice. Their suggestions enabled Pat to fully analyze the components of his teaching practice and alter specific aspects where and when needed.

Pat further engaged in discussions concerning his teaching experiences with the other science department members both during school related functions, as well as during non-scholastic events:

> We're the only department that actually hangs out outside school. We've had, we had a wine tasting. So, yeah it's fun. We all eat lunch together. And it's one of those if you don't show up [at lunch] it's somebody's asking you know where were you? It's always nice. Everybody's just so, everybody's so laid back (Pat Interview, 5-3-05).

The sense of community shared amongst these departmental teachers was solidified by their focus of attending to students' academic and personal needs. Pat's choice to reflect on his teaching practices, gain feedback regarding these practices, and access the resources present amongst the other teachers in the community displayed his desire to improve his teaching practices.

According to Wenger (1998) a community of practice consists of three primary components, they include: (1) mutual engagement, (2) a joint enterprise, and (3) a shared repertoire. The Beagle High School science department mutually engaged in attending to their students needs, both academic and personal through their

discussions during departmental meetings and professional development meetings. During these instances, department members would share their teaching experiences, offer teaching advice (shared repertoire), and discuss (joint enterprise) how they should alter their teaching practices to accommodate students' needs, ultimately addressing the department's focus of developing a "student-centered" approach to teaching science (mutual engagement).

The resources present within Beagle High School, namely the county curriculum, Pat's science department, mentors, and students, represented significant factors that Pat utilized in developing his teaching repertoire during his first year of teaching chemistry. Since his chemistry curriculum was formulated as a set of teaching guidelines, Pat was afforded the freedom to design his chemistry courses in ways that aligned with his personal teaching style, as well as his science department's focus on creating a student-centered learning environment. As a result, Pat chose to construct a curriculum that incorporated a variety of labs and activities that focused on the qualitative aspects of chemistry. Pat was thus able to design course curricula that demonstrated the application of chemistry concepts in his students' lives, as well as addressing his students' interests and learning needs.

The final resource that affected Pat's teaching agency during his first year of teaching were the students within his chemistry courses. Pat chose to engage his students on both an academic and personal level, designing his course curricula to incorporate laboratory activities and demonstrations that displayed the applicability of chemical concepts to everyday situations, as well as their value in various scientific realms. In addition, he encouraged his students' to express their conceptions and explanations of chemical concepts, allowing each student to have a voice within the

class. Pat's ability to empathize with his students' life situations, identifying their needs both within and outside of his classes, not only affected the strategies he chose to employ in his courses, but also his teaching identity (role of father figure to some of his students).

Social and Cultural Capital. In addition to the resources that Pat had access to amongst his teaching professionals, the social and cultural capital that Pat amassed amongst his students enabled him to connect to his students' learning needs while, simultaneously utilizing them as resources to improve his teaching practices. The relative strength of Pat's social and cultural capital was evidenced in the student enrollments for chemistry electives for the subsequent school year. Pat's use of his capital amongst his students was further substantiated by his science department's cultural schema of attending to both students' academic and personal needs. As a result of his choice to apply the schema of collaboration and utilize his social and cultural capital, Pat impacted the structure of his general teaching environment, particularly in effects on the organization of and planning of his science department's chemistry courses.

Beginning Teacher Concerns and/or Difficulties. From Pat's first year teaching experiences at Beagle High School, it did not appear that he shared any of the primary concerns/difficulties of beginning teachers cited in the review of literature. Again, these issues involved beginning teachers' abilities to develop classroom management techniques, classroom instructional procedures, course planning procedures, communication with parents (Veenman, 1984; Kagan, 1992; Adams & Krockover, 1997; Meister & Jenks, 2000). The following passages provides a view

into Pat's conceptions of his classroom management techniques and how he developed his management techniques during his first year of teaching:

> I'm kinda' known as the crazy teacher. My classroom management it's grown a lot. It's gone from, I mean it's not like it was ever bad, but it's just…people tell me that they don't fall asleep in my class. I change things up a lot. I'm very ADD in the way I teach. I try not to stay with things for more than five ten minute at a time. The whole thing with the classroom management [during students teaching was] weird, because I was bouncing from Pam to Tim to Vincent. So it was like whenever I talked to [a student] in Vincent's class I had to do it by Vincent's guidelines, Tim's went by Tim's and Pa's by Pam's. And now it's, I can pick and choose [from these styles and do] whatever I want to do. My kids know not to talk up in my class because I'll call them out on it. I told them, flat out, and I said you know I do not tolerate bad behavior, if that happens I'm going to send you down to Mr. Belding. There's a rule there and there's got [to] be a line. And they appreciate it. Some kids get up close an tippitoe on it, but…I have those kids in my class that I can sit the talkers next to and they'll be like "My God, be quiet! The reason you don't get it is [be]cause you never shut up!" And I'm like "There's nicer ways to say that." Then after class I go up to [them and] I was like, "Keep saying that" (Pat Interview, 11-6-04).

> The teachers at my school didn't influence what I taught, but I mean certainly there was whole different classroom management styles. You have Anthony's [style] and he's so respected the kids don't mess with him, very black and white person. That's more of the style I'd like to be. Then there's Jody who teaches next to Anthony and she's more of a…the kids like her, but she has that edge, like you can see it in her eyes, like don't push me. I just [notice] how she builds that [technique] throughout the year. The first day it's funny to see how she is the first day as opposed to the last day and how it changes (Pat Interview, 7-21-05).

Thus, from his descriptions of his experiences with managing a classroom during his student teaching experiences, Pat identified his use of his cooperating teachers' styles of classroom management. During his transition into his first year if teaching, Pat identified his ability to utilize these before-mentioned management styles, as well as

those of his fellow first year science teachers. Thus, through his membership within both the communities of practice during his student teaching and first year teaching environments, Pat was able to access the resources that his fellow teachers embodied. In this case, Pat was able to access resources associated with managing his classrooms. Pat was also able to access a variety of resources amongst the teaching professionals in both his science department and surrounding county in order to develop and refine his instructional and planning strategies.

The resources present in the individuals previously described afforded Pat the opportunities to modify his teaching practices to address both the needs of his students, as well as his own teaching style. Moreover, Pat's membership within the community of practice during student teaching encouraged him to interact with his first year science department and county chemistry teachers in a collaborative manner, sharing his science teaching knowledge while simultaneously gaining knowledge from these other science teachers. The combined effects of Pat's first year teaching structures with his coteaching experiences afforded him opportunities in which he could reflect on his teaching practice and alter any aspects of it that he chose.

Thus, the coteaching model of preservice teacher preparation provided Pat with the frame of mind that through his collaboration with other teaching professionals and reflection on his teaching practices, he would be afforded the necessary resources to alter his teaching practice. Pat enacted his teaching agency through the utilization of the resources provided to him, ultimately developing a teaching style and teaching identity that allowed him to maximize his teaching potential. Through his use of the schema of collaboration, Pat was especially able to amass a significant amount of social between he and his students. The resulting

increase in students' enrolments for chemistry courses the subsequent year demonstrated the structural effects of Pat's choice to apply the schema of collaboration within his first year teaching environment.

Lisa

Lisa chose to initiate formal coplanning sessions with Rosalind and Marie as a result of her perceived need to obtain professional feedback regarding her teaching and planning practices. Lisa specifically cited her desire to gain feedback and advice concerning her planning for a weekly, double-period laboratory. Through Lisa's encouragement, she and her fellow biology teachers identified times during which they could meet and discuss their thoughts regarding laboratory activities for each week, as well as organize who would prepare and clean up each laboratory exercise.

In addition to arranging and preparing laboratory activities, Lisa and her fellow biology teachers took these planning opportunities to discuss their methods of instruction and use of technology in their classroom. Lisa's use of collaboration enabled her to access various resources that supported her efforts to address her school district's cultural schema for students' to succeed academically, as well as for the integration of technology and innovative teaching practices into teachers' repertoires.

Structure|Agency Dialectic. Lisa enacted her teaching agency by initiating the practice of coplanning with her fellow biology teachers at Franklin High School. These informal coplanning meetings typically occurred after school, before and/or after departmental meetings, or via email. During these meetings Lisa, Rosalind, and Marie primarily discussed their thoughts concerning the laboratory activities that they were teaching each week, but they also shared their various

teaching experiences of the week, as well as different activities and teaching methods that they were implementing in their courses. Over the course of the school year the coplanning practice became a regular component of their teaching practices, ultimately allowing Lisa, Rosalind, and Marie to collaboratively develop their teaching repertoires. The emergence of the coplanning practice resulted from Lisa's self-identified need for feedback concerning her teaching and planning practices, as well as her teaching peers' decisions to continually share their teaching experiences an advice with one another.

Beginning Teacher Concerns and/or Difficulties. With respect to the literature focusing on beginning teachers' first year difficulties, Lisa similarly identified a need for assistance in planning her weekly, double-laboratory periods:

> My biggest challenge, because I don't have anything to do, [well] it's slim what I have to pick from, but we have done a lot of co-planning thank goodness…With the three other people that teach CP bio to set up the labs. So, we all meet and we all decide what we're gonna' do and, you know, we rotate in a forming cycle, whose gonna' prep and whose gonna' clean up, and whose gonna' write the lab. Which, thank God we finally got that put together, by my push, because I couldn't do the labs by myself (Lisa Interview, 11-6-04).

As a result of need for feedback regarding her laboratory planning practice, Lisa chose to apply her knowledge of the schema of collaboration as a way to obtain the resources necessary to address the curricular requirement. During the end of her first year teaching at Franklin High School, Lisa commented about her use of coplanning in addressing the planning requirements:

> And in terms of the workload, there's a lot, but when we really work together, the three or the four or the five of us that can, it's not as much as I ever thought it was going to be…the couple other bio teachers. It usually ends up being Rosalind, Marie, and I, that's it. [We] work on

> labs more than anything else, so that the three of us are doing the same lab, that we're doing the same lab every week (Lisa Interview, 5-18-04).

With respect to the research literature's reporting of beginning teachers' difficulties with managing their classrooms, Lisa described her classroom management techniques in the following passage:

> I was doing active transport and I drew a picture up on the board and a kid made some comment about what he thought I drew, all the way in the back of the room, and I barely heard it, but enough to turn around and say Bill, [do you] wanna' say that to the rest of the class so everyone hears that? Well he was so embarrassed, but yeah, you pick that up student teaching. You [have to] listen to everything. And you can't have that selective hearing as to what you hear and what (Lisa Interview, 11-6-04).

During our final interview, Lisa and I were discussing her general teaching environment and how it had affected her teaching. During our talk she began describing the nature of her students in relation to her use of classroom management techniques:

> For the most part the kids are really good, and I don't have that discipline issues that I thought was going to be a disaster. I wouldn't say my classroom management skills are as good as they could be, but in terms of violence in a classroom, we don't have any of that, so it makes it feel like it's a safe place to come (Lisa Interview, 5-17-04).

Lisa identified that while she possessed classroom management techniques, such as those that she developed during her coteaching experiences, the school environment of Franklin High School was regarded as a "safe place." Thus, while Lisa had developed and applied some of her classroom management techniques from her coteaching experiences, the major focus of her general teaching environment was focused on her developing her teaching repertoire to encourage students' academic achievements.

Cultural and Social Capital. In particular, these informal coplanning meetings functioned to generate resources that enabled Lisa and her fellow biology teachers to collectively address the planning and logistical demands associated with teaching a double laboratory period each week, their general pedagogical needs, as well as the school's continued emphasis on improving student achievement and technology use. As she continued to interact with Rosalind and Marie, Lisa gained cultural capital within her teaching environment, particularly through her collaborative efforts and discussions with her teaching counterparts.

The establishment of the coplanning practice as a regular aspect of these three beginning teachers' repertoires resulted from Lisa's choice to employ the cultural capital that she held amongst her fellow biology teachers. Lisa aided in sustaining this practice by her prior knowledge and experience with coplanning from her coteaching experiences. However, the resources that this collaborative grouping generated were the primary factor in its sustainability. Similar to Jaime's establishment of coplanning sessions, the creation and use of these shared resources represent what Wenger (1998) described in the third component of a community of practice, a shared repertoire. I would argue that the practice of coplanning represented a community of practice due to the participants' choice to engage in the practice as a medium used to improve their individual teaching practices, such that they gathered around "what they [were] there to do" (Wenger, 1998, p. 74) (mutual engagement). Through group discussion of their teaching experiences these beginning teachers generated resources that they applied to their individual teaching practices (joint enterprise).

Lisa also utilized the cultural capital that she developed in her attempts to obtain district funding to attend the 2005 National Science Teachers Association

(NSTA) Meeting. She described her efforts to obtain district funding for the trip, stating:

> It took me a long time to put together all of the resources that I needed to present to the appropriate people in the district, but apparently it was good enough. It was a letter explaining what I experienced in coteaching, why I think [coteaching's] a valuable thing, why is it a good thing that I [attend this conference and why it's a good] for my classes (Lisa Interview, 5-18-05).

Through her communication and provision of a description describing her previous conference experiences (association with coteaching research presented at 2004 NSTA conference) and their application to her current teaching practices (i.e. coplanning) Lisa's was able to attain her school district support for her travel and attendance at the NSTA conference.

Thus, while Lisa was able to establish coplanning as a regular practice amongst she and her fellow biology teachers, her use of resources associated with her collaborative practices also enabled her to generate cultural capital within her science department. Lisa utilized this capital in order to obtain district funding for the 2005 NSTA conference. In addition, their social capital amongst their coplanning group enabled each teacher to share their planning ideas and maintain a sense of ownership over their planning practices. Ultimately, her application of the schema of collaboration, as well as the resources she garnered during student and first year teaching environments enabled her to integrate and sustain the practice of coplanning in both her own and Rosalind's and Marie's teaching repertoires.

The coplanning practice maintained its utility due to the mutual engagement on the part of Lisa and the other two biology teachers. By coplanning their laboratory activities each teacher gained resources from the collective grouping and provided the

other participants resources associated with each laboratory topic. By acknowledging one another's teaching strengths and experiences, Lisa and her fellow biology teachers collaboratively constructed a structure that allowed them to garner valuable resources to address their required laboratory teaching and planning needs, as well as their school's concern for innovative teaching practices, the use of technology in lessons, and students continued motivation to achieve academic excellence on SAT, AP, and course assessments.

Lisa's choice to apply the schema of collaboration (agency), in response to the general teaching environment at Franklin High School, initiated the emergence of a structure | agency dialectic particularly when the resources that her coplanning group generated were applied to the participating teachers' teaching practices. As a result of the cultural reproduction of the collaborative schema and applicability of these resources to the participating teachers' needs, the coplanning practice became established as structural component of Lisa's, Rosalind's, and Marie's teaching repertoires.

Contradiction. Lisa's choice to not collaborate with her mentor, James represented a contradiction to her application of collaboration as a means to generate resources to improve her teaching practice. Due to her mentor teacher's lack of coresponsibility and corespect regarding their regular meetings, Lisa planned activities and other aspects of the course curricula with her other biology teachers. Thus, the contradiction to Lisa's engagement in collaboration displayed the difficulties associated with maintaining collaborative interactions amongst educators. The lack of corespect and coresponsibility between Lisa and her mentor highlighted the issue of

how teaching responsibilities and respect for fellow educators were addressed within their mentoring relationship.

Chapter 9

CONCLUSIONS

Beginning teachers are concerned about a multitude of issues during the start of their teaching careers that include being prepared to adequately address the diverse needs of their students, classroom management issues, communicating with parents, and planning their course curricula (Wilson, Ireton, & Wood,1997). With such a vast amount of typical first year teaching concerns, a teacher's first year has profound impacts on her/his subsequent professional teaching activities. Thus, it is critical to examine the methods used to prepare preservice teachers for their profession and the ensuing transition into the roles of in-service teachers. It is during preservice teaching that student teachers begin the transition from the position of a novice to that of a qualified professional who can successfully engage in a variety of teaching situations. Accordingly, the methods employed to guide these individuals towards becoming qualified educators should be thoroughly analyzed and evaluated for their preparatory value, as well as to determine the degree of influence that they have on the identity formation of educators (Britzman, 2003).

Current research identifies that beginning teachers describe having concerns and difficulties addressing the diversity of students' needs, issues of classroom and time management, communication with parents, curriculum development and planning skills, and the development of classroom instructional procedures (Adams & Krockover, 1997; Kagan, 1992; Meister & Jenks, 2000; Veenman, 1984). Thus, the examination of the coteaching model's effects on Jaime's, Pat's, and Lisa's teaching

agencies provides an additional perspective to view the current research on beginning teachers' first year teaching concerns and difficulties. In addition, their experiences provided a perspective into the preparatory value of the coteaching model. Within this chapter I discuss the three beginning teachers' application of three of the central principles of the coteaching model: corespect, coresponsibility, and coplanning and assess the effectiveness of coteaching in teacher preparation as a vehicle to transition preservice teachers into their first years of teaching.

Teaching Agency through Coteaching Experiences

Coteaching attempts to bridge the gap between the theory and practice of teaching (Roth & Tobin, 2002). Through collaborative interactions, participants generate both material and human resources to engage in the practice of teaching. Furthermore, the model's structure encourages student teaching interns to reflect on their teaching practices and subsequently share their ideas and insights with their coteaching peers (Roth & Tobin, 2002). Roth and Tobin (2002) identify coteaching as an opportunity for "teachers to have shared teaching experiences (including planning, enacting, and reflecting on curriculum); these experiences then provide the ground for meaningful professional conversations" (p. 1). For preservice teachers, the prospect of gaining a professional's insight on their teaching seems to be an invaluable asset to honing their teaching practice. Thus, the core endeavor of the coteaching model is to provide student teachers with the opportunity to learn to teach (Roth et al., 2004). After examining the first year teaching experiences of Jaime, Pat, and Lisa, it is apparent that all three beginning teachers chose to employ the schema of collaboration as a means to improve their teaching repertoires, as well as address the cultural schemas present in their schools. From their use of the schema of collaboration,

Jaime, Pat, and Lisa enacted their teaching agencies such that each beginning teacher impacted the structures of their teaching environments.

Jaime and Lisa enacted their teaching agencies by establishing coplanning sessions amongst their teaching peers. These collaborative planning meetings fostered an environment of sharing and respect amongst the participating teachers. While engaging in these collaborative interactions, participating teachers shared their ideas and difficulties associated with teaching within their particular teaching environments. Through their conversations, the participating teachers were afforded resources to further develop their course curricula, as well as employ content specific instructional strategies for their classes. Thus, Jaime's and Lisa's choice to collaborate with their teaching peers generated a teaching practice that both they and coplanning associates continued to utilize throughout the course of their respective school years. This practice was sustained due to the generation of resources that addressed these teachers' needs, as well as their respective school's cultural schemas.

Jamie's ability to enact her teaching agency was further supported by the degree of symbolic capital that she held amongst the two other beginning teachers with whom she coplanned. Jaime developed her symbolic capital through her teaching peers' perception of her as a "veteran" teacher. Jaime's position as the veteran teacher of her coplanning group was supported by to her pedagogical content knowledge gained from her experiences with the coteaching model, as well as the after-school absence of the other veteran science teacher. Thus, Jaime's application of this symbolic capital enabled her to establish coplanning as a sustained teaching practice amongst her fellow seventh grade science teachers.

Lisa's teaching agency was supported by the degree of cultural capital that she developed while teaching at Franklin High School. Through her active use of technology as a means to encourage student learning, Lisa aligned her teaching practices to address her school's cultural emphases (i.e. student academic achievement). Her suggested use of coplanning as a way to address the required double-period laboratory activity was embraced by her fellow biology teachers because the collaborative activity generated innovative teaching practices. Through her instigation of coplanning, Lisa demonstrated that she was engaged in her school's cultural norms regarding the use of technology and new teaching practices to promote student academic achievement.

Pat enacted his teaching agency by collaborating with science teachers within his department and county chemistry teachers. During these interactions Pat shared his teaching experiences and simultaneously obtained various strategies for teaching chemistry, employing new laboratory activities into his curriculum, as well as developing teaching strategies that were specifically attuned to teaching at his high school. Furthermore, Pat allowed his students to have a voice within his chemistry classes. He identified this as an effective way he could improve his teaching practices.

Pat's choice to modify his teaching practices in ways that addressed his students' specific learning needs enabled him to garner social capital with his students. His attention to their curricular needs and extracurricular activities further solidified the formation of this form of capital and its subsequent transformation into cultural capital. By allowing his students to have a voice in their classes, Pat reflected on effective teaching practices that addressed his students' learning needs. Likewise,

his attention to his teaching practices and student needs aligned with his science department's emphasis on attending to students leaning and personal necessities, ultimately allowing him to engage in collaborative discussions about improving teaching effectiveness between he and other science teachers.

Addressing Beginning Teachers' Concerns and/or Difficulties

With respect to the beginning teachers' concerns / difficulties identified from the research literature, Jaime, Pat, and Lisa addressed their needs regarding curriculum development, planning, and the development of classroom instructional procedures through their use of collaboration. Jaime's and Lisa's coplanning practices enabled them to obtain the necessary resources to plan their course curricula, as well as develop teaching strategies attuned to their specific classes' learning needs. Pat's collaboration with his science department, chemistry teachers though out the county, and unofficial mentors provided him with a plethora of human resources. These individuals afforded Pat advice and ideas about how to plan his chemistry courses, as well as instructional strategies that he applied within his chemistry classes.

Each first year teacher responded differently to addressing classroom management. In conjunction with his science department's cultural emphasis of addressing students' academic and personal needs, Pat clearly identified making an effort to communicate with his students and to provide support for both their curricular and extracurricular activities. From the social capital that he accrued amongst his students within and outside of is classes, Pat reconciled any discipline problems before they escalated.

Lisa described classroom management as a minimal issue at her high school, identifying that the school was not a dangerous environment. Although she noted that

her classroom management techniques could be improved upon, her school's cultural expectations for academic excellence appeared to influence Lisa's teaching focus. Thus, the combination of her school's relatively "safe" environment and the expectation for students' high performance on both SAT and AP assessments, as well as on their coursework, classroom management was not a major concern for Lisa. Students who were off-task during her lessons often talked quietly among themselves and did not typically disrupt the lesson.

Jamie identified distinct differences in her classroom management techniques that she employed during her coteaching experiences at Biden High School with those during her first year of teaching at Mendel Middle School. She described the students' age difference as the critical factor affecting how she employed various management techniques. While she initially identified difficulties with classroom management, she did not specifically mention how she addressed the managerial requirements, but described managerial strategies that she would be using at the start of her second school year. These strategies emphasized the use direct instructions to curtail her middle school students' disruptive behaviors.

Summary of Findings

From Jaime's, Pat's, and Lisa's first year teaching experiences, each first year teacher enacted their teaching agency by applying the schema of collaboration as a means to generate resources. While they each engaged in collaborative actions specifically attuned to their first year teaching environments, all three of these first year teachers generated resources through their collaborative efforts as a means to improve their teaching practices, while addressing the cultural schemas present in their general teaching environments. In addition, the beginning teachers'

collaborative practices were supported by their appropriation of the concepts of corespect and coresponsibility, the latter being central components of the coteaching model of teacher preparation. Moreover, their use of the specific forms of capital previously identified and membership as active members of their teaching communities enabled them to engage in these collaborative practices.

Thus, Sewell's (1992) positioning of structure and agency as a dialectic, such that "schemas are the effects of resources, just as resources are the effects of schemas" is apparent in each of these teachers' first year teaching interactions (p.13). All three beginning teachers described the influence of particular cultural schemas on their first year teaching practice. In addition, the lack of access to resources that Jaime, Pat, and Lisa encountered, as well as their personal motivations to improve upon their teaching practices, encouraged them to enact their teaching agencies. These teachers' choices to apply their knowledge of collaboration functioned to generate resources to address their teaching needs within their individual teaching environments. Thus, the structural modifications of their first year teaching environments, in the forms of Jaime's and Lisa's establishment of coplanning as a sustained planning practice amongst their teaching peers, as well as Pat's impacts on the increased student enrollment for chemistry courses concretely reflect Sewell's (1992) theoretical construct of structure | agency as a dialectic.

From their participation in the coteaching model of teacher preparation, Jaime, Pat, and Lisa were afforded with experiences and resources that aided in their transition from preservice to in-service teachers. The coteaching model's use of collaboration as a method of improving teaching practice was evidenced in these three beginning teachers' agencies. Their use of collaboration as a means to generate the

resources they desired to function as effective teachers within their particular first year teaching environments demonstrates the program's ability to act as a "bridge between theory and practice" (Roth & Tobin, 2002). Thus, this model of teacher preparation addresses Britzman's (2003) concern regarding the disconnection between theory and practice within teacher education that occurs when pre-service teachers' conceptions of their teaching identities as student teachers does not equate with their experiences during their student teaching practicum (Britzman, 2003).

Widen, Mayer-Smith, and Moon (1998) identify that the difficulties associated with the transition period between preservice and inservice teaching can be countered "when close collaboration exists between players in student teaching" (p.152). The coteaching model of teacher education positions key stakeholders in student teaching, these individuals being student and cooperating teachers, to link theory and practice through the critical analysis of their teaching and leaning practices (Roth & Tobin, 2002). The coteaching model's emphasis on self-reflective practice as a means to refine one's teaching practices was evident in these beginning teachers choice to engage in a collaborative community in which they could share their thoughts and personal reflections about their teaching practices. Thus, in these specific instances, the beginning teachers' coteaching experiences allowed them to utilize the theoretical constructs of the program to address their first year teaching needs by establishing collaborative teaching practices.

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