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Learning to teach without teacher preparation : a case study of two beginning high school science teachers.

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LEARNING TO TEACH WITHOUT TEACHER PREPARATION: A CASE STUDY OF TWO BEGINNING HIGH SCHOOL SCIENCE TEACHERS

A Dissertation Presented

by

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To D, for waiting

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ABSTRACT

LEARNING TO TEACH WITHOUT TEACHER PREPARATION:
A CASE STUDY OF TWO BEGINNING HIGH SCHOOL SCIENCE TEACHERS

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Many concerns have been raised about the quality of teaching in schools. One proposal is to reduce the amount of formal preparation prospective teachers need. This suggestion should be evaluated carefully to determine whether teachers with minimal or no formal preparation are able to do the work of teaching in ways that respond to concerns raised about the teaching profession.

This study followed two high school science teachers throughout their first year of teaching. Neither had had formal teacher preparation. The study focused on how they understood and managed the role of teacher and the tasks of teaching, and how they viewed their students.

Three techniques were used in data collection: interviews, observation, and concept maps. Extended interviews were done at the beginning, middle, and end of the school year. During these the participants constructed concept maps on the topic of teaching. Shorter interviews were done bi-weekly following a day of classroom observation.

While the participants fit easily into the outward role of a teacher, they had difficulty knowing how to help students learn. Both participants assumed that if a

student listened in class and did the work, then that student would learn the material. They did not know how to assist a student who had difficulty in class.

The schools had a significant impact on how the participants viewed the work. Because they fit easily into the school, the participants had no reason to question or change how they taught. No one at the schools raised any other possibilities for how to do the work than what the participants were already doing.

This study raises questions about the efficacy of hiring teachers who do not have teacher preparation. Those who are calling for more subject matter background and less pedagogical background are expecting that change to make a difference in student learning. The participants of this study, however, did not have the knowledge and skills to effectively help all students learn the material. This study also points to the importance of having schools be active participants in efforts to reform teaching and improve learning for all students.

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CHAPTER 1

INTRODUCTION

How one learns to teach has long been a source of debate in this country. The amount of preparation, the kind of preparation, and where it should take place, have all been areas of contention since formal teacher education was started about 200 years ago. A recurring assertion is that all a teacher needs as preparation is a solid grasp of the subject matter. The assumption behind this sentiment is that anyone can teach as long as that person has an understanding of the subject matter. If a person has the academic ability to master a subject, then s/he must have the ability to teach another about that subject. Any other skills that may be needed can be picked up on the job; more extensive, "professional" preparation is not necessary.

Educational reform reports published during the 1980s, state legislatures that have reduced the amount of hours prospective teachers need to take in education courses, and local districts/schools that hire teachers with minimal formal preparation all continue to contribute to this debate. Their specific concerns may vary, from wanting to improve the education children receive in schools to needing someone for a hard-to-fill position, but the outcome still is similar: people with little formal preparation are teaching in schools.

Many questions can and should be raised about teachers who have not had formal preparation. Are they able to teach what they know? Do they know their subject in ways that allow them to teach it to students? How do they deal with students who have varied abilities and backgrounds? Are they able to organize, plan and manage the many tasks and people that make teaching a complex activity? Research that looks at these questions can help clarify whether teachers without

professional preparation are able to do the work of teaching in ways that respond to concerns raised about the teaching profession.

Focus of Research

This dissertation contributes to that body of research. I studied how two beginning high school science teachers without professional teacher preparation understood and managed the role of teacher and the tasks of teaching. I was specifically interested in three aspects of their experience. Each of these aspects was concerned with the participants' understanding of and perspective on the experiences they were having as a teacher.

The first was how they understood the role of teacher. What kind of characteristics did they assume to be a part of that role? What did they believe were their responsibilities as a teacher? Did their perspective change during the year and, if so, what caused those changes?

The second aspect was what they believed "teaching" to be. How did they see the connection between teaching and learning? What methods or activities did they use? How did they make decisions about what to do? What changes, if any, did they make during the year and what influences those changes?

The third aspect was how they viewed their students. What did they expect of them? How did they take into account the students' background, perspective, and experiences? Did their perspectives on the students change during the year, and if so, what affected those changes?

Since neither of them had gone through professional preparation, they had had few opportunities to articulate, analyze or challenge their assumptions and beliefs about teaching or being a teacher. Those assumptions and beliefs were what guided

them through the year, shaping their attitudes and actions both in and out of the classroom.

Definition

For the purpose of this study the term "preparation" refers to professional teacher education, which includes work in curriculum development, instructional methods, educational foundations, and supervised practice teaching. "Unprepared" or "without preparation" means that the individual(s) has not gone through a teacher education program prior to beginning teaching.

Significance

Recently, research reports have appeared in which investigators examine the issues and problems unprepared teachers face as they begin to teach. The focus is moving from "Can they teach?", which was the emphasis of studies in the 1950s and 1960s, to "How do they teach?" (Grossman, 1990; Camp & Heath-Camp, 1989). Much of the impetus for these studies was a drive to understand the task of teaching. Looking at that topic from the point of view of those who have had no formal preparation for the work offers additional ways of understanding teaching.

This study expands that research. Few investigators have followed unprepared teachers over a significant period of time. By observing and interviewing the participants throughout their first full year of teaching I was able to gain some insight into the effect that time and experience might have on learning to teach.

Implications

One group for whom this study has implications are teacher educators. Understanding how people learn to teach is an ongoing part of the task of preparing

prospective teachers. This study contributes information regarding the role of experience in learning to teach. Looking at how a person without teacher education makes sense of the experience of first year teaching may provide teacher educators with insight into methods of helping their own students reflect upon experiences in the college or elementary classroom.

This study also has implications for policy-makers who are moving in the direction of placing people with minimal or no preparation in classrooms. The participants in this study graduated from an academically rigorous pre-med program. They were selected to teach by their advisor and the school district representative on the basis of a solid grounding in their subject matter. How they understood and handled the tasks of teaching provides further information for policy-makers in determining the efficacy of current proposals affecting teacher education.

In addition, this study also may have implications for evaluating the preparation of college/university professors. Those who teach at the college/university level are not required to have any formal teacher preparation. A graduate degree in the subject area they will be teaching is the basic requirement. Clearly the prevailing assumption is that the ability to teach the subject is something they will be able to develop on their own. While some relevant differences exist between high school and college/university regarding structure and expectations, the questions raised in this study also can be raised about the professors' ability to interact with their students in ways that enable their students to learn.

CHAPTER 2

LITERATURE REVIEW

Introduction

I begin this chapter with a discussion of national reform proposals and state legislation regarding teaching and teacher education. The proposals and legislation represent efforts to address concerns about the education children receive in schools. Inadequate teaching, and by extension the inadequate preparation teachers receive, is regarded by the authors of these reports as one of the major causes of the problems in schools. Many of the documents propose limits on the amount of time preservice teachers spend in professional preparation. How teachers without much preparation fare in schools should be looked at carefully in order to determine whether reducing formal preparation will address the concerns raised in the reports.

A review of the research that has been done on teachers without formal preparation will follow the section on reform proposals. While the number of studies in this area is not large, they offer some indication of the issues to be aware of and the questions that need to be asked regarding unprepared teachers.

The chapter will end with a brief look at the problems and concerns faced by beginning teachers. Since the two participants of this study were first year teachers, a distinction should be made between aspects of their experience that may be due to being first year teachers and aspects that may be due to lack of preparation.

Reform of teacher education

The education reform movement in the 1980s focused attention on teachers as contributing to the problems in schools. Teachers were seen as poorly prepared

academically, insufficiently committed to teaching, and inadequate in terms of their intellectual capabilities. The underlying assumption was that if only we could put highly qualified, academically proficient teachers into the classrooms, then many of the concerns about the problems in schools would be addressed. The more general manifestos regarding education reform such as Educating Americans for the 21st Century (1983) and A Nation at Risk (1983) were followed a few years later by specific reports on teaching and teacher education reform such as the Holmes Group's Tomorrow's Teachers (1986) and the Carnegie Forum's A Nation Prepared (1986). These later reports specifically addressed concerns within teacher education and the profession of teaching. They identified problems that existed and proposed, in varying amount of detail, changes that should take place in both preservice teacher education and in the teaching profession.

This ferment of critiques concerning teacher education and the teaching profession is found at many different levels. State legislatures have passed new regulations regarding teacher certification. Colleges and universities have altered their expectations and requirements for teacher education. Individual schools and school districts have made changes in how they regard teacher roles and the role of the school in preparing new teachers. All of this movement implies a basic agreement that how teachers are prepared and what is expected of them must change if problems within schools are to be addressed.

One suggestion included in many of the reform proposals is to reduce the amount of time spent in education classes. Behind this change lie two major areas of concern. One concern is that teachers are not spending enough time in subject area courses (National Commission on Excellence in Education, 1983; The National Science

Board Commission, 1983). If the instruction that students receive is to be academically rigorous and prepare them for careers, then teachers must be better prepared in the academic fields.

The second concern is a lack of confidence in the efficacy and attractiveness of teacher education programs. Questions about the need for teacher education programs have existed since before such programs were common in this country (Flickinger, 1991). The well-known argument that "if you know something you can teach it" is still a very powerful one for many people. Bolstering these doubts about the usefulness of teacher education are teachers themselves who point to the student teaching experience as the most relevant aspect of their preparation. The education courses they took are often viewed as impractical or simply busywork (Lortie, 1975).

This attitude toward teacher education programs does not make entering these programs very attractive. Many policy-makers and educators contend that we need to find a way to get bright, capable people to go into teaching who may be avoiding it because of the bad reputations attributed to many teacher education programs. They argue that if requirements are reduced or alternative avenues of certification developed, then people looking for a second career or college students majoring in a liberal or scientific discipline will be more willing to consider teaching. About two-thirds of the states now have alternative routes available for people out of college who decide to enter teaching (Education Commission of the States, 1990). These alternative programs vary considerably from state to state, but they all are designed to appeal to people who otherwise might not go into teaching.

Research on unprepared teachers

While teacher educators and researchers agree that who is or is not going into teaching should be addressed, some have expressed concern about the movement to reduce teacher education coursework as a way of encouraging people to enter teaching (Haberman, 1984; Evertson, Hawley, & Zlotnik, 1985; Ashton & Crocker, 1987). They contend that the proposed changes are not based solidly upon evidence gained from research. While the research in this area is not extensive, it can provide insight which may be useful in determining what direction to go or what questions still need to be addressed.

In their review of the literature, Evertson, Hawley and Zlotnik (1985) looked at 13 studies, mostly from the 1950s and 1960s, that compared teachers with and without preparation. These studies focused on student achievement or evaluation from a school principal or outside observer as the criteria for determining effectiveness. Their conclusions are somewhat mixed. Initially they determine that teachers with preparation were more effective than teachers without preparation. "Quite clearly, teachers learn to do some things through their education courses that might reasonably be expected to improve student achievement" (p. 4). Two paragraphs later, however, they suggest that teacher preparation may not really affect how teachers operate within a classroom. "Overall, there is very good reason to believe that much of what prospective teachers learn in their formal college training is not transferred to their classroom behavior or even that many of the specific skills they acquire do not survive practice teaching" (p. 4).

This leaves open the question of what they think makes the difference between teachers with preparation and teachers without preparation. If it is not the coursework

that leads to a difference between these two groups, then is it some socialization that takes place during the teacher education program that allows teachers with preparation to do better in the classroom? Or is it amount of experience that teachers with preparation have had in classrooms (e.g. through practica) that really makes the difference?

Research on teachers without preparation breaks down into two broad groups based on when they were done. One group of studies, many of which Evertson, Hawley and Zlotnik included in their review, is mostly from the 1950s and 1960s, with one in 1975. All of these studies compared those with preparation to those without, in general trying to determine whether preparation was an important factor in the competence of teachers. The major areas they looked at were student achievement and subjective (often global) evaluations of teacher effectiveness.

Shim (1965) and Hall (1964) both looked at the effect of amount of preparation on student achievement. Shim's results showed higher student achievement from teachers without preparation, particularly in math, language and reading. Hall took as his sample teachers from Beery's (1962) study and looked at student achievement on standardized tests. His conclusion was that students of teachers with preparation did better, particularly in paragraph and word meaning and in spelling.

LuPone (1961), Beery (1962), Bledsoe, et al. (1967), and Copley (1975) all looked at various aspects of teacher effectiveness. The greatest overlap among the variables considered was in the area I labeled "Teaching Skills." This included planning and preparation, management, instruction, use of resources, subject matter knowledge, and awareness of student needs and abilities. Those with preparation were consistently rated higher in three of the four studies. Copley was the only one to

differ. He found instances of no difference between the two groups in the areas of planning and preparation, and in subject matter knowledge.

The other area which received attention in these early studies was what I labeled "Relationships." This included evaluations of the ways in which the teacher interacted with colleagues, parents and students. Bledsoe, et al. (1967) and Beery (1962) both found those with preparation as rated higher than those without preparation. Copley's (1975) study slightly favored those with preparation. LuPone (1961) found no difference except in teachers' relationships with students. In that area those with preparation were rated higher.

Three problematic issues arise in attempting to arrive at an overall impression from these studies. The first concerns the amount of preparation the teachers had and how that compares across studies. The terms used were "non-certified" or "provisionally certified." Not every study defined these terms precisely, leaving unclear whether the unprepared teachers had no background in education, a few courses, all but student teaching, or just had not received certification.

The second issue involves the specific criteria used to determine either student achievement or teacher effectiveness. Four of the studies looked at "teacher effectiveness," yet the criteria varied from one study to another. For example, one of the studies (LuPone, 1961) included the ability to evaluate students. None of the other three studies mentioned that factor. In another case, one study (Copley, 1975) included "effective communication skills" and another rated "overt classroom behavior" (Bledsoe, Cox, & Burnham, 1967). One could argue that these two are the same, but certainty is not possible without more precise definitions.

The third problematic issue that should be kept in mind is the data gathering techniques used in the various studies. The methods used to gather data varied from looking at past records or data from previous studies, to principals' ratings of the teachers, to careful training of special observers for evaluating the teacher's performance in class.

These issues need to be kept in mind when using these studies to understand differences between prepared and unprepared teachers. However, these studies do make a contribution to the question of the impact of preparation. In general, they point to the advantages of having formal preparation, at least in the areas of teaching skills and relationships. Some exceptions did occur, however, which point to the need for further investigation.

Even though these studies for the most part favored having teachers with preparation, they did not seem to lay to rest the idea of employing teachers without preparation. The practice continued, particularly in times of teacher shortages or in subject or geographical areas difficult to fill. The research in this area subsided for 10-15 years, not reappearing in the literature until the late 1980s.

The second group of eleven studies have all been done in the late 1980s and early 1990s. Included in this group are studies that look at teachers who have received certification through alternative routes. Since this body of literature is quite large and continues growing as more alternative routes are created, I have decided to include only those studies in which the teachers had a maximum of two to three weeks of study before actually starting a job as a teacher. My rationale was that even though they may be doing concurrent coursework throughout the first year of teaching, they are still, for a time, responsible for a classroom with minimal or no preparation.

Half of these studies (Clarridge, 1990; Dewalt & Ball, 1987; Knight, Owens, & Waxman, 1990; Mishima, 1987; Peck, 1989) looked at issues of teacher effectiveness, continuing the research started by the first group. Once again, the specific criteria used to determine teacher effectiveness varied among the studies. The general area of study was the teaching-learning process, similar to the "Teaching Skills" area I mentioned earlier.

Mishima (1987) compared those who had been through regular certification with both those who had received alternative certification and emergency certification. She found no difference among the three groups for the six criteria used. Dewalt (1987) compared prepared and unprepared teachers in 12 areas of competency. He found two areas which favored those with preparation, two which favored those without, and no difference in the other eight areas.

Peck's (1989) results showed those with preparation as more favorably rated in attitude toward subject (math) and in students' perceptions of teaching ability. In other areas no difference was found. Knight, et al. (1990) also used students' perceptions in looking at the learning environment created by traditionally and alternatively certified teachers. Their results showed that students thought traditionally certified teachers offered classrooms more conducive to learning.

Clarridge's (1990) study was slightly different than the others. She set up a teaching situation and had novices (those without any preparation), beginning teachers (with preparation), and expert teachers all plan and teach a half-hour lesson. In this setting, beginning teachers were rated as more effective than the novices, and experts were, not surprisingly, rated as more effective than both novices and beginning teachers.

The other six studies in this latter group all had a slightly different focus. Their interest was not so much in determining whether those with preparation are more effective as teachers as it was in identifying specific issues or problems confronting teachers who have not had preparation and how those are similar to or different from those with preparation. Most of the investigators were interested in the implications such contrasts might have for teacher preparation programs.

Camp and Heath-Camp (1989) looked at what prepared and unprepared vocational teachers identified as "detractors": any kind of influence that hindered the person's ability to teach (p. 9). While both prepared and unprepared teachers identified similar detractors, some of the areas were clearly more of an issue for one group or the other. Unprepared teachers identified issues of pedagogy (short-term planning and preparation and instruction) and curriculum (intermediate-term planning and preparation) as problematic areas more frequently than prepared teachers did. Teachers with preparation found programmatic issues (long-term planning and operation of department), internal issues (self-concept, values, etc.) and relationships with the community to be detractors.

Cooke and Pang (1991) were interested in the issues and problems faced by beginning teachers in Hong Kong, particularly differences between those with and without preparation. They concluded that preparation could indeed diminish some of the problems beginning teachers confronted, such as reducing the discrepancy between expectations and reality or helping the teacher feel more confident and able to get needed information or resources.

Shulman (1989) looked at teachers without prior formal preparation who participated in a three week seminar through the California Teacher Trainee Program

prior to beginning teaching. The purpose of the study was to look at the kinds of dilemmas they faced in their teaching. Shulman concluded that those teachers lacked the ability to make the transition from knowing a subject to teaching it to someone else.

Shulman's results were supported by Grossman (1990) in her study of three secondary English teachers who did not have any teacher preparation. They had difficulty knowing how to determine what their students knew and did not know and then how to present the subject in a way that facilitated learning for their students.

Rosenberg (1990), in his study of prepared and unprepared physical education instructors, concluded that those without preparation focused on subject matter and on the specific performance skills of the students. Those with preparation focused more on general teaching behavior and more general student behaviors such as whether the students were on or off task.

Valli and Agostinelli (1993) followed the development of Agostinelli who had taught for a year without preparation before entering a teacher education program. The main issues they discussed were changes in how he dealt with classroom management and changes in instruction. Definite improvements in both of these areas were seen as he went through student teaching and on into his first year of teaching after going through the program.

Though each of these last six studies focus on slightly different aspects, some threads run throughout. There seems to be fairly consistent evidence to support the notion that unprepared teachers have difficulty with instruction. They have trouble making the transition from knowing a subject to teaching that subject to others.

Another common finding is that those without preparation have trouble with their perceptions of students. Some of the studies (Cooke & Pang, 1991; Grossman, 1990; & Shulman, 1989) point to unrealistic expectations of the students held by unprepared teachers. Rosenberg (1990), Valli & Agostinelli (1993), and Grossman (1990) all suggested that they are not as aware of student needs and perspectives.

Three of the studies, Grossman (1990), Rosenberg (1990), and Shulman (1989) suggest that those without preparation lack needed constructs with which to think about, reflect on, and evaluate their experiences. They do not know what questions to ask or what kinds of issues to be aware of and keep in mind.

Summary

The majority of the studies cited pointed to the advantage of having preparation prior to beginning teaching. In areas such as instruction, awareness of students and their needs, and relating to the variety of people a teacher interacts with, those without preparation seemed to have some level of difficulty. The later studies have begun to identify specific problems unprepared teachers face and how the individual teacher understands and reacts to them. This more specific information can assist teacher educators and schools in determining how best to address these issues.

Research on Beginning Teachers

While the participants' lack of professional preparation may account for some of the difficulties they encounter, they are also first-year teachers and, as such, may be experiencing situations or dilemmas typical of any first year teacher. A brief look at the research that has been done on beginning teachers will provide a basis for a deeper understanding of their experience.

Olson and Osborne (1991) provide a useful overview of research on the needs and problems of beginning teachers. Their discussion can be summarized by the following statements:

*Beginning teachers have a strong need to be accepted both as individuals and as teachers.

*Classroom discipline is a major problem for first year teachers and one result is that control becomes an important issue. This can lead to a more conservative and authoritarian approach to teaching than they may have initially envisioned for themselves.

*Beginning teachers lack knowledge about the culture of the school.

*Beginning teachers have trouble deciding how to teach what they know.

*Being placed in a classroom by themselves from the first day--a "sink or swim" mentality--causes anxiety, self-doubt and a heavy feeling of responsibility. A lack of willingness to ask for help can increase this sense of isolation.

*Beginning teachers are typically more focused on their own activities and progress than on the activities and progress of their students.

*Conflicts between ideals or assumptions regarding teaching and the actual day to day demands are common.

Some similarities can be seen between the problems experienced by first year teachers with and without preparation. Difficulty knowing how to teach a subject and unrealistic expectations of what the work involves seem to be common concerns. These highlight the need to be aware of the possible reasons for difficulties experienced by unprepared teachers.

One of the most extensive reviews of the literature on the problems perceived by beginning teachers was done by Veenman (1984). He looked at 83 studies, done from 1960 to 1984, conducted in a variety of countries. The studies included not only

first year but also second and third year elementary and secondary teachers in their definition of beginning teachers. Most of the studies used questionnaires; a few employed interviews with the teachers. From his review, Veenman compiled a list of the top 24 problems of beginning teachers.

The problems perceived by secondary teachers were slightly different than those noted by elementary teachers. Since this study involves secondary teachers, I focus on those data. The ten most common problems were as follows:

1. Classroom discipline
2. Motivating students
3. Dealing with individual differences
4. Assessing students' work
5. Dealing with problems of individual students
6. Relations with colleagues
7. Heavy teaching load and little preparation time
8. Insufficient materials and supplies
9. Effective use of different teaching methods
10. Determining learning level of students

The remaining fourteen topics from Veenman's list focused on trouble with relationships with parents and colleagues, difficulties with curriculum planning and execution, and lack of needed resources such as time, support and space.

Summary

Beginning teachers, both with and without preparation, face difficulties during their first year of teaching. Confronting behavior problems in their students, focusing on their own performance rather than the students' performance, feeling isolated, and being unsure of the expectations, policies and traditions of the school are all typical of first year teachers, regardless of whether they had teacher preparation. How they

resolve some of these difficulties may be influenced by their preparation, but that is unclear at this point.

Issues such as difficulty with instruction, unrealistic expectations of students, difficulty assessing learning, and inadequate constructs and language with which to reflect on their experience seem to be more common with unprepared teachers. Teachers coming out of teacher education programs appear to have learned effective means of dealing with these issues.

These distinctions between being a first year teacher and being an unprepared first year teacher can help clarify what topics should be the focus when looking at unprepared teachers. The areas that are problematic for all beginning teachers point to the need for continuous improvement in teacher education programs and schools.

CHAPTER 3

METHOD AND DATA COLLECTION

This investigation was a case study of two unprepared high school science teachers. They were observed and interviewed throughout their first year of teaching to gain insight into how they approached and contended with the variety of tasks and situations that constitute the work of teaching.

Case Study Method

In one of the first books to focus specifically on the case study as a research strategy, Yin (1984) laid out clear criteria for the use of case studies:

> In general, case studies are the preferred strategy when "how" or "why" questions are being posed, when the investigator has little control over events, and when the focus is on a contemporary phenomenon within some real-life context (p. 13).

The case study approach provides opportunity for an intensive, in-depth look at a small number of participants in a specific setting. The researcher is interested in understanding the interaction of various factors in the situation and how they affect the participants. A "thick" description of the phenomenon, rather than testing an hypothesis, is the desired outcome (Merriam, 1988).

Yin (1984) pointed out that the findings of a case study are not generalizable to other people but instead are relevant for broadening our understanding of theory. New information gained from the case study, differences in findings from other studies and confirmation of previous ideas can all add to how we understand a particular topic.

Shulman (1983) referred to case studies as highlighting what is possible. The emphasis is on what can happen, not on what is most probable. The case study design is not useful as a predictive tool, but rather broadens our understanding of what can happen given certain circumstances. It is a way of taking into account, and even focusing on, the unpredictability of human beings and the uniqueness of a given situation.

Limitations

One limitation of the case study design revolves around the point that the focus is a unique setting. As mentioned above, findings from a case study are not generalizable to a broad population. In a case study, the sample size is small and the setting is specific to that situation. The findings in one study may not be the same as another since the people and the setting will be different. How the two participants in my study functioned as teachers may or may not be similar to other unprepared teachers. Many more studies would have to be done before general conclusions could be drawn regarding how unprepared teachers respond during their first year of teaching.

Merriam (1988) raises another limitation of case studies that is inherent in the design--the use of the researcher as the main data gathering instrument. This aspect has a number of ramifications. One of these is that the outcome of the case study depends heavily upon the organizational and interpersonal skills of the researcher. Gaining entrance, establishing good rapport and conducting observations and interviews are all important elements that require skill and initiative on the part of the researcher.

Another ramification is that the deep involvement of the researcher in one particular case can cause the researcher to lose sight of the larger picture. Focusing so intently on a specific phenomenon, the researcher can forget that it is only one piece of the whole. Generalizations can be made that are not warranted by the data (Merriam, 1988).

Relevance for current study

Since the number of participants in this particular setting was small, the case study method offered an opportunity to concentrate on their experiences and perspectives. I was able to look closely at how they thought about the work they were doing, how that thinking changed and what influenced those changes. Focusing on how these two people developed over the year contributes to the current understanding of how a person learns to teach and provides direction for further research.

Setting

Hester College in Lowry and the Lowry School District (all pseudonyms) have collaborated on a program which is now into its fourth year. The program was started in response to an expressed need to work with the local high schools in inservice teacher development. Two science teachers are given a year sabbatical by the high schools to attend the college on a full time basis. They take science courses in their field as well as other courses of interest. The main objective is to help them remain abreast of their field and gain new ideas of what and how to teach.

During this year, they are replaced by two recent graduates of the college, generally chemistry or biology majors, who have full responsibility for their classes.

These two people have no formal preparation in teaching; the college does not have an education department. They are chosen by the project director at the college, who is a chemistry professor, and a representative from the school district. The criteria used to select the replacement teachers are their knowledge of the sciences and their presumed ability to teach at the high school level. They are chosen the previous spring, so they have the summer to prepare. The courses they are responsible for range from freshman Earth Science to upper level Chemistry and Biology courses.

The two high schools in the Lowry district that participated in the program during the year of this study were East High and West High. One science teacher from each school was given a sabbatical for the year to attend Hester College. The previous year another teacher from East High had also been selected to attend the College; that teacher was now back at the high school.

Data Collection

Three techniques were used to collect data: interviews, concept maps and observations.

Interviews

Two different types of interviews with the two participants were done during the year: shorter interviews conducted frequently and three extended interviews. Each interview was audiotaped and transcribed. The three long interviews (one and a half hours each) occurred at the beginning, middle, and end of the year. During these interviews, the participants were asked about their plans, thoughts and reactions regarding the work they were doing. The first of these long interviews was done in August before they started teaching. The second took place at the end of the first

semester and the final interview occurred at the end of the school year (See Appendix A).

The second type of interview was shorter (averaging 20 minutes) and followed a day of observation in their classes. During the first month, these interviews occurred once a week. After the first month, they were conducted every other week. Twenty short interviews were conducted with one of the participants and nineteen interviews with the other.

The three main research questions provided the overall focus for these interviews. The specific questions for these interviews were generated from two sources. The first were my observations in their classes that day. The teachers were asked for their reactions or thoughts regarding what happened throughout the day as well as to clarify their reasons for planning or acting as they did. The second source were topics or problems that arose in previous interviews and observations. This allowed me to follow themes throughout the year on a regular basis, focusing on changes that took place in their thinking and understanding.

Concept Maps

During each of the three long interviews, the participants were asked to do concept maps on the topic of teaching. Concept maps are a way of visually representing how an individual understands a particular concept. They are "powerful tools for observing the nuances of meaning a student holds for the concepts embedded in his or her map. When concept maps are conscientiously constructed, they are remarkably revealing of [an individual's] cognitive organization" (Novak & Gowin, 1984, p. 35). The structure of the concept map focuses attention on what

aspects the person sees as related to the main topic and how those aspects are related to each other.

Concept maps can be used both inside and outside of research settings. For example, they can be a strategy used for organizing and planning a lecture or article (Novak, 1991); a study technique; a tool for organizing knowledge in a discipline; and as an assessment device (Beyerbach, 1988). In this study, they were used as an assessment tool for determining how the participants understood the concept of "teaching" at each of the points during the year when they were asked to construct a map. The focus of assessment was on what topics and vocabulary they thought of regarding teaching and how those topics and words were related to each other. Each of the participants were given detailed instruction on the purpose and construction of concept maps (see Appendix B).

The process for constructing a concept map follows three steps (Beyerbach, 1988). The first involves brainstorming words or phrases associated with the main concept. Next, these words and phrases are organized on the paper with lines connecting them to each other. Finally, the connecting lines are labeled to explain the relationships between and among the topics.

One of the limitations of concept maps is that they are focused largely on the vocabulary participants have available at the time the concept map is constructed. Lacking a specific word or phrase to express an idea does not necessarily mean the participant has not thought of or used that idea. This concern can be partially addressed by using concept maps in conjunction with interviews and observations. Vocabulary may be used or activities undertaken in these settings that were not addressed in the concept map.

Another limitation is that the analysis of concept maps can be fairly subjective (Beyerbach, 1988). The perspective of the researcher can influence what is seen, what is considered relevant and what constitutes change in understanding on the part of the participant. In order to address this concern, I tested my analysis of the concept maps with a colleague. This gave me opportunity to receive feedback on my understanding as well as to see the maps through another set of eyes.

Observations

Observations in the classrooms of the two participants were done every week for the first month and then every other week for the remainder of the year. Field notes were taken throughout the day, focusing on sequence of events, major interactions between teacher and student, and questions that arose for me as a result of previous interviews or discussions.

The purpose of these observations was twofold. The first was to provide the participant and me with a common perspective about which to talk. What occurred during that day was seen by both of us and could be used to broaden our conversation during the subsequent interview.

The second purpose was to provide me as the researcher with an understanding of the setting in which the participants worked. Rather than rely solely on their descriptions of the school, the classroom and the students, I was able to add my own perspective.

Additional interviews

In addition to the two participants, I also conducted interviews with four beginning teachers, two of whom went through a traditional teacher preparation

program and two of whom received their preparation through an alternative one year program. Of the two who had been through a traditional program, one taught at East High and the other at West High. Both of these participants were female. The other two first year teachers were both male; one taught in an urban high school and the other in a regional high school. Those interviews provided me with more perspectives from which to draw as I developed my understanding of the experiences of the two participants. The interviews were done in late spring and focused on their reflections concerning their first year of teaching (See Appendix C).

The Researcher

In qualitative research, the researcher is a vital part of the study. In many instances, s/he is the instrument by which data are both gathered and analyzed. Because of this, being aware of the researcher's biases and assumptions, as well as skills and insights, is an important aspect of the research process. (See Appendix D for a brief personal biography.)

In order to allow opportunity for reflection and evaluation of myself in this study, I kept two logs throughout the year. One was a chronological record of dates and events. I used the second log to record questions and insights into the process and the outcomes, interpretations of experiences and data, and new ideas to try. This log provides a record of how my thought processes evolved both during and after data collection.

CHAPTER 4

LANCE CELARIO

This chapter begins with a description of Lance Celario and the school in which he worked. Lance's perspectives on each of the three research questions (view of teacher, view of teaching, and view of students) are then discussed. The chapter ends with a analysis of the concept maps that Lance created on the topic of "teaching". The next chapter on Sam Cott, chapter five, follows a similar outline.

Lance Celario

Full of energy and self-confidence, Lance Celario approaches everyone with outgoing friendliness. He has a quick smile and a good sense of humor. He is rarely at a loss for words, his strong New England accent leaving no doubt as to his background. Not one to sit quietly, he worked at two other jobs besides teaching; after school every day he taught gymnastics at the YMCA and on Saturdays he worked in a lab at a nearby university.

Situated not far from a large city, the small, New England town where Lance grew up is predominantly White and middle-class. During the last five to ten years, a growing Hispanic population has begun to change the make-up of the town. Lance went to the public high school where he did well academically. He particularly remembers having good science teachers who encouraged his interest in the sciences. During his freshman year at college, he didn't put forth as much effort as he could have in his courses and his grades suffered. He decided after that year that if he was going to spend the money to go to college and if he was serious about going on to medical school he would need to put more effort into academics. His interest in

biology, his major, sharpened and his grades steadily climbed during the next three years.

He decided early in his senior year to take some time between college and further education and had only to choose between doing research or teaching for a year. He had worked in labs and on research projects and though he enjoyed that kind of work he missed interacting with other people. Besides being more interesting than research, he saw teaching as a chance to develop relational skills that would help him later as a doctor. Another reason for choosing to teach was that he thought of himself as a product of public schools and was interested in giving something back to that process, perhaps by encouraging students' interest in science as he had been encouraged.

Lance had been interested in this program at his college since early in his senior year. He applied and was called in for an interview with the district liaison. After some brief questions regarding his courses in biology, they spent the rest of the interview discussing a project his brother had worked on in the city's schools. Lance walked out of the interview shaking his head, not quite sure what to expect. Two days later he was offered the job at East High.

Lance had spoken a few times with the teachers who were participating in the program during his senior year. From those conversations he had a general idea what the work involved. He had few doubts about his ability to teach in a high school. He felt comfortable with the subject matter and was confident he could handle the students.

Lance thought his young age would be a positive factor, both in terms of the energy he could bring to the job as well as the rapport it would help establish with his

students. He felt he could understand better how they were thinking and what they were doing because he was their age not so very long ago. Being able to talk with them about movies or TV shows or music would help the students be more relaxed with him. That did not mean that he had illusions about having no problems with the students. He was aware he would be tested and that there would be a few who would cause problems. But he felt he could either win them over or cope with whatever came up.

East High

East High is located in a middle- to lower-middle class neighborhood in a mid-sized city. It was originally built as a junior high school. Consequently, the classrooms and hallways seem small when filled with high school students. East High moved into the building a few years ago.

The student population of 800 is about two-thirds White, with Hispanics, African Americans, and Asian Americans making up the rest. About 60% of the students go on to further education after graduation, some to two-year community colleges and others to four-year colleges or universities.

During the year Lance was there, the Science department had six teachers, two female and four male. Three of the teachers, two male and one female, were first year teachers. The other three teachers, mostly in their 50s, had taught at East for quite a few years, all of them having known each other in college. One of the teachers participated in the program at the college the previous year; Lance had gotten to know him there.

Of the five rooms used by the department, two were clearly set up to be used for labs, with counters, sinks and gas outlets. These rooms are also used for regular

classes, so students either sat at the counters or at desks placed in between the counters. In those rooms without lab counters, the students sat two to a table or at regular desks.

Lance's room did not have lab counters for the students. A long counter with a sink was at the front of the room. Ten tables filled the center of the room. The students sat two to a table, all facing the front counter and blackboard. The perimeter of the room was lined with desks holding 10 computers. One or two classes were large enough that students needed to sit at these desks. The back of the room consisted of windows. A variety of science-related posters decorated the walls, some of which Lance bought and some of which were there when he started. A TV was set up in one corner of the room.

Classes

The classes taught by Lance included two sections of Computer-Assisted Biology, the lowest level science class, one section of College Biology, the next level up, and one section of Honors Biology, the highest level. He was originally scheduled to have two sections of Honors Biology, but that was changed just before the school year started and he was given the College Biology class. Because the computers were in his room he was the only science teacher who taught the Computer-Assisted Biology. Due to scheduling problems during the summer, none of his classes had scheduled lab periods.

Class size ranged from 17 to 25, though on any given day half a dozen students usually were missing in each class. Though the College Biology and Honors Biology were predominantly sophomores, Lance had freshmen through seniors in all of his classes. Females comprised over half of the students in each of the four classes.

In the two Computer-Assisted Biology classes and in the College Biology class at least 40% of the students were minorities. In the Honors Biology class minorities made up just under 20%.

The school day began at 7:25 with a six minute homeroom period. The day was divided into six class periods of 42 minutes each and two 22 minute lunch periods. The break between each class was three minutes. Lance's schedule stayed the same every day. He taught four classes, had two free periods, and had lunch duty during one of the lunches.

Lance usually arrived by 7:10 in the morning, spending the 15 minutes before school started talking with other teachers or preparing for his classes. Students stood talking in the halls or at their lockers which were located in the classrooms. The first bell at 7:25 was for homeroom which lasted for six minutes. During this time the pledge of allegiance and announcements were given by two students on the TV. The students in class usually were talking with each other during this time, often paying little attention to what was happening on the TV. Lance took attendance, talked with the students and prepared for class.

The bell rang at 7:31 and the next three minutes were filled with students moving in and out of the classroom, talking with each other and Lance. At 7:34, another bell rang and the first class of the day began, the first section of Computer-Assisted Biology.

Lance's style in a class stayed fairly consistent throughout all of his classes. When lecturing he wrote terminology and definitions on the blackboard and expected students to take notes. Whether or not he had notes written out for himself depended on the class and on the particular topic. The notes, when he used them, usually were

not very detailed, often just terminology or specific definitions. He brought in examples or stories from everyday life to help explain particular points. He regularly asked students questions regarding the material and used their responses to move the lecture along. Students responded easily, calling out answers or sometimes raising questions of their own.

Other common activities in class were worksheets taken from the teacher's edition of the textbooks and either reviewing for or taking tests. Lance sometimes gave the worksheets as homework to be gone over in class the next day and sometimes had the students do them in class. When going over the tests and worksheets, Lance's style was to call on students one by one to give the answer, sometimes elaborating on the answer and other times moving on to the next question.

Lance took some tests directly from the teacher's edition and other times made them up based on the chapter and on the lectures and discussions in class. For his College Biology class, he often used part or all of a test one of the other teachers had made up for his class. While taking tests the students usually were very quiet, raising their hands or calling to Lance if they had a question. As they finished, the noise level would rise and Lance would ask for quiet a number of times. He rarely had the students do anything after a test, leaving them free to talk or read or play on the computers. A few times during the year he had the students grade each other's tests while he called out the answers.

The class periods were regularly interrupted by announcements coming over the intercom calling different students down to the office. Sometimes Lance stopped in the middle of a lecture to listen to the announcement; other times he kept talking, raising his voice slightly to be heard. The other most common interruption in class

came from the students asking for passes to go to the bathroom since the bathrooms were not open during the break between classes. Lance varied in his response to this interruption, sometimes signing a pass without pausing in his lecture and other times refusing to let students leave the room. He often was frustrated with both of these interruptions, feeling that he did not have any control over what they interfered with or when they occurred.

Lance did not encounter anything that he would describe as a major discipline problem with his students. A few times he called a student out of class to speak with them about their behavior and that usually took care of the situation, at least for that day. Twice during the year he sent a student to the vice principal's office for talking back to him. There often was an undercurrent of chatter in his classes, but he rarely seemed bothered by it as long as it did not interrupt his train of thought or what was happening in class. He did not want to get into long-running feuds with students and would ignore some behaviors from certain students rather than take a chance of a confrontation escalating during class. Over the course of the year he developed the strategy of waiting until after class or even later in the day to talk with a student who had been causing some trouble. He believed that waiting gave both of them a chance to cool down and be better able to talk about the situation. He never doubted his ability to handle anything that might arise, but neither did he wish to make the year a difficult one for himself or his students.

Lance's greatest source of frustration throughout the year was the administration of the school. A large part of his discipline strategy arose because he felt he could not count on the administration to back him up. He thought they did not consistently follow through on the policies and rules of the school and consequently

students felt they could get away with not adhering to those rules. Lance decided that in general it was easier to deal with students himself than to deal with the frustration he felt when he tried to get help from the administration.

The other main reason for his unhappiness with the administration was that he did not have enough textbooks for both sections of his Computer-Assisted biology classes. Because of this, one of the classes was given a textbook that Lance felt was too difficult for them. During the first half of the year Lance repeatedly talked to the principal and his department head to try to get books, asking them how he was supposed to teach a class without textbooks. Initially he was told they were coming and then he was told there was not any money to buy them for this year. By mid-year he had stopped pursuing the matter, convinced that it would not get him anything. He also did not want to create problems with his colleagues and thought that pushing the issue further might cause tension.

Lance's self-confidence and positive outlook continued throughout his first year of teaching. He enjoyed the work and the students, remaining pleased with his decision to work with people rather than in a lab. The administration seemed content with his performance, offering him both a summer position and a job for the following year. Lance did work there during the summer, but had been accepted into medical school and decided to move on to his original career path of becoming a doctor.

View of Teacher

Lance entered the year with a well-defined notion of what a teacher was, the roles, characteristics and duties. He thought of the work as comprising a multitude of roles, not all of which dealt directly with the subject matter. In fact when asked before

the school year began to describe **teaching** his response came as talking about what a teacher was:

> Describe teaching. Someone said once it's part parent, part teacher, part guidance counselor, part fight referee, it's it's just, it's no, it's so many different jobs you play, so many different hats you wear while you're there. It's not just one thing. You have to be good at all of the things and not just, you can't be a great lecturer but you couldn't, but not be a good listener. You wouldn't make a good teacher that way. So it's a lot of different things you have to put together. .... you're part teacher of the kids, you're partly their friend, you have to be a disciplinarian sometimes and guidance counselor, there's a lot of different things you do. So I think that, you can't put one label on teaching, it's diverse. (Aug. 30 interview)

Lance's view of the work of a teacher stayed fairly constant throughout the whole year. He saw the position as complex, requiring the person to provide a number of services depending upon the particular situation or the needs of the students.

> It's, it's interesting. Everyone always asks me how do you, what do you think of it. Interesting. It's, you know, (pause), it's not, you know, it's not any one role. It can't be, you know, any one job. It's different jobs all into one. It's something whereas you're part guidance counselor, you're basically a magician up there sometimes. You, you know, you have to be able to be a babysitter sometimes (smiles). You have to be able to be very flexible with the kids' needs. [Jan. 25 interview]

Part of the role as Lance understood it was being an authority figure. This was bolstered by how he dressed, how the students addressed him, what they knew about him, how the room was arranged, where the focus was during class, and the actions he took to establish/maintain order and discipline both in and out of the classroom. Much of this was his own inclination, supported by suggestions and responses from his colleagues.

Lance always wore a tie, believing that helped create a useful distinction between himself and the students. While he thought briefly about having the students call him by his first name he was dissuaded from that by one of the other teachers. The students addressed him as Mr. Celario, though a couple of students changed it to "Mr. Celery". At the beginning of the year he discouraged this change, but as the year progressed he began responding to it as easily as his real name.

The layout of the room was important to him as well in establishing where the attention should be. He was frustrated that he had a small room which meant some students sat around the perimeter. He would have preferred enough room with single desks so that all the students could sit by themselves and face the front of the room, their attention focused on him and the blackboard.

From the beginning of the year Lance had few qualms about his role as a disciplinarian both in and out of his classroom. While he did not see himself as a "mean" person or one to raise his voice, he was aware that establishing rules early in his classes was important and he did so during the first two days of school. He also responded to various incidents in the lunchroom and hallways, upholding school policies and stepping into the middle of student conflicts. He had high confidence in his ability to handle any of the students and a belief that it indeed was his responsibility as a teacher to maintain order.

Lance's picture of a teacher was filled out with certain characteristics that varied little throughout the year: liking kids and understanding their perspective, being patient, and being flexible.

> But I think another thing is you have to like the kids. If you don't like teenagers don't teach . . . You have to be very patient too, I've learned, that it's not a question of going over mitosis once, it's a question of

> going over it about eight times, you know, the same thing over and over again. You have to be willing to do that. If you're not willing to, you know, answer, you know, address the questions in class you can't do it, 'cause then kids, kids will be very upset if, you know, if you don't c-, it's not caring they need so much as you know, answer their questions. If they have a question you've got to be willing to answer it, even if it's a repeat question, you have to be willing to answer it. I mean, yeah, you can't, you have to be someone flexible to, just cause you know, if you walk in there one day and you have periods one to four but it's a half day and they tell you the period's actually four, five, six and seven, then you have to be ready to think on your feet. So that's another thing... But basically, I think the thing is, you have to like the kids... I too think, like when you're doing something you have to understand and think of the consequences of your actions in their mindset almost. You have to think how would this affect me if someone had told me to do this, you know, I had this project, you know, would I be able to function as a student . . . [Jan. 25 interview]

Lance took seriously his responsibilities towards his students. Taking their point of view was one aspect of this. He put himself in their shoes, trying to take into account how they might react to events or expectations. While this did not always alter what he planned, at times it did affect his decisions.

> I put myself in their situation. That's, maybe I'm a little more lenient, you know, about this or that, but a lot of times it'll be like, well okay, like you know I try to say how I had it in high school, how I felt about it and if I didn't like something, homework on weekends, that's a good, that's a great example. I hated homework on weekends, 'cause you had to lug your books home. It was just a pain, you had, you had, a lot of times it was counter-productive. And I mean I will assign it sometimes, but it's not a thing for me. I didn't like it... So I don't, I'm trying not to do something like that. I know I didn't like it, I won't. I'll tell them, "Listen, I hated this in high school." [Sept. 16 interview]

Lance had little hesitation about encouraging his students to do better or try harder. Whether it was about getting their homework in, answering a question he posed in class or finishing a test, Lance clearly believed that he had a responsibility to push his students to work hard. Some students he wanted to push harder than others,

thinking that they were not working up to their potential. This caused some conflict for him because he also believed a teacher should be fair and treat students equally.

> I guess my job in a way is hard because you don't want to, people like Tonya, I don't want to say anything to her in class because there's other people getting 40s. But you know, like I know she should be doing a lot better, but you know I can't say to her "you should be getting an A" and not tell the other person who's getting a 40, you know. It wouldn't be fair. [Dec. 1 interview]

Lance also thought it was his responsibility to create the atmosphere in the classroom. He wanted it to be comfortable for his students, where they would be willing to ask questions and give responses.

> Well, you know, obviously, you know, secure, that's one of the things. Like the kids, you know, the kids feel comfortable being in, they're not afraid to be in there, then, you know, then the comfortable one, they're not, well you know physically, that the temperature's not 800 degrees and it's not freezing either, I mean that's kind of like building more than anything else, but also I, you know, also more like an emotional one, where they're not afraid to ask a question, not afraid to answer in class, you know, not afraid to contradict someone else's answer without, you know, not offending the person, maybe they can help, you know, try to correct the answer, so something like that, and something to express their opinions too. [Feb. 16 interview]

He believed that he could affect that atmosphere by how he treated the students and how he reacted to their questions and comments.

> I don't mind the kids like you know, not, they don't have to raise their hands if they answer a question. That I will, no matter how ridiculous the question might seem, I don't, you know, laugh them out of it and laugh at their question and not answer it. If a kid asks a question, you know, usually I'll say, even if it wasn't a good question, I'll say it was a good question, you know, that's not a bad question and then I'll try to answer it and make them feel like, you know, they're contributing to the discussion and let, try to listen to everyone, even if this point's been beat into the ground if someone raises their hand I'll still recognize them and you know ask them what they have to say. So that way they don't

feel shut out or that I'm saying I don't want to hear you. [Feb. 16 interview]

At only a few points during the year did Lance address the issue of his responsibility as a teacher to teach the subject matter - biology. The various roles and responsibilities discussed above were where he placed most of the emphasis. When he did bring up teaching the subject it was, at times, accompanied by a shift from the subject to a much broader focus.

Q: What do you see as your responsibility to the students?

They, you know, try to, for the students, you know, to give them the best possible learning environment, you know, not only in the classroom, but providing them with the correct information and not, right now like my Honors class it's tough. They've had a lot of, this is very basic things we're doing right now, they've had a lot of it, they know what a volcano is, but they don't know what a fault-block mountain is or they don't know what an upwarped mountain is, so that, now and this aspect I'm starting to supply them with new information and evaluating them on their retention of the information. They're not going to be, it's not going to be very vital to their future if they know how a fault block mountain is formed, but that will get that, basically it gets them the discipline as they take notes, how to study for something and how to learn some, you know, that will help you out in the future more so than a fault block mountain... [Sept. 30 interview]

You know, your main job supposedly, is, you know, presenting the kids with learning. You know, you're teaching them the content material. It's things that will supposedly make them fit into society, but along with that you're also teaching them manners, you're teaching them discipline. You know, it's more than biology. They don't come to my class to learn biology. [Jan. 25 interview]

It is not that Lance did not think the subject was important or that he himself was not very interested in it. He found biology fascinating and wanted to be a part of getting his students interested in the subject. But in terms of where he placed the

emphasis for the work he was doing as a teacher, the subject matter was not his primary concern.

Lance did not alter his views of what it meant to be a teacher very much throughout the year. As he gained experience in doing the work, he did acquire a greater appreciation for how much was expected of him.

> In a way I kind of felt my job was coming in, being able to teach, go home, correcting papers, preparing at night.....[I was] thinking that that's where it began and ended, in the class period, but obviously it didn't. Everyone had, you know, hallway duty, [cafeteria] duty, lot of things I guess I just didn't picture myself doing. I think of teaching to be in front of the class or doing lab and that's where it ended and then you know, correcting papers at home, but I never thought of in the hallway is, you know, wherever you were, you know, you were a teacher. Or in the school yard going to my car or wherever, that was still my job. So I guess that hadn't really occurred to me. [June 15 interview]

> [T]his is probably the largest responsibility I think I've had in a while and I think I probably will have for a long time. Maybe, it might even be more responsible than being a doctor, I don't know. In some ways, 'cause being a doctor I'll be responsible for people, but only when they're in their time of need almost, as opposed to, I'm responsible for someone every single day here, I mean, I'll have patients and stuff, you know, that I'll see, but you know for the most part what I'm really most responsible is when someone is sick and then I'm definitely responsible, but here I'm responsible for these kids every single day and I think that's different 'cause you know it's five days a week, 180 days a year. [June 15 interview]

View of Teaching

While Lance saw the position of teacher as complex, involving a variety of roles and responsibilities, he believed teaching itself to be much simpler. When asked what he thought would be easiest about the work he replied:

> I think the teaching itself. Like the in-classroom teaching of demonstrations, in work, in the classroom, I think will definitely be the easiest, because I think I just feel I'm ready for it, almost, because between TA-ing at college, and just maybe love for the material, I don't

> know exactly what it is, but I think that I'm, don't know, and the excitement, too, I think I'm really looking forward to that the most. Thinking up ways to keep the kids interested, demonstrations, or anything, I think that will, that in itself will be the easiest. [Aug. 30 interview]

Halfway through the year his response hadn't changed:

> I think the easiest thing is actually getting up here and going over the material. That's probably the easiest. You know actually being in front of the class teaching, 'cause that's, I don't find that part difficult at all. [Jan. 25 interview]

The act of teaching was a fairly straightforward process to Lance. It included certain activities: lectures, worksheets, reviews, quizzes and tests. Other activities were also used, though Lance saw them as a "day off", a "break" from the usual routine. Videos, field trips, newspaper articles may be important as isolated events, but not as vital components of teaching a particular topic. The more serious work was the lectures, homework and tests.

Lance was told by the department that he was expected to get through a certain amount in the textbook by the end of the year. This would then prepare the students for the next year. He determined how much he would have to cover every quarter and kept close track of where he was, particularly in relation to other teachers.

The organizing principle for what Lance taught was the textbook for each class. His lectures followed the chapter outline; only rarely did he leave out parts of the chapter. At times, he used other sources such as encyclopedias or magazines to find examples of the topics he was covering in class. The homework given to the students consisted of writing definitions from the chapter, answering the questions given in the textbook and filling out worksheets taken from a teacher's workbook connected to the textbook.

Lance quickly established a certain procedure for going through the material. This procedure was based on plans the teacher whom Lance was replacing had developed. A series of lectures and homework assignments covering consecutive sections in the chapter led up to the review for the test and the test itself.

The chapter test was both the goal of each chapter and the goad to get the students to pay attention.

> [The test] is an evaluation, it's not so much evaluation as, in a way it is evaluation in comprehension and retention, but it's also a way of giving the kids a goal. If you just say here's all this material, we did all those things with that, the kids "what does it mean?" They won't, a lot of kids won't, it'll just be in one ear and out the other. but if you say this test, this material is testable, there will be a test on this next Wednesday, you need to study this, it gives them a goal to look forward to. If you don't direct it towards something, a lot of, most of the kids won't look at it, they'll never learn a thing. [Sept. 16 interview]

Testing was the way to determine whether students had learned the material.

> I mean the only method of evaluation, you know, for the most part, is what they see on their tests. And it's very objective, I don't have much say, "well he's okay, I'm going to give him a high grade". Here they worked and they got what they worked for. A lot more direct, you know, there's no mystery involved in it. [June 15 interview]

The final exam given at the end of the year was, for Lance, an important part of the curriculum. It gave the students an ultimate goal, a reason for retaining information throughout the year.

> [I]t's to get them used to, you know, just to make sure, just to go over everything they've learned for the year, show them, you know, that everything, there was a reason why they were learning that formula back, why pay attention back in October, so that you can do this. [June 8 interview]

Lance was frustrated by the lack of scheduled labs for his courses. His initial response before the year began was "they can't have a science course without a lab. I won't do that." [Aug. 30 interview] He planned on doing a lab in his room at least one day a week, particularly for the College Biology course. As the year progressed, he found it difficult to arrange the time to incorporate labs and still get through the amount of material he wanted to.

> I had four classes a week, depending we had five days consecutive school and you know I eventually wouldn't have covered the material I should be covering, you know, so in four weeks I'd be back one week behind. [Mar. 9 interview]

Toward the end of the year he did make time for his College Biology class to view slides of microscopic organisms, though they were not pertinent to the topics being covered in class. Lance also continued to think about having the College Biology and one of the Computer-Assisted Biology classes do dissections at the end of the year, but that did not happen. For the Honors Earth Science course he arranged to have them work on a water project being run by the local Science Museum. Four times during the year they participated in running and analyzing tests. However only once did the whole class take part in this; usually it was one or two students from the class.

Another area of frustration for Lance in his teaching was the lack of textbooks. Because he organized his teaching around the textbook, Lance had a difficult time with period six, one of the Computer-Assisted Biology class that didn't have the appropriate book. He had two sections of this class, periods one and six, and wanted to keep them on the same schedule. His lectures for both classes were from the book period

one had. He felt frustrated because he could not give period six the reading assignments or questions for homework that went along with his lectures.

> You know, I don't think they know what it's like to teach a class without a book. You know, that's that's something I just couldn't give them questions, you know, they don't really have homework, I can't give them questions out of the book, say listen do questions 5-10 right now in class, we'll discuss them. I can't do that. [April 6 interview]

During the first part of the year he wrote out and mimeographed the vocabulary he wanted them to know. He also gave them the same worksheets as period one, though he was very aware that they didn't have the advantage of using the book to find the answers. As the year progressed, period six received fewer homework assignments and Lance's expectations for the class diminished. He saw the class as being at a disadvantage because they didn't have a textbook and decided to just do what he felt he could to get them through the material.

> I had given them a lot of, I had tried to keep them up with the other class in homework, but it just got too crazy 'cause at first I started giving them the words, but they couldn't have the books to look up the words in. So then I had to make up, so they were getting different definitions out of their book than the other book. And I couldn't give the same test, it was just outrageous. I just couldn't, I just couldn't keep doing it and then after a while I said forget it. I'll just go to teach what they have and just test them on that and that's it.
>
> Q: In terms of the book that they had available?
>
> No, I used, I taught out of the other book and they would have to rely on their notes. I told them just to leave the book in their locker 'cause they weren't going to need it any more. [June 15 interview]

For Lance, the act of teaching was an obvious, straightforward process of moving through the material in the textbooks. He felt comfortable with his knowledge of the material in each class, though he did spend a little more time reviewing the

topics in the Honors Biology class. The methods he used to go through the material contained no surprises and no difficulties. He usually got most of his planning and preparation done during the day, only now and then spending time in the evenings or on weekends. When asked to speculate on what he would do with the time if he were to work in the evenings or weekends, he replied "Maybe a little background research maybe. Like something just to fill in things. Other than that, at home you really can't do too much" [May 11 interview].

Lance saw himself as doing what was asked of him and what needed to be done. Areas of frustration or doubt, such as lack of labs or textbooks, arose from forces outside of his control. He put them aside and did the best he could with the resources he had available. In general he was pleased with the results of tests and with the students' term grades. He saw no reason to question his approach or his methods.

View of Students

> [Y]ou have to like the kids. If you don't like teenagers don't teach... [Jan. 25 interview]

Lance's firm belief that a teacher had to like interacting with students was borne out by his relationships with his students. His age and friendly personality made it easy for many of the students, particularly the male students, to strike up conversations with him both in and out of class on a variety of topics. Sports was a favorite one with both serious discussions about teams or players and friendly arguments about which team was better. Lance showed an interest in the social events the students were involved in, such as dances or clubs, and often asked

students what they thought about them. The students clearly felt comfortable around him and a few regularly sought him out in the cafeteria or in the hallways. Since Lance had taken the job as teacher largely for the interaction with people it afforded him, it came as no surprise that he would spend the time getting to know his students and enjoy that aspect of the work.

Lance was impressed with how the students of different ethnic backgrounds got along with each other. He saw no evidence of racial problems during the year, though he was aware that outside of class students tended to gather with others of the same ethnicity. He felt some ambivalence about his position as a white teacher in a school where a significant part of the student body was not white and where only three people in faculty or staff positions were minority. "That's a big difference for these kids. They don't have role models" [Dec. 15 interview]. While he thought that bothered some students, he believed that for the most part it was not seen as a problem for many of the students.

Analysis of the interview transcripts showed four main categories for how Lance viewed his students: treating his students as a monolith rather than as individuals; the expectations he had for students; the distinction he made between the higher level classes and the lower level classes; and his understanding of student learning. Each of these is discussed below.

Monolith

Lance's focus when talking about his students often was not as individual students, but rather each class as a single unit. In describing how his students were doing or in answering interview questions about them, Lance often referred to each class as if it was an entity. Comments such as "they did well on the test" or "they

didn't understand the material" referred to the class as a whole, regardless of students who received a D or an F, or the students who were having no trouble with the material. If Lance was asking questions in class and half a dozen students were shouting out answers, his response was that the **class** clearly understood the topic.

Another area where Lance treated the class as a monolith was in responding to students who were absent. He wanted the class to move along together in covering the material which meant that if some students were absent the rest of the class would need to wait for them to catch up. Going over a test or starting a new chapter was sometimes delayed until everyone in the class was present and had completed prior work.

While Lance was concerned about individual students, when it came to making plans or judging the value of a test, he looked at only four entities - his four classes - rather than at 80 different individuals. This approach helped him to simplify and make sense of the work he was doing.

Expectations

Just as he had with his view of teacher and of teaching, Lance entered the school with well-defined ideas about what his students would be like, both behaviorally and academically. From his own experience in high school, as well as discussions with other teachers, he had developed what he believed to be realistic expectations.

> I was that old not too long ago so I mean I know. I hate to use the word immature but it, they are, you know, and so there's going to be, you know, a lot of the giggling and you know, dumb little things you used to do, like you know little hitting or stealing someone's hat. You know, the little things, you know, I used to do to. So I, there's going to be a lot of that. Some like, almost like open defiance, just kind of those kids will try to assert some kind of hierarchy, either towards themselves in class, or towards the teacher. So, I mean there will be some of that. So that's

> going to be, that's one of the things. And I think the kids, I think the first few weeks they're going to be a little, I don't know if nervous toward me or what, I mean they can be nervous towards any teacher, but I think after a while they're going to start to realize that I'm kind of, you know, almost the same generation and we do a lot of the same things, you know I do a lot of the same things they do, enjoy the same type of music, let's say, or movies or TV. So I think after a while they'll start to feel a little more comfortable with me and not as afraid and I think after that it should be okay. [Aug. 30 interview]

A few aspects of how the students acted did surprise him. The lack of respect some showed toward both him and their fellow students bothered him. Cutting into line in the cafeteria or talking while he was talking in class were two behaviors Lance found equally perplexing.

> [F]ifth period I had off and then [cafeteria] duty and that was out of control.... I had to stand, they have a snack line, so basically I have to stand there, keep people in line and kids just, oh... absence of manners. Like there, there's one kid who didn't want to wait, so he just decided to step in the front, so I took him and I said you know, just listen, you can go to the back. [Sept. 1 interview]

> I think some of the kids, you know, when you're speaking a kid will talk. Even if you singled them out and asked them to not talk, they will still talk directly in front of you, while you're looking at them telling them to not talk, they'll turn around and talk to their friend. I mean, that blew my mind. I mean I'm surprised I didn't like take a few of the kids and strangle them, just because I mean that's something, you know, a few of them, it seems if you have conferences and they do understand that what they're doing is wrong, but some of them just, as soon as you turn your head they start talking again. So that's, you know, that really blew my mind, 'cause that's, you know, something you don't ordinarily do. If someone is talking to you, you don't turn around while they're talking and talk to someone else. It's unbelievable. [Jan. 25 interview]

While the extraneous talking obviously bothered him, at the same time he believed that some extra talking was inevitable.

> Yeah, I think, I mean there's a little chattering going on during class. There's always going to be. I, I'm not, I'm not a crazy person about absolute silence. [Sept. 16 interview]
>
> [L]ike I said, if I have a discussion, there's going to be a little talking. As long as it doesn't disturb others or disturb me. [Oct. 6 interview]
>
> If you want to have a discussion you have to understand that sometimes, you know, they'll talk with someone else and they won't be following the discussion. [Jan 25 interview]

Concerning the students' academic ability, Lance began the year with an attitude that carried consistently throughout the whole year.

> I think it's more, a lot of times a lot of the kids don't want to be here. Not that they can't do it but that they don't want to do it. They'll, you know, there might be, "I don't want to do this, I'm lazy," almost. But I think a lot of them, all of them have some kind of potential. [Aug. 30 interview]

The issue, Lance repeated often, was not ability as much as it was motivation. If the students would just apply themselves and do the work they would be able to do well in his classes.

> We're doing Nutrition in [College Biology]. I think this would be a little too involved for the kids in the [Computer-Assisted Biology] class, some of them, not all of them. All of them, you know in any other instance if you taught them one on one they could get this no problem. But it's just the fact that you know they've always been the Standard level track and that they know, you know, ...they don't have to work that hard for it. So I think if you had separated out them out with a personal tutor and you gave them complex stuff like this they'd handle it, I'm sure they could. [Jan. 20 interview]

He also thought that some students could easily move from lower level classes to a higher level one if only they would be willing to take the work seriously and put in the time needed. For these students, the question was not whether they would be

able to understand the topics but whether they would be willing to keep up with the assignments and push themselves hard enough to do well in the class.

At the end of the year, Lance was asked to respond to the statement "The students in your Honors Biology, College Biology and Computer-Assisted Biology are not separated by ability, but rather by motivation and interest." While initially agreeing with the statement, he began referring to students who, he believed, simply didn't have the ability needed. This was one of the only times he talked about lack of ability rather than lack of motivation.

> I mean there are some kids who just don't have the ability, they just can't do it. Like Gene is a good example, he does work hard, yeah, Gene does all his homework, he does study, believe me, he tells me he studies, he just can't, he doesn't have the ski-, he doesn't have the writing skills, he doesn't have the logic skills for a lot of the answers. [June 8 interview]

He then went back to his original stance, claiming that some students could do the work and just didn't want to.

> But in some instances it's not the same way, because in my [Computer-Assisted] class, some of the kids who are in there should not be in there, they should be in the College level class, whether like I said, it's a scheduling conflict or what have you, it could be anything like that, but a lot of times, but there are some, there are very clear instances, like Eric, he's in there, because, not because of scheduling conflict, he's in there because he's too lazy and he likes to fool around in class and hang out and not do anything. [June 8 interview]

Distinctions

Along with Lance's belief that motivation was more of an issue than ability was an equally strong belief that there were relevant distinctions to be made among his classes. Any students may be able to do the work in any of the classes, but the

different levels of classes still had meaning. Lance taught two of the lowest level classes, one mid-level, and one of the top level classes. His responses to interview questions regularly separated out the classes, even if the questions simply referred to "your students." Differences in his expectations regarding their behavior were evident from the first day of class.

> Q: Are you going to seat them or just let them sit wherever they want?
>
> Yeah, the honor's class I told them, there's only 17 as it stands right now and they can sit wherever, they're better behaved than the other classes. The other classes I told them to sit in assigned seats, 'cause they already clustered in groups. [Sept. 1 interview]
>
> [T]he lower levels won't be doing dissections, don't want any scalpels in anyone's hand. [Sept. 1 interview]

His perception of their behavior did not alter much during the year.

> [The Honors class is] a little more well behaved, I don't have to worry about discipline. Seventh period, I could probably swing [a field trip] with seventh, first period it'd be a stretch, sixth period I don't think so. I mean, now I might be able to do it with sixth period but I want to wait 'til the year goes on and see if I can take these kids on a field trip for a couple of hours. [Sept. 23 interview]
>
> The Honors class is fine. I haven't really had any problems with that. The College, actually the College class has been pretty good too. The two, the first period class there has been very few problems. But the sixth period lots of times it's goofing off, getting up and walking up to the door in the middle of class. You know? "What're you doing?" It's a lot, I think sixth period is a lot worse. There's a few kids in there who have like behavioral problems and they shouldn't be in the class. [Jan. 25 interview]

His expectations of their academic work varied as well. The Honors class (highest level) was given more assignments and essay tests and expected to pay attention for longer periods of time. Lance thought their interest level was much higher

than the other classes. They had to write a short research paper and bring in newspaper or magazine articles every other week. If specimens or slides were used in covering a topic the students would be expected to write down observations and respond to questions. They were the only class that had a few labs scheduled and they also went on two field trips.

The Computer-Assisted classes (lowest level), by contrast, had none of the assignments mentioned above. When asked what he thought the Computer-Assisted would do if assigned a paper to write, Lance replied "I'd get straight copy out of somewhere word for word" (Nov. 17 interview). Their tests were multiple choice and short answer. "[I have never given them] like an indepth comprehension essay question, 'cause I just think they'd be intimidated by it" [Ap. 27 interview]. One of the two classes went on a field trip near the end of the year, the other one never went because Lance did not think he could trust them to behave well enough. Neither of the classes had any labs during the year.

Lance viewed the College Biology class (mid-level) as in between the Honors and Computer-Assisted. He required newspaper articles from them every other week, but they did not have to write a paper. They had a few labs where they viewed slides and were asked to make drawings and write down their observations. He expected fewer absences and more completed homework than from the Computer-Assisted classes, but did not expect the College class to be as consistent in these as the Honors class.

Part of his reasoning for treating the Computer-Assisted classes differently hinged on what he believed the future held for them. He assumed that very few of

them would go to college or get jobs that would use the knowledge they could learn in biology.

> I think, right, for their future, whether they get a C or get an F in bio, it's not going to make a whole lot of difference, you know, maybe personally but in the whole grand scheme of things. So a lot of these kids, you know they're not going to college, so I, at least on me, there's not, not as much pressure, not as much pressure for me to like test. Not like the other groups. I think I take [the Honors and College classes] a lot differently.....Those kids could be going on to school, so, most of them probably will and their grades will make a difference there. So like here, it's a little more laid back with the Computer classes. It's not, you know, I don't drive anything into them. If they remember something, great. But if they don't, you know, that's the way it goes. I'll get on the other kids' cases, and a few kids in this class I will get on, that can do better. But overall I think it's, it's a different mindset I think with this subject, material itself. ..... [I]t sounds awful when I say it's kind of a babysitting, but it almost is a glorified babysitting in those classes. You know, they're not, they're learning, but all the learning is not, is going to go for naught. You know, they're going to be working at McDonald's, they'll be working at retail, you know, like a minimum wage job, you know, for god knows how long. [Nov. 17 interview]

Learning biology, from Lance's point of view, was very much directed toward a clear future goal. If students were going on to college Lance felt he had more incentive to require more from them and push them harder to learn the material. For students not expected to attend college, Lance did not put as much emphasis on working hard to understand the subject. The focus shifted to learning to take responsibility and follow directions so one could be a good employee.

> I would say 90% of these kids are not going to go to college and become biology majors. They're not going to have a biology related job. But, you know, so you say why learn this in the first place. But it's not, just the fact is, like if they went to work, they'd have to learn a certain task, they'd have certain things they're held accountable for and they have to be willing to sit down and pay attention and to understand and to memorize it, you know, what their job is... they have to be able to have some responsibility and be able to do it on their own. That stuff's almost the same thing, you know, if I give them a chapter on mitosis,

> they have to be able to study at home and perform well on the test. [Jan. 25 interview]

Lance believed quite strongly in the necessity of having a tracking system in the high school. Students worked at different levels and could not be expected to be the same. If the classes were of mixed ability, Lance thought he would lose students at one end or the other. "It's like, you know, like a military convoy in the ocean. The speed of the entire convoy is only as fast as the slowest ship." [Dec. 15 interview] He realized that even with the tracking system he still had students of mixed abilities in his classes. His strategy was to aim for the middle, "fast enough to keep the smarter kids from being bored and goofing off, but yet slow enough so I'm not blowing the kids who are on the lower end away." [Jan. 25 interview]

Even though he thought that tracking was necessary, he also saw some potential dangers, both for the students and for himself as the teacher.

> [A] few of the kids, they get pegged as a Career level and they take all Career level classes. That's, that's where it can hurt. And then on that, if I walk, if I walk into a class and it is a Career level class, I'm "oh god". I'm already have preconceived notions. I mean whether you want to or not, you know, you might deal with them differently. You might let the other kids have a little more leeway and these kids you want to clamp down a little harder, you know. Deal with the kids differently too, I think. [Dec. 15 interview]

Lance was also aware of the debate concerning discrimination against minorities in the tracking system. He was ambivalent about his reaction to the issue, initially saying he didn't think it was a problem but then not being sure how to explain the make-up of his own classes where the lower level classes had more minority students than the Honors class.

You wonder, you know, that's that's a problem too. A lot of people complain about that those, tracking is slighted towards minorities. I don't know if it is or not.

Q: But then if you don't think it is how do you explain what you see sitting here?

Exactly, I don't know. You know, you don't want to say well these people are all lazy. You can't say that because it's not true. But there's something, you don't know what it is but you'd like to know what it is.

Student Learning

Student learning, from Lance's perspective, occurred as the students did the work required of them in each class. He emphasized that if they did the homework, took notes and paid attention in class then they would do well on the tests and they would pass the course.

You know, if they do their homework, do decent on the tests, they'll pass the course. [Sept. 1 interview]

If you don't want to take notes, don't take notes, but if you have any thoughts of passing the test you have to take notes. [Oct. 6 interview]

The opposite also held true: if they didn't do the homework or take notes or pay attention they would not do well. Lance thought that by going through the exercise of doing the homework they would pick up something from the material.

I mean whether they know it or not you know by doing the homework they are learning something. So you know usually that's the type of kids who do the homework or they might do well on the test, you know, or they get above a 70 let's say. Kids who don't do the homework are the kids who don't do well in class and it just shows.

Q: So just like going through the exercise of doing the homework...

Exactly. Whether they know it or not, they mentally might learn what a term means....eventually they'll be able, or those are the people who'll be able to recognize on a multiple choice test which ones sound right,

> which ones maybe don't sound right and they can eliminate 'cause they, they don't remember the word exactly, they know if it's right or if it's wrong. [April 27 interview]

At the beginning of the year Lance had a few students for whom the above did not hold true. They never took notes or did the homework and yet regularly did well on the tests. This seemed to bother Lance since it went against his belief that all the steps had to be followed in order to pass the tests. He reasoned that those students were relying on prior knowledge and that as the year progressed they would be less and less successful unless they began to do the work. He also made it clear that passing the class depended on much more than passing the tests. The homework was required for its own sake, not simply as a means to learn the material for the test.

> Q: Is there a connection between those that don't do homework and those that haven't been doing well on a test?
>
> Not yet. Unfortunately, not yet. After, eventually, it will catch up with them. No doubt about it. When they start getting to the material they haven't come in contact with before. A lot of these kids can survive on prior knowledge, right now, no doubt about it. Lot of these kids have seen some of this stuff before. But when we start getting into different subject areas, then they'll [see that it's important]. [Sept. 23 interview]
>
> She didn't have any books, no books, nothing. Just sat there and did nothing. She got a ten on the quiz. You know, in a way kind of burns me 'cause you know that, that kind of reinforces her that she doesn't have to do any work, but she's going to be surprised when she, she has a D, an F for homework grade. [Sept. 30 interview]

Lance placed a heavy emphasis on the grades the students received. Those were the markers by which he knew how students were doing in his classes. Interview questions that asked about student understanding or student learning elicited responses about the students' grades, clearly with the assumption that the questions was being answered. When discussing mid-term progress reports or term grades,

Lance talked to the students about bringing their grades up during the next grading period. The emphasis was on the work needed for the grade and not on whether the students understood the material or where they might be having difficulty.

> I tried to tell her that in the grand scheme of things this is only you know, five weeks through the first term. She wasn't in, you know, like a 20 grade where no matter what she could do she could never bring it up. She was in the 50s and I told her, you know, do well on your next couple of tests and I'm sure you'll have nothing to worry about. [Oct. 6 interview]

Grades were also the means by which Lance determined how successful he was in presenting the material.

> I tend to see somewhat, hopefully no one's failing, but hopefully tend to see somewhat that bell curve, tend to see, you know, a majority of B's and C's, you know, a couple of A's, couple of D's and one or two F's. That'll be, it means probably the material is right. [Jan. 25 interview]

A range of abilities existed in his classes, he believed, and therefore the grades should reflect that range. If the grades were too heavily weighted either high or low that would indicate something wrong with his teaching or perhaps with the tests.

At one point during the year Lance raised the issue of whether to focus on grades or on student learning. He had been reading about take home tests and decided to try one in one of his classes though he seemed a bit skeptical.

> They say you shouldn't always give in class tests. Give a take home every once in a while. You know, 'cause, you know, don't worry about the grades. I should not be interested in grades, I should be interested in what they're getting out of it. And if you give them a test like that, they'll tend to read the book. They won't memorize, they'll actually read it and see what the answer is. They'll have to discover the answer. So in this case, be as it may, I'll do that. You know, probably be only one they'll have, but I'll do that. [Dec. 15 interview]

Lance had his College Biology class do a take home test and was pleased with the results. He thought they probably would remember more from this test than others since they had not just memorized the information for the test. The students also reported liking the format. Lance thought at the time that he might do another take home test in the future since he felt it was a worthwhile exercise, but he never used it again.

Concept Maps

Lance's concept maps (Figures 1-3) provide three snapshots of how he pictured the work of teaching at different points during the year: before he started, halfway through, and at the end. They illustrate many of the points raised above as well as providing a broader view of how his experiences influenced his perspectives.

Lance's somewhat bemused comment as he looked over all three maps at the end of the year was "It is interesting to see how there is a lot of correspondence between them. It's funny." [June 15 interview] The maps do show some consistent ideas along with an increasing complexity as he incorporates his experiences into them.

In the first map (Fig. 1) constructed before he began the year, Lance was thinking in broad strokes: the school as the "home of learning"; the students as the "consumers of teaching" with discipline being an important aspect connected to them; the methods of teaching; and the prominent place of the administration as the supporter and approver of the work he did.

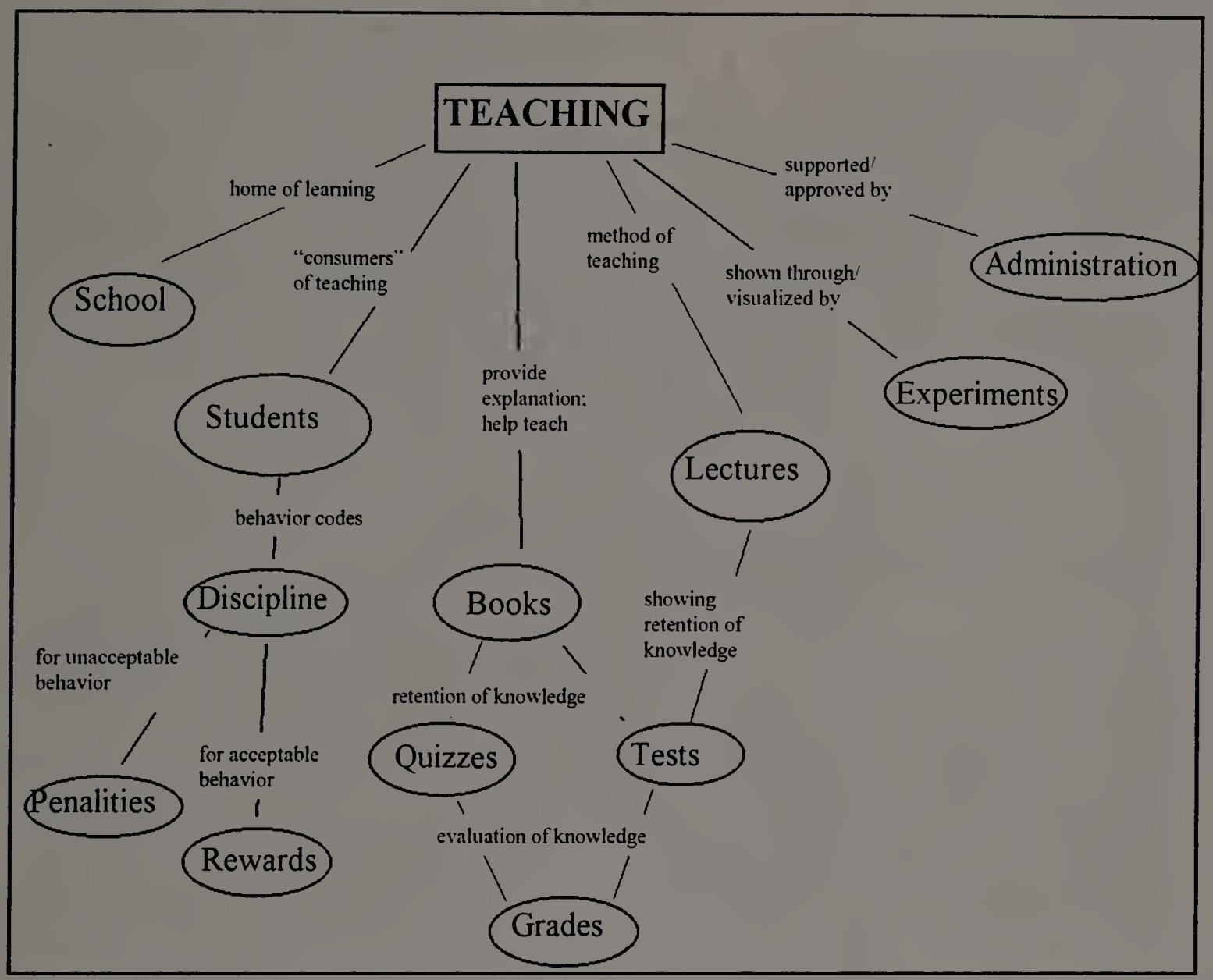


Figure 1 Lance Celario Concept Map #1 8/30/93

Five months later, Lance created a picture (Fig. 2) that reflected some of his experiences by introducing new ideas not found in the first or creating more detail to previous concepts. The map also shows the components that Lance kept without much alteration.

Students are no longer simply consumers, but rather people with whom relationships are an important piece. In his description of the map, Lance explained the difference between relationships with students and relationships with faculty.

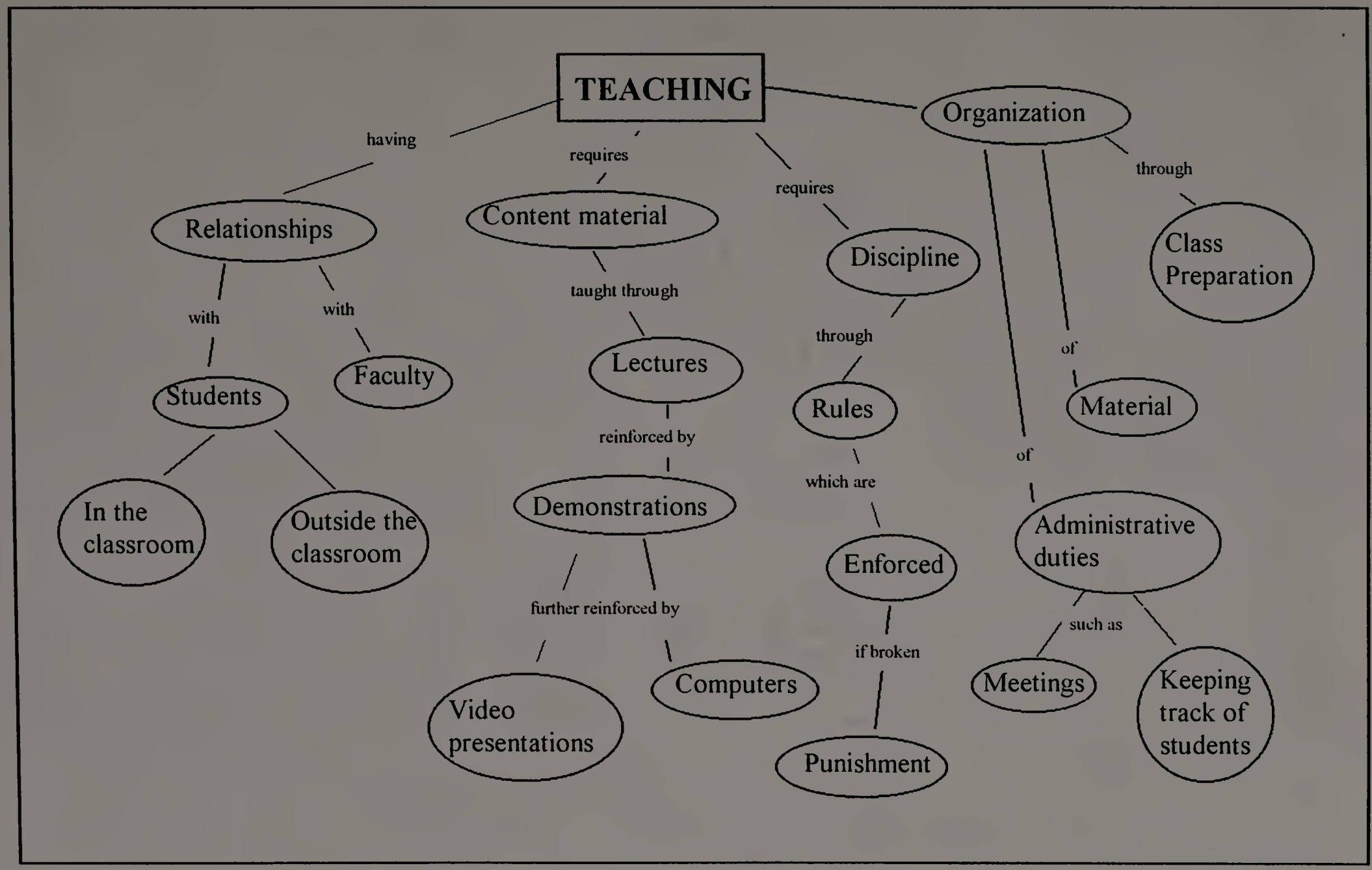


Figure 2 Lance Celario Concept Map #2 1/25/94

> You obviously have relationships, you know a couple of different types of relationships. Relationships with the students and relationships with other faculty members. And the other faculty members they're friendly, but they're not on a level as the students, they're more, you know, the faculty is on the same level as you are, you know, friendly relations, a friend instead of a student relationship which is, you know, you're the superior they are the inferior, you know, to use words like that. [Jan. 25 interview]

He goes on to make one more distinction regarding relationships with students, those in the class and those outside of the class. "Those are very very different. If I see the kid, you know, at a basketball game I'll be, you know, the kid is much more liable to feel at ease talking to me than he would be in class" [January 25 interview].

Lance brought up the importance of organization, a component he didn't raise at the beginning of the year. The need to keep on top of the many responsibilities became much more real to him by the middle of the year. As was mentioned earlier in this chapter, he became more aware of how much more there was to being a teacher than just presenting the material during class.

Discipline remained as a component, though he made it a separate category rather than under students as it had been in the first map. He retained the focus on acceptable and unacceptable behavior.

Content material was added as a requirement with lectures still the predominant method used to teach.

> The material itself is taught by lectures which is reinforced by demonstration which is again reinforced by either videos or, in my case, computers. And that, those are you know they seem to kind of stack on each other and that the main thrust of the teaching is lectures and then after lectures some some type of demonstration and after demonstration ....videos or computers. [Jan. 25 interview]

Experiments did not appear this time; he had used them very little during the first half of the year.

The other main component that he did not include was the administration. His experiences with the administration by this time had negated his original idea that they were present to support and approve of his teaching. The lack of help he had received regarding getting textbooks and disciplining students along with the apparent "hands-off" approach the administration took toward his teaching contributed to his discounting their relevance.

At the end of the year, Lance's "snapshot" of how he understood teaching used many of the same components seen in the two previous maps as well as some new ones. (Fig. 3) The school building reappeared as the place teaching happens and Lance spent some time explaining that what happens may be affected by the size or contents of the classroom.

Students still held a prominent place, once again referred to as "the people basically receiving what you're doing. If you're providing a service, they're the recipients of that service" [June 15 interview]. Lance's description of why he had included respect, authority and friendship in his map was similar to the emphasis on relationships he had included in the mid-year map.

He also included students in a new way as a group toward which he had a responsibility to

> "provide a safe environment and a learning atmosphere...that someone is there watching in case there is trouble, you know, that there is someone in "authority" that can step in and diffuse the situation which I've had to do a few times this year. And like a learning atmosphere, if like the kids all do work and someone is fooling around the class, making a lot of disruptive behavior, you know, speak to that person and try to get themselves calmed down so the rest of the class can do

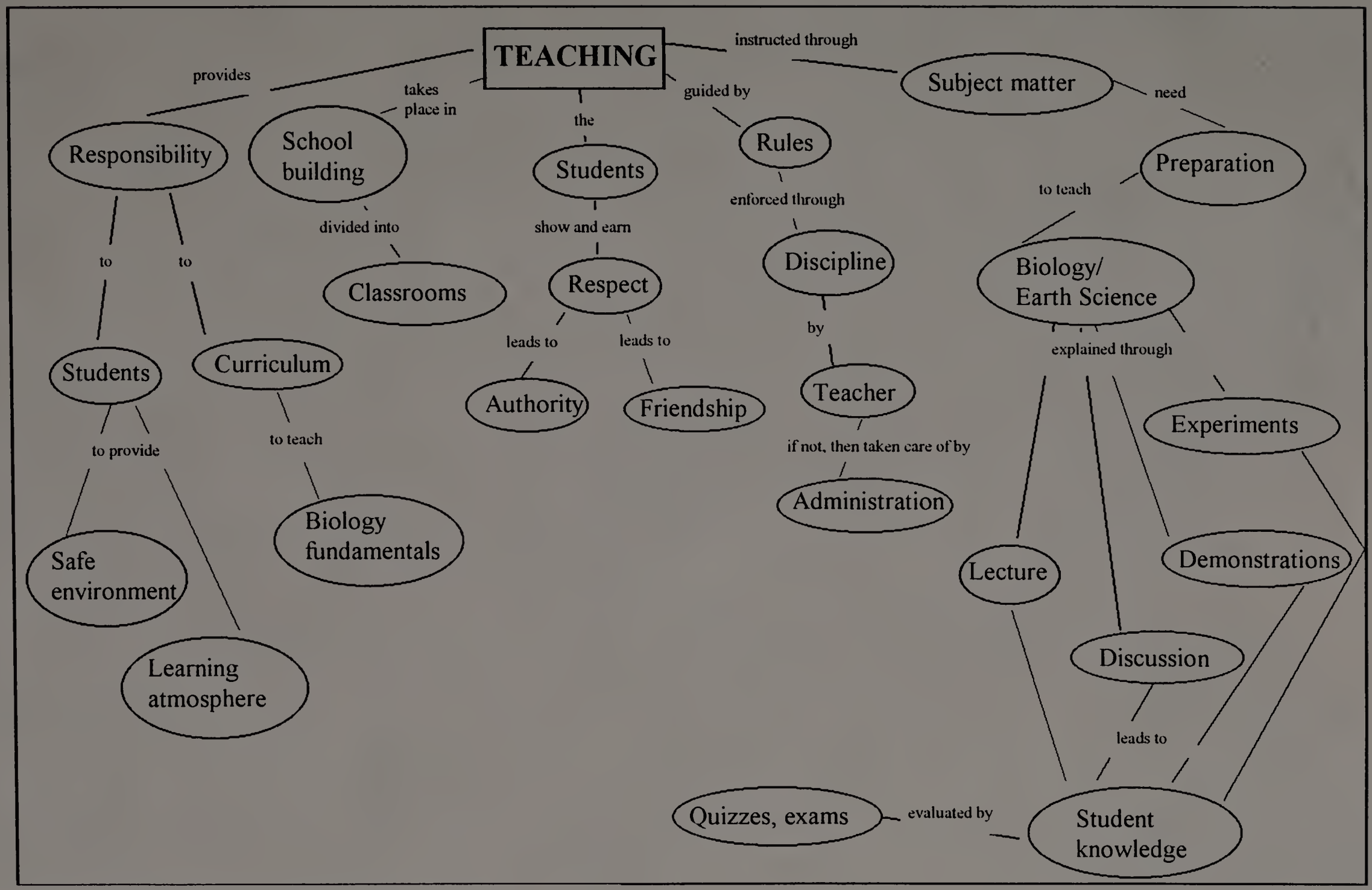


Figure 3 Lance Celario Concept Map #3 6/15/94

> something or if someone is taking a test and someone else finishes early and so now they're causing hell in the corner, you can either get them to come do something for you up at the desk, which always works to keep them quiet, or you do whatever. [June 15 interview]

The other two main components -- discipline and teaching methods -- were also in each of the previous concept maps. Discipline is necessary to enforce the rules set up by the school. This is initially the responsibility of the teacher, with the administration being the final authority. The administration makes a reappearance here, but only as the enforcer of rules which is how Lance has interacted with them.

In this map, Lance brought up some of the same methods to teach subject matter that he had previously -- lecture, demonstrations, experiments, and exams. He also includes discussion, a format he saw himself using in class as the year went along. For the first time he overtly includes student knowledge as a component, although he referred to it in the first map. Lance's description of how these pieces fit together point toward one of his beliefs raised earlier in the chapter: student learning was an end product of going through these methods.

> Once you've done the preparation then you're able to teach those subjects, you know, biology, earth science. Biology and earth science are all explained through lecture, discussion, demonstrations and experiments. And all those four things are somehow combined and lead to the students' knowledge. And then that knowledge can be evaluated by, you know, quizzes and exams, how much did they learn, hopefully the exams will tell, although that's not always the situation 'cause some people just don't test well or what have you, but unfortunately for our purposes most of the progress is evaluated by how they perform on quizzes and tests. [June 15 interview]

While the concept maps that Lance created do not fully show the complexity of his understanding, some of the components are consistent with many of the ideas raised in this chapter. They show a gradual increase in understanding that the role of teacher

encompasses more than being in a classroom or correcting papers. The methods of teaching included were traditional and varied little throughout the year. Lance's views of his relationship with his students and his expectations of them are also included.

Summary

In taking the job of a teacher, Lance believed he was walking into a familiar situation. He knew how a teacher looked and acted and what the expectations would be for him. He had very clear ideas about what teaching would involve, what he would need to do in order to present the material to his students. While he would not say he was an expert at being a teacher or teaching, Lance did believe he had the necessary skills already available and that all that would be necessary would be some fine tuning and adjustment here and there.

While Lance would readily admit that this high school and student body differed from his own in many ways, he also thought he had a good idea of what to expect from the students. Since he was not much older than they were, he felt he understood their interests and concerns. He was aware of the school's academic reputation and believed he had realistic expectations for what the students would do. His experience with each of his classes justified for him the tracking system that was in place. The students in each of his classes acted in expected ways, both academically and behaviorally, with the Honors class doing the best and the Computer-Assisted Biology having the most trouble.

At no time during his experience at East High was Lance confronted with a situation that caused him to question his beliefs and assumptions. What he came in with as far as attitudes and capabilities fit comfortably with his colleagues, the administration and his students.

CHAPTER 5

SAM COTT

When first meeting him, Sam Cott's demeanor seems somewhat grave and reserved. That impression begins to broaden as he talks, expanding to include a sense of humor and an even-keel temperament that is rarely disrupted. His attitude toward working with high school students is similar to his approach to going to medical school or being a world-class baton twirler: unruffled and quietly self-confident.

Sam's hometown is the same as Lance's, although they did not know each other before going to the same college. School, for Sam, has been a successful experience. The high school he attended, a private all-male, Catholic school, stressed hard work and discipline. He did well there and went on to a well-respected, private Catholic college which has a very reputable pre-med program. Sam majored in biology and also received a solid grounding in chemistry. His experiences at college included research as well as being a teaching assistant for biology labs.

Outside of academics, Sam had made a reputation for himself as a baton twirler. Starting at the age of eight, he competed at the national and world levels for twelve years. During the last three years he ran clinics and judged at national and international competitions. He enjoys both the clinics and the judging, though he admits that he still gets quite nervous before each clinic. He does some coaching, but is reluctant to commit himself long-term, feeling that it wouldn't be fair to the student(s) if he leaves to go to medical school soon after starting coaching.

During his senior year in college, Sam decided to delay entering medical school. He briefly considered taking a job in a lab, but chose instead to teach for a

year. He had done some work in a lab previously and had missed the interaction with people that he thought working in a school would give him. The first place he looked into was an organization in New York City that placed teachers in private schools. Though that seemed promising, he also applied to the program through his college that would give him a job in a local public high school -- the one used for this study.

One of the two positions available involved mostly teaching chemistry and Sam felt from the start that if he had a chance at getting the job, that would be the position. Though not his major, he thought his chemistry background was fairly solid and his grades were good. In April, he was called for an interview with the liaison between the city school district and the college program. The interview, as he remembers it, was quite short and focused mostly on his baton twirling activities. They talked very little about the teaching position, either in terms of which school or what his responsibilities would include. Sam left the interview with a good feeling, and two days later found out that he had gotten the job.

Though he had a few concerns, Sam never really doubted or questioned his ability to teach in a high school. Not usually comfortable speaking in front of a group, he surprised himself with his lack of nervousness in front of the students. He consistently had a good feeling about the work, enjoying the interactions with the students and the challenge of presenting the material to them. The responses from the administration and other teachers were positive, a pleasant boost to his self-confidence.

Sam saw himself as a fair and reasonable person, treating all his students equitably. When students expressed anger or dislike, he didn't take it personally, something he thought was a necessary characteristic of a teacher. In most instances,

any frustration or impatience he felt did not spill over into the classroom. He believed he should treat his students with respect, hoping that they, in turn, would treat him similarly.

With an age difference of only six or seven years between himself and many of his students, Sam initially had some questions about how the students would react to him. There were a few instances when he thought students perhaps did not treat him with as much respect as they would another teacher, but in general he saw his young age as a positive aspect. For example, he believed being able to talk with them about their favorite music groups helped the students feel more comfortable with him, which would then carry over into class.

West High

West High is located in a middle- to upper-middle class neighborhood on the other side of the city from East High. The largest of four high schools in the city, it is also considered to be one of the best academically. The three-story building, built in the 1960s, has two wings connected by two halls. Student lockers line the hallways. Faculty offices and lounges are interspersed among the classrooms. The classrooms are fairly large, easily accommodating 30 students.

The student population of 1200 is predominantly White, with African Americans, Asian Americans and Hispanics making up the rest of the student population. About 85% of the students generally go on to further education after graduating.

The principal of the school, at the time of this study, was an African American woman who was in her second year as principal. She was quite visible around the school, often walking in the halls or standing in the main office talking with both students and faculty. She seemed to be well-liked and respected by the faculty.

The Science department had ten teachers, three female and seven male. Two of the teachers, one male and one female, were in their first year of teaching. During the first semester one of the older male science teachers left the school and was replaced by a young male teacher who was in his second year of teaching. The other seven teachers were in their 40s or 50s and had taught at West for a number of years.

The science classrooms all had lab counters with sinks and gas outlets placed around the perimeter with desks for the students in the middle of the room. Some of the teachers, including Sam, were assigned to one room for all their classes; the others floated from room to room.

Sam's initial description of his room was that it was very dirty, the walls needed painting, and it looked barren. He spent some time before the school year started cleaning the room and the desks. Not being able to do anything about the paint, he found some posters owned by the department and purchased others at a local teachers' supply store. Illustrated pictures of the human body, pictures of birds and shells, and a large Periodic Table helped give the room some color.

At the front of the room was a long counter with a sink and gas outlets at one end. Next to the counter was Sam's desk, usually piled with papers and textbooks. A cardboard picture of a fishbowl with fish sat on his desk. The students' desks were arranged in four columns facing the front counter and blackboard. On one side of the room were three lab counters with sinks and gas outlets. On the other side was an empty cabinet with glass doors, a short counter along the wall and a lab counter. The back of the room was covered with windows, below which was another counter along the wall. A TV was mounted up in one corner at the front of the room.

Classes

The classes Sam was assigned to teach included one section of College Chemistry, two sections of Honors Chemistry, and one section of Honors Biology (in the tracking system used by the school the Honors classes are the highest level with College the next level down; a Basic or Standard class is the lowest level). Each of the classes Sam taught had lab one day a week either right before or right after their regular class period.

Honors Biology, all freshmen, was the largest class with 28 students; one third were female and minorities made up 30%. All of the chemistry classes had just under 20 students. The two Honors Chemistry courses were sophomore level classes. Males and females were fairly evenly balanced in the two classes, with minorities being 15% in one and 6% in the other. College Chemistry was a mix of juniors and seniors, two thirds female with almost 60% minority.

The school day began at 7:25 a.m. and ended at 1:30 p.m. Each day began with students in a homeroom for eight minutes, then was divided into six 42 minutes class periods with a 20 minute lunch break. Sam's schedule varied each day depending on which class had lab and which duties he had (e.g., study hall, cafeteria). My observations generally took place on Wednesdays during which Sam monitored a study hall and had two free periods.

Sam usually arrived by around 7:10 each morning and when I arrived was often preparing for the day, either finishing up notes or pulling together equipment for a lab. First bell rang at 7:20 and the students in his homeroom, all freshmen, came in from the halls. The TV was usually on, tuned to a cable program of teenagers giving the news. At 7:25, the bell rang and Sam closed the door, turned off the TV and began to

take attendance. One or two students often walked in late, usually with a pass/note, sometimes without. A few minutes later the principal came on over the intercom and asked everyone to stand for the pledge of allegiance. Following the pledge, a moment of silence was observed, and then she started on the day's announcements. During all of this, the students were talking quietly with each other while Sam was taking attendance, passing out notices or doing some final preparation for his classes. If the talking got too loud, Sam asked the students to quiet down during the announcements. The principal always ended the announcements with a "thought for the day." A few minutes later, 7:33, the bell rang for the end of homeroom and the students filed out the door.

The students had five minutes in between classes, allowing them time to go to their lockers and then to class. The time between classes was extended from four to five minutes halfway through the year. The administration felt that students didn't have enough time to get from one class to the next. The students were expected to go straight to their lockers and then on to their next class. The bathrooms were not open to the students during these breaks between classes. The next bell rang at 7:38 and Sam's College Chemistry class began.

Sam's style of presenting material was consistent throughout all of his classes. He carried a notepad on which he had written notes for topics he wanted to cover in what order and definitions he wanted to write on the board. While lecturing, he alternated between walking around the room among the desks and writing definitions or topics on the board. He regularly asked questions of the students regarding the material he was discussing and usually several students responded with an answer. He provided examples of the concepts he introduced, often asking "Does this make

sense?" or "Does everyone understand?". Students raised their own questions when they were confused about the material. Sam usually went through the problem or topic again, sometimes providing one or two more examples relating to the question the student raised. If the student continued to express confusion after two or three explanations, Sam would ask the student to see him after class and he continued with the next topic.

Other regular activities in Sam's classes were going over homework, and reviewing for, taking, and going over tests. The homework consisted of either problems/questions taken from the textbook or worksheets Sam got from other teachers or the teacher's edition of the textbook. Sam also gave out worksheets for the students to do in class. When reviewing the homework or worksheets, Sam either called students up to the blackboard to write out the problem and solution or had them call out answers from their seats. Sam regularly repeated and elaborated on the answer given by the student.

Tests were two to three pages, combining multiple choice, definitions, problem-solving, and essays. Sam put the tests together from a variety of sources: the tests that came with the textbook, other teachers, and questions he made up. He gave a test at the end of each chapter; for some of the longer chapters he also gave one or two short quizzes while going through the chapter.

While taking the tests, students regularly raised their hands or went up to Sam with questions. Otherwise they were, for the most part, silent while taking the test. As they finished and handed it in, talking gradually increased. Sam would ask for quiet until everyone had finished; students quieted briefly, but the volume soon rose again. Very rarely did Sam have the students do anything after finishing a test; they were

usually free for the rest of the period, which for some students could be up to 20 minutes.

Sam felt he had very few discipline problems in any of his classes. The most difficult class in terms of behavior was the Honors Biology; he attributed most of that to the fact that they were freshmen and had not yet matured. His response to extraneous talking was to either talk over it, assuming it would die down (which it often did), or to address the students by name, asking if they "had a problem" or telling them to be quiet.

The most frustrating disruption in his classes came from students asking for passes to go to the bathroom. Sam's response to this request varied throughout the year and throughout his classes. At times he wouldn't sign anyone's pass, other times he would sign without interrupting his lecture and the student would leave. He couldn't decide on a policy that he felt was fair to both the students and himself.

Sam felt good about the administration at his school, believing that they were there to back him up with discipline problems. The principal stopped by his room a few times during the year and briefly observed him while he was teaching. She often followed this up by complimenting his work, either in front of the class or later in the day. The vice principals were quite visible in the halls, monitoring student movement and addressing any problems that arose. Sam believed the positive atmosphere he felt at the school was a result of how the administration treated the faculty and staff.

Sam's initial interest and enjoyment of the work was present throughout the whole year. He never felt he had a reason to question his original feeling that he would be able to do a good job. The administration of the school was also pleased with his work, offering him a position for the following school year. Since Sam did not

get accepted into medical school, he decided to accept the offer and return for another year of teaching.

View of Teacher

> [This is] what I thought the role of the teacher would be, like both, you know, presenting material in a classroom yet also....leading and presenting an example to kids...which would be through the classroom but also like outside too. [Aug. 30 interview]

Sam began his first year of teaching with a clear picture of "teacher". His understanding of what he should be doing, how he should be acting, was formed before he entered the classroom. While he initially expressed some uncertainty about some of the specific aspects of the job, like the paperwork required, he had no such hesitation about what was expected of him as a teacher.

While Sam thought the two pieces mentioned above, presenting material and being an example to the students, were the primary responsibilities of a teacher, he also talked about other aspects of the position. He believed it was his role to help and encourage the students about both academic and non-academic matters. During the first few days of school he "acted as a buffer" between the freshmen in his homeroom and the vice principal by helping the students get locker questions settled so they wouldn't have to talk with the vice principal who Sam characterized as "gruff." In class, he often tried to convince the students that they were capable of doing the work, especially when they felt they couldn't.

> But also it seems that I try to like do a little encouraging type of thing. Like so people aren't really, like when I talk to that girl Kim in the last, you could tell she was going to cry. You know what I mean? I feel so bad. But I guess you try to encourage, too, to keep working. Don't always give up I guess. [Sept. 29 interview]

Another responsibility was to create a comfortable classroom for the students. He wanted them to feel relaxed in his room, free to ask and respond to questions without fear of ridicule.

> It's kind of relaxing, you know it's like a relaxed, that's what I was kind of like, you know I've heard like people say "oh he's cool" or whatever, but I don't want it to be, I want it to be relaxed, but you know not so that they're really lax, you know. So I don't see that being a problem so far. [Sept. 2 interview]

> I think [the classroom should be] one that's kind of friendly. I think maybe that they feel comfortable with me, like, like I think I think the kids sense that, they can feel comfortable...And then I think one that they could ask questions too or that's why I kind of always ask, you know, are there any questions. Not really even if they don't really ask questions, but if they participate in the questions I ask. [Mar. 2 interview]

At the end of the year, Sam thought that aspect was one of his strengths as a teacher.

> I think I was good at kind of like getting a good environment in the class. I think it was good in terms of that, I think people were comfortable, you know. I think that's important. [June 15 interview]

Sam's concern for creating a comfortable atmosphere in his class was combined with his belief that he was the authority figure in the class, the one ultimately in charge. This was exemplified in a number of ways: how he dressed, his interactions with the students, and how he understood his responsibility within the classroom. From the first day of class Sam came to school in a tie with dress shirt and slacks. The students referred to him as "Mr. Cott". On one occasion a student called him by his first name in class and Sam responded quickly, telling the student that he was "Mr.

Cott" and that the student should not refer to him by his first name. Later, he talked about his discomfort with the incident:

> You know today I just kind of, 'cause that's not right, you know, they really shouldn't [call me by my first name]. It's not like I'm a friend or anything....That is my name, but it's like oh my god he called me that. You know what I mean? [Nov. 23 interview]

The distinction between teacher and student was a very important line to keep for Sam. While he was pleased that he could carry on conversations with them about popular music or movies, he also wanted them to observe limits.

> I think that's good, you know, I can just carry a conversation, right, but then I think there's got to be a point, like you know when people ask me like my girlfriend's name or something. You know, then what, you know, what else are they going to ask, or I don't know, maybe that just at least sets, even though I'm young, like people say oh he's young or whatever, but at least with that [last] name, [it] kind of [sets] boundaries a little. [Sept. 29 interview]

Sam held no doubts that he was the one who was responsible for what occurred in his classroom. It was up to him to assign seating arrangements and monitor how lab groups worked together as well as to determine the schedule and events.

> There was supposed to be a reading day that they could read anything, but I decided to do a worksheet. People were, seemed to be upset like, you know, "why do we have to do work, it's supposed to be a reading day. Principal said it's reading day." You know I just said, you're going to be reading chemistry. People got upset. But, I'm the teacher I guess. [Oct. 13 interview]

While he listened to concerns or comments students made regarding what was happening in class, the final decision about what to do was his. At the end of the year, as he looked back on how he had operated, that attitude was one he felt good about:

> I thought "oh, I want them to have a test on Friday," so I made sure that we [were ready], instead of like letting the class "we can't have a test now, wait 'til next.." You know what I mean? Like taking charge of that stuff, I think that was good....Telling them this is the plan for the week, test on Friday. [June 15 interview]

For Sam, the ability to be a teacher took "a special person," someone who had the right combination of flexibility, toughness, liking kids and knowing the material. "I don't think everyone should be teaching. I mean I think I'm okay, but I think it's, I don't think everyone could do it." [Jan. 12 interview]

View of Teaching

As discussed in the previous section, Sam believed it was his responsibility to "present the material" to the students. From the beginning of the year, he had a clear understanding of what that meant. During the first two interviews, Sam referred regularly to lectures, lecture notes, homework and tests. These activities were the bulk of the methods he used in classes throughout the year. One additional activity in chemistry consisted of students going up to the chalkboard to write out math problems they had done for homework or were working on in class. Sam thought the math in chemistry provided an opportunity for this type of participation by the students.

The pattern of going through a chapter that Sam used was established early in the year. He would lecture on consecutive sections of the chapter, have students work on questions or math problems from the chapter, assign homework of reading or questions from the text, possibly a worksheet done in class, then a day of review for

the test and the test itself to finish the chapter. If the chapter was a long one, he would often give a quiz part way through it.

The goal of each chapter was the test. Sam reviewed homework, went over quizzes, and asked questions in class so that students would have what they needed for the test. It was both a focus for the daily work and a way of making a transition from one chapter to the next.

> [I give tests to] make sure they knew what we covered and so we can get going on some new material. I thought, especially on the math, I mean on the chemistry I mean you could just spend all, you could spend much more time going over it and I think the kids would do about the same with the math because they either have it now or [not], you know what I'm saying? So I think if we test now, like some teachers haven't tested yet on a chapter and I just think, I mean it's important to know that [material], but that isn't chemistry yet and we've got to get going, you know, so like maybe the test will put it to rest and I can move on. [Sept. 15 interview]

Decisions about how to go through the material were discussed in terms of whether it would help the students do well on the chapter test.

> I think maybe it's helping that I'm writing the stuff on the board, saying take a minute and copy it and then we'll go over it. So I think I'm going to try to do that, hopefully maybe they'll do well on this test. [Nov. 10 interview]

> I'm trying to do less notes and more problems when the chapters allow, because this chapter basically all we've done is problems, so and it seems like they're kind of liking it, I mean you hear some people say "oh I find it easier than last" or the last chapter, so I hope it's, we'll see if the tests show that. [Mar. 2 interview]

Tests and quizzes were the primary method Sam used to evaluate how well the students knew the material. When asked how else he might judge student understanding, Sam wasn't sure. "Maybe if they're kind of trying to concentrate in

class, at least they're trying to assimilate it" [Mar. 30 interview]. He also thought he would rely on their answers to questions in class, though he acknowledged that many students never speak in class, and "if they're quiet I don't think I could make that judgement" [Mar. 30 interview]. He believed he would be able to judge some students' understanding, but not all in the class without giving tests.

Sam also believed it was good for the students to take tests beyond the immediate purpose of this particular class.

> The thing is [tests are] important, because they're going to have to do that all they're, for a long time, like multiple choice and it's important, some people just leave blanks, you know what I mean? It's pretty tough, but I think they've got to try. [Ap. 13 interview]

While these methods characterized what Sam did in class, he mentioned both at the beginning and end of the year about wanting to do other kinds of activities in class.

> Hard also I think would be coming up with new ideas all the time too, 'cause you know I've never really done this before, I don't know what works, like how to explain something instead of just reading, you know, [or] saying, "These electrons, they're going around the nucleus." Should I have like a, that's what I'm going to look for tomorrow too, like say do they have like a model of something. [Aug. 30 interview]

> [For next year, I'd like to] maybe do more outside things, maybe see I don't know about like, not necessarily like all field trips, but maybe, I want to do something like at Hester College, I want to do something like with labs, "Come this day and we'll have a lab [there]." I want to do that. So I want to work on something like that. So I want to, I think I want to do more outside stuff. [June 15 interview]

Several times during the year he had his students bring in articles relating to chemistry or biology from newspapers or magazines and summarize the article for the class. He also assigned a short paper for his Honors Chemistry classes. Other than those

assignments and the use of a video in a couple of classes, Sam relied on the "traditional" methods of lecture, homework, and tests. His reaction to giving assignments outside of the typical pattern was, "like the newspaper [articles], I made those, that was kind of a gift I think" [Nov. 10 interview]. They were not to be taken as seriously as homework and tests. Part of this attitude may have arisen from the fact that these "extra" assignments were rarely related directly to the specific material they were covering at the time. Sam's focus on getting through the material could explain why he felt that those alternative assignments were not as important as those which kept the class on track.

At the beginning of the year, the department chair had told Sam how much of the textbook he was expected to cover in each of his classes. Sam figured out how much that meant for each term and planned accordingly. He kept close track of where he was in relation to other teachers who had similar classes and, for the most part, was pleased with how much he was covering. Throughout the year Sam repeatedly referred to the need to "get through the material". Sam saw this as at least a partial reason for not using a wide variety of teaching methods.

> I haven't had any, haven't really used a lot of outside material, like videos or stuff like that. I haven't really, some teachers use those kind all the time but I haven't really, I don't really feel like we have the time. [Jan. 25 interview]

The textbook was the focus of Sam's teaching. His lectures and the homework were based on the material as it was covered in the book. He rarely brought up topics that were not in the book, though he did leave out parts of chapters now and then. This focus was due at least in part to his feeling comfortable with the topics as they

were covered in the textbook. When asked what topics he would teach if he had complete freedom to do what he wanted, Sam replied:

> I'd probably chose topics similar to the ones we're doing this year because I think those are the topics that you're expected to be familiar with if you take like an achievement test or if you want to take like AP science or something like that and go to college. So I'd probably do things like that. [Jan. 25 interview]

Throughout the year, Sam was pleased with how his classes were going. He felt that he was getting through the material at a reasonable rate and saw little need to significantly alter what he did in class. The assumptions about what it meant "to teach" that he had entered the year with worked well for him. A few small adjustments were made -- tests written better, more notes put on the board for students to copy -- but in general he felt his approach needed little improvement. The responses, both explicit and implicit, that he received from his colleagues and the administration supported his ideas and gave him no reason to question what he chose to do in class.

View of Students

> I think it will be easy like knowing that, like you'll be working with people every day.... I think that, I think that will like get me up in the mornings. [Aug. 30 interview]
>
> It seems like teachers most likely like working with kids, I would hope. 'Cause otherwise why would you do that, you know, I mean that's what you're doing all the time. [June 15 interview]

One of the things Sam consistently pointed to when talking about why he liked the work was that he enjoyed the students. The possibility of working with people was one of the main reasons he decided to teach rather than work in a lab and his experiences during the year confirmed his choice. While his interaction with some

students caused him frustration at times, his more general reaction was that he had had a good year because of the students in his classes.

> What else I like most is working with people kind of thing...I like working, 'cause I always thought I wanted to work with younger kids, like younger people, that's what I'm doing now.....So I'm glad I like it. But plus too I think it's because of the classes I have. It makes a big difference. [Jan. 25 interview]
>
> I think I really [lucked out with the students] in a way. I really think I did with some of those kids. They're just good people. And that was helpful to me, you know. It's almost like I just kind of came in with, you know, the material I wanted to cover and didn't have to worry about fighting another battle, you know what I mean? [June 15 interview]

As he looked ahead to a second year of teaching, he felt positive about the work since he'd had a good year, "but then who knows, maybe the kids would be different so that would make that part harder, you know, I guess" [June 15 interview].

Analysis of the interview transcripts showed three main categories for how Sam viewed his students: the expectations he had for students; the distinction he made between the higher and lower level classes as well as between freshmen and seniors; and his understanding of student learning. Each of these is discussed below.

Expectations

Sam began the year with high expectations for his students. He had heard that West High was a "good school," with most of the students going on to college after graduating. This fact, combined with his assigned schedule of three Honors level classes and one College level, encouraged his belief that he should expect good behavior as well as good academic work.

> I'm just hoping they'll listen to me. I think if I, like I have some expectations that I want to....Just basically like, like I'll respect you and

> you can respect me by, maybe if I'm talking to everyone and talking with everyone, maybe you could just hold your talking. I don't know, I think just, like I don't want to load them with burdens. [Aug. 30 interview]

Sam assumed that most of his students, particularly his Honors classes, were in class to learn the material. Good behavior was expected from them so that the academic work was not interrupted.

> I had like a little talk with the biology class....Someone was throwing spitballs at another person in the back and I just like said, you know, no one's forcing you to be in this class. I talked like a couple of minutes about the Honors type of thing you know, more is expected. Things like that and you know we shouldn't have to waste time dealing with discipline issues, something like that when you know a lot of people are here to be challenged or whatever. [Sept. 29 interview]

Later in the year, Sam put together a behavior contract with his biology class. "I thought maybe this would curb some people's urge to talk or something....I guess I didn't think of it that way, I didn't think I'd have to do that at the beginning, but then I guess maybe knowing that eventually I would get fed up with the talking or something that would cause me to set it up earlier. I didn't think that'd happen though." [Jan. 25 interview]

The most consistent behavior problem Sam had with his students was extraneous talking. During many classes, an undercurrent of chatter was present, though usually not loud enough to disturb the whole class or interrupt what Sam was doing. If the talking began to bother his concentration or interrupt a lecture, then he would respond by asking for quiet, walking or sitting down by the person talking, or directly addressing the students who were talking. These techniques worked for the short term, but gradually the chatter would begin again.

Sam assumed that some talking was inevitable, "someone's talking anyways, no matter what you say," [Dec. 20 interview] and generally ignored it, not wanting to constantly interrupt himself to ask for quiet. Other than the behavior contract in the biology class and a few seating changes in that same class, Sam took few steps toward actively addressing the issue. He did not see it as a large enough problem to warrant more effort on his part.

The academic expectations Sam had of his students encompassed both the skills and abilities with which they began the year as well as their attitude toward learning. Just as he assumed it was his responsibility to prepare them for the next year, so too did he assume that they were coming into his classes with a background gained from previous years. For his chemistry students in particular, he assumed they had the math knowledge needed to work through the chemistry problems they would have during the year. If they didn't have those math skills entering the year, they were not going to learn them in his classes.

The attitude Sam expected from the students was very clear. It was their responsibility to pay attention in class and put effort into the work required of them. The biggest source of amazement for Sam was students who did not take class seriously or would not listen to instructions he gave.

> Sometimes I wonder should I do more of a discussion at the beginning [of lab]. But I mean I went over the points that I wanted to say but no one bothered to write them down....Today was just, I mean I told that kid 5 drops like ten times. He filled up half the testtube. [Nov. 23 interview]
>
> And then I still think that kids not bringing pens to class or a notebook. I mean what else can I do? Not admit them to class? Maybe I should, I don't know. (pause) I cannot believe people would not bring a pen. [Mar. 2 interview]

> People still don't bring pens or anything to class. It just baffles me, that people wouldn't bring a notebook to their class. [May 4 interview]

At the beginning of the year, Sam was a little surprised by the trouble some students had with the material. He realized that his lesson plans might not always fit what the students would be able to do.

> I thought with the chemistry...I didn't know if they'd have much of a problem with the, the problems assigned. I knew we'd go over it, but like I said I thought maybe we'd just talk about the answers and say if a lot of people got it wrong we'd do it on the board. But you know we did like every problem, those assigned, and that took almost, you know, almost the whole period in all three [classes].....I think [I was surprised] a little...'cause, I don't know, I guess they're a little difficult, but this is so minuscule compared to what we're going to be doing, you know what I'm saying? So, I guess when, when I, when we get into like heavy duty math problems, not to schedule, I'll have to know that, you know, tomorrow we're probably going to have to spend the whole class going over problems. [Sept. 8 interview]

As the year progressed, Sam modified his expectations of the students only slightly. At least in part because of his belief that they needed to get through a certain amount of material, he continued to assume that the students, particularly the Honors students, should be able to do the work.

> Maybe with the two Honors, they're pretty, I mean I was, I was kind of like hoping that people would be like, you know, I give them the material, they'd kind of like learn it and you know, not too many problems. That's how I was thinking, like I, I didn't know what to expect kind of thing at the beginning, but I just thought, you know, I just thought it'd be okay. [And it has been], but a lot of kids in the Honors are really, I think really motivated, like they really want to do well. [Jan. 25 interview]
>
> In terms of [the Honors Chemistry], I think, I think [my expectations] are pretty uniform throughout, like I think we have to do this [work] and if you don't, well, too bad, you know, you have to keep up, I guess. [June 15 interview]

Sam made more adjustments in his perceptions of the College Chemistry students. "I mean they obviously can do it, but then they're like (groans), because they're with other people that just don't want to do anything I guess. I guess that changed a little bit. Not necessarily to expect less, but I guess, I guess know the limits or something" [June 15 interview].

While on the one hand Sam clearly expected his students to be able to do the work he asked of them, on the other hand he did not expect all of his students to do well. Some students simply were not going to do the necessary work, that was inevitable. Sam was happy as long as the majority of the class seemed to understand the material in class or received A's and B's on a test. He was bothered by any D's or F's on a test, but seemed to feel that he could not do much about it. It was the students' responsibility to ask questions or seek extra help if they were having trouble with the material and if they did not do so then they shouldn't expect to do well.

Distinction

Sam made two kinds of distinctions in talking about his students. One was based on the age of the students. His Honors Biology class was a freshmen level class and, particularly near the beginning of the year, he attributed much of their behavior and their academic work to their age.

> Like freshmen it seemed like everyone when I, when I said you know I have a freshmen class, like everyone would say "oh, they're going to be brats." You know?....But like my homeroom isn't like that. They're, they're pretty good. I mean the bio class actually is a little, if I'd have to pick, I mean not that they're bad or anything, but if I had to pick like the noisier, it'd probably be that one. [Sept. 2 interview]

> I asked [the biology students], and they said they prefer if I wrote some stuff on the board. So like I told them I'm not going to write everything,

> but I will write some of it. Plus I need to remember it's freshmen, so I got to, I've still got to write stuff. [Sept. 2 interview]
>
> It seems like in the last class, the biology, it seems like I have to do more of that "turn around" a little bit more, then I even have to do in all the other classes combined, you know. But you know they're freshmen too, I guess. So I think that has to do with it somehow. [Sept. 29 interview]

As the year progressed, Sam made fewer references to the age of the students in his classes. The Biology class continued to be the one he considered the noisiest, but he began to attribute that as much, or more, to the fact that it was the largest class he had.

The second type of distinction he made was focused on the tracking system operating in the school. He had three Honors classes, the highest level, and one College class, the next level down. He started the year uncertain about whether to think of the two levels as being different, at first saying he did not want to treat them differently and then acknowledging that he probably would.

> So I guess Honors, I guess I, I guess I should expect more. But then again I shouldn't, I don't think I should expect any less from the College.....because I think sometimes maybe they're not challenged enough, so..and, but in terms of abilities, I don't know, I guess I'll find out when I start. But, I don't know, I think maybe I'll expect more from the Honors....in terms of conduct too. [Aug. 30 interview]

He initially told his College Chemistry class that he was going to cover the same material in their class as in the Honors Chemistry and that he would expect as much work. For the first week or two they did go at the same pace, but gradually the College class began to move slower. At times he reminded them that they were indeed covering the same material, hoping to encourage them.

> Basically we do almost all the same material as in the Honors class. Obviously a little slower 'cause we're behind a little, but basically we cover the same things, you know. And that's what I tell them too, you know, that we're, and try to encourage them. I think it works, 'cause some people are doing okay in there, you know. [Nov. 10 interview]

Even when acknowledging that the College class needed to go slower or that some material was perhaps too difficult for them, he still believed that they should be introduced to the material. "I don't think they should skip, 'oh that's over their head'. I mean some things are, granted, I think, but you should try to introduce them. I don't know, that's what I thought" [Dec. 8 interview]"

As the year progressed, he began to comment more and more on the differences between these levels, both in terms of their academic work and their attitude in class.

> I mean just the attention spans [are different]. Like for example that College, you know, when I said you know, they couldn't even tell me what I just said a second ago. Like yesterday in the test review we had, I basically told them a few things that would be on it and so that's what I'm wondering when I correct it, are they going to get it right. 'Cause it seems to go through one ear and out. [Sept. 29 interview]
>
> I have to go over the material I think a little bit more in College. For instance, usually I do the same material, usually, maybe omit something, like even today I didn't end up talking about those F orbitals 'cause I think that's way over their head. You know, I think some they could handle it, but I think, but then I almost thought maybe this would turn them off...Sometimes it happens that, see this is weird, if I see that something, if it's hard to get, but if they just, that's why I always say try to keep an open mind 'cause if you think about it for a little while you can understand it. But the first time if I say something and they say "I don't understand it" . . . You know what I mean? . . . . Then if some people do that it seems like, it seems to encourage that from others. Not everyone, 'cause some people obviously work to get it....I think that only happens in the College. [Oct. 27 interview]
>
> In the [College class] there was a good amount of Ds, high Ds I would say. But I guess that's to be expected, I don't know. [Nov. 10 interview]

Sam responded to the differences he saw by adjusting his pace and his expectations. He continued to believe, however, that the issue was really one of motivation and not ability. At least some of the students in his College class were capable of doing work at the Honors level, he believed, they just were not willing to put forth the effort needed. He wondered at times whether he should change what he did in class, but usually decided that it was the students' responsibility.

> Every once in a while when I do the College group and no one, you know, half the class doesn't do their homework and half of them are just like, I question myself, am I taking the right approach? Should I be doing something really different? I mean it feels like what I'm doing is the right thing....I mean I think that you have to do this, but sometimes it's like you know, is it me or is it, (smiles) I think it's them, in a way. [Mar. 2 interview]

Student Learning

For Sam, there was a very direct connection between the amount of effort students put into the classes and how well they did on tests or term grades. If a student did poorly on a test, that meant the student had not studied. The reverse was also true: if a student studied the material, then they would do well.

> He got a D on that [test] and the first test he got an 87. You know what I'm saying? I mean you can tell he's a smart kid, but he just didn't study for the test. [Sept. 29 interview]

> J gave me a note that he was going to switch out of a class. And I told him, he had a 68 on the test, so I told him I don't know, I, 'cause the question [on the note] asked "Do you think he should be switched out?" And I said I don't know. That's what I put for my answer. I said only, you know, if he, I think if the ability there's but he doesn't, but he doesn't, I think he needs to put more effort in or something. [Nov. 23 interview]

> You know, if you know you're going to have a vocab quiz, all you have to do is study the definitions. Some people choose not to, you know. [Jan. 12 interview]

> I mean like certain people in biology, you know, I give everyone the same material, you know, it's obviously how they do, you know, some people consistently fail, two people consistently fail at everything. So it's obviously, they sit in class, they probably don't even take the information I give them and that's you know what you get back. [June 1 interview]

If a student wanted to do well in Sam's classes, all they needed to do was do the work asked of them. He assumed all of his students were capable of handling the work and therefore any that had trouble were not willing to put in the needed effort. Other possible factors such as the difficulty of the material or the way in which it was being presented were not raised.

> Like yesterday we talked about say covalent bonding and today we talked about ionic bonding, and you know people wouldn't take the time, like those first three guys in that row, they wouldn't take the time to just think about it. Instead of thinking about it, they'd just keep asking question after question and I'd kind of like repeat the same answer 'cause that's how you'd answer it, but they wouldn't absorb it. You know what I'm saying? They just wouldn't think about the answer. So that's why they don't know it so they keep asking. [Sept. 22 interview]

When confronted with a situation that did not follow this pattern, Sam wasn't sure how to respond to it.

> Like that girl who didn't know it, I mean she's been doing her homework and things like that, so you wonder if she just, is it just like copying from a book or something, not thinking about it or, I don't know. [Oct. 13 interview]

As Sam understood the process, effort should pay off in doing well. Where it appeared that lack of effort was not the problem, then the kind of effort must be at fault.

What Sam meant by "doing well" was focused on the grades the students received, whether on a test or for the term. Many of the decisions he made regarding the work he required from students revolved around helping the students get a higher

grade, providing them with more opportunities to improve their grade. When asked what he thought the connection was between the grades the students received and how well they understood the material, Sam replied,

> I think for most, for the most part it seems to be a direct, you know, directly related. The higher the grade, it seems like, I mean for a, I mean like talk about, like if you get in the A range, it seems like you, I think, I think they're consistently, you know usually to get like a, I mean especially to get like a high A it's like consistent like everything, you know? But even like a low A, like just you maybe had a bad day or something....But then when you get to like the 60s, you know, and F's, I really don't know if there's much difference between the two, just because you get an F doesn't mean you understand it less than the person who got the 60s. I think, I mean it's basically, I don't know. You know, maybe you memorized a couple more things. I don't think there's really much of a difference there. [Ap. 13 interview]

Sam agreed that there were a few cases where the term grades did not match up with what he thought the student knew, but thought that that had to do with how many opportunities to earn grades were provided in a given quarter. At times, he also manipulated the points he gave on a test or assignment to more accurately reflect what he believed students should have earned.

Sam did not seem to sense any contradiction in how he viewed grades. He operated under the assumption that good grades meant students were learning and bad grades meant they were not, even though he also talked about assigning points or weighting assignments differently at different times.

Sam rarely talked directly about student learning. His focus was on moving through the material and on getting students to do the assigned work. He seemed to believe that the inevitable outcome of the process was that students would learn. The grades students earned fit easily into that scenario, since, in general, students received grades that he thought accurately reflected the work they had put in.

Concept Maps

Sam's first concept map (Fig. 4) stayed focused on two major aspects of the work: instruction and being an example for the students. What he meant by instruction was not elaborated, but rather Sam moved on to discuss who was responsible for the instruction. "[A professional] . . . someone that you would respect . . . that you can learn from..a professional with expertise in their field" [August 30 interview].

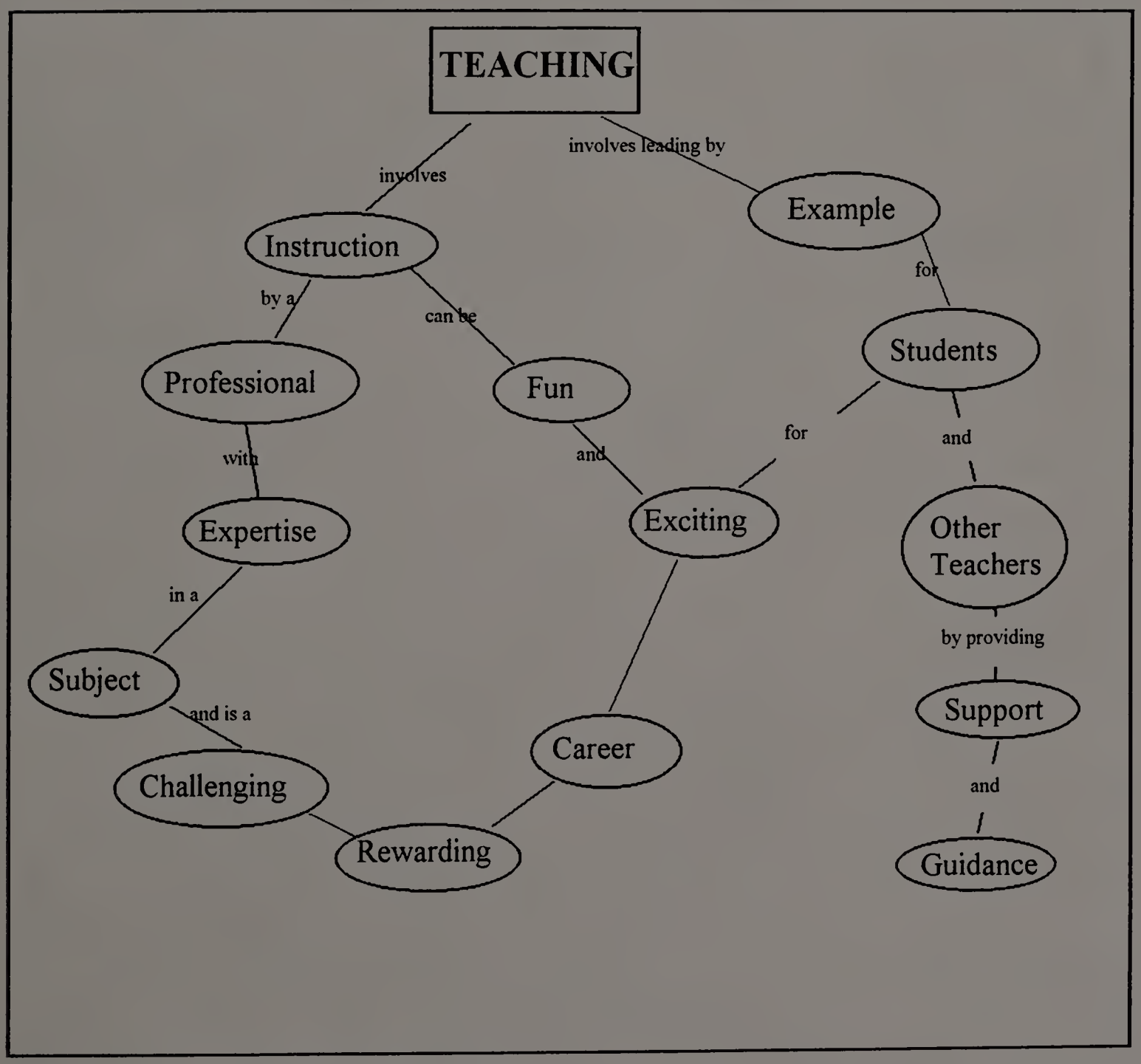


Figure 4 Sam Cott Concept Map #1 8/30/93

A branch off of instruction highlights Sam's view entering the year that teaching was important work, "a challenging and rewarding career" [August 30 interview]. He connected this branch with the students, explaining that "instruction can be fun and exciting for students." Sam entered the year believing that teaching was valuable and enjoyable both for himself and for his students.

The second aspect, that of being an example, included for Sam providing help with both school and non-school matters. In his discussion of the map he focused on the importance of being "approachable" and that the students feel comfortable coming to him with questions or problems.

Five months later Sam created another map (Figure 5). This one contained essentially the same two areas of focus as the first, though the vocabulary used was slightly different. "One side focuses on ideas and things we talked about in class whereas this other [side] focuses on the individual you come into contact with" [January 25 interview]. Instruction was still a major piece, this time explained a little further: "Relaying information through lecturing and using resources, it helps you to explain ideas and concepts or any information you want to get across. And through trying to explain you're helping them understand what the new idea or topic is."

Sam thought "contributing to the overall development of the students" was just as important as the instructional aspect. He added to that piece the idea of developing relationships with both students and other teachers, an aspect not present in the first map. By this time in the year he had had opportunity to interact with a variety of people, had been helped by colleagues, and therefore had begun to understand the day to day reality of those relationships.

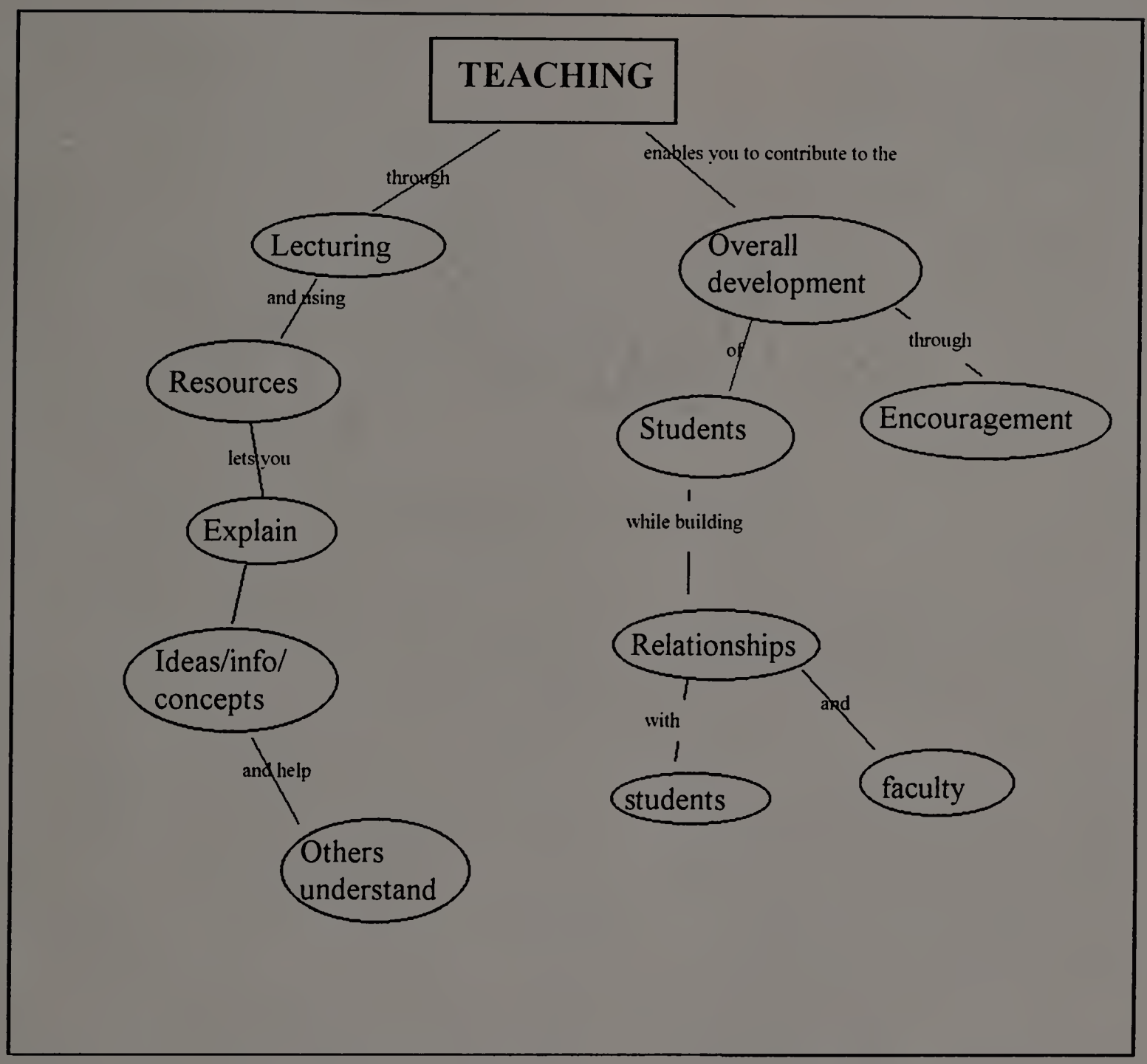


Figure 5 Sam Cott Concept Map #2 1/25/94

The final concept map (Figure 6), constructed at the end of the school year, still carries the same two aspects of instructions and helping students, though in this one they were combined under the same strand and an idea from the first concept map was picked up again and given prominence -- the importance of teaching as a profession. Just prior to making the map Sam had raised some questions and concerns about how teachers are perceived in society. His heightened awareness of

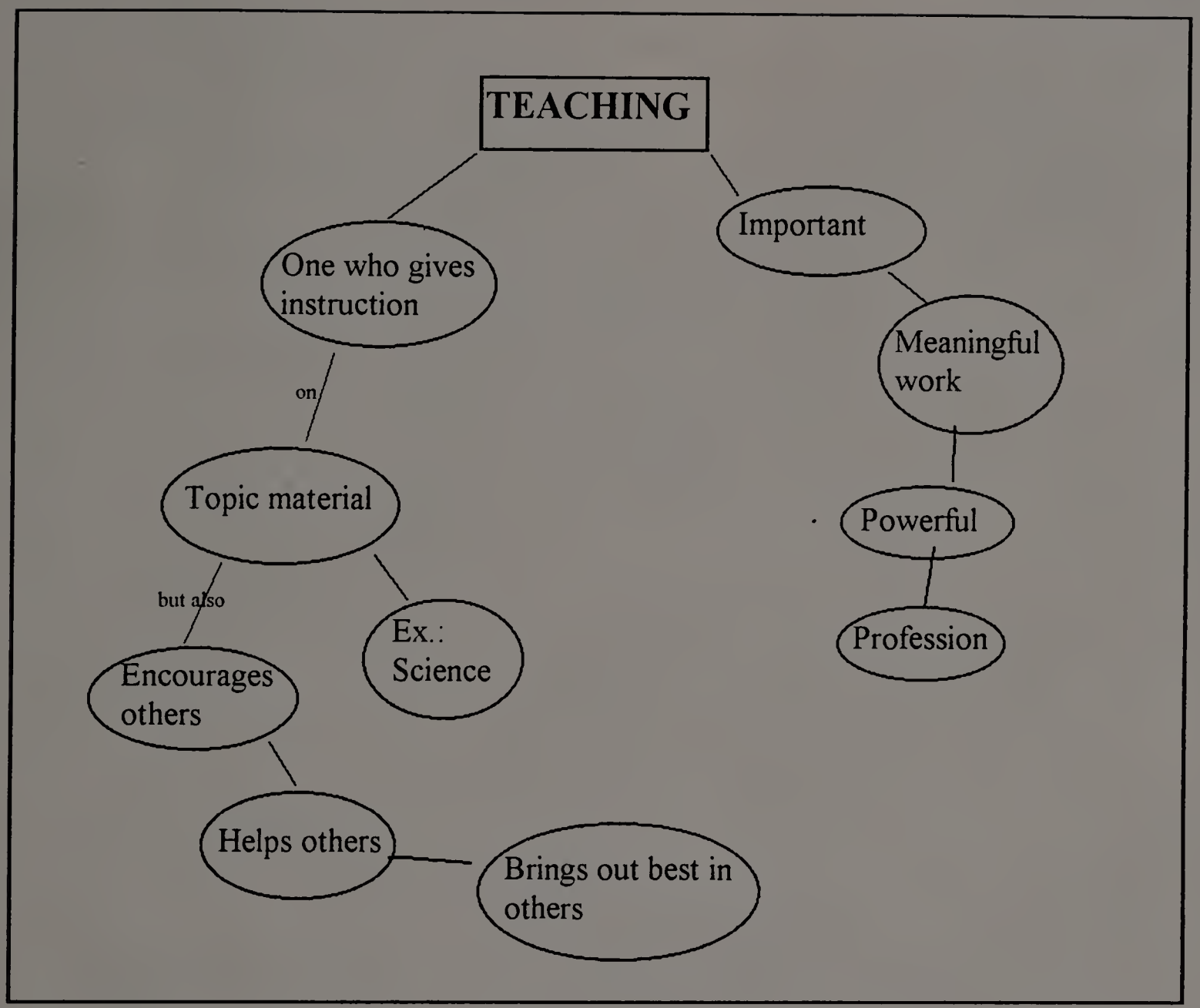


Figure 6 Sam Cott Concept Map #3 6/15/94

his own belief that teachers have been undervalued manifested itself in his concept map. "Now it seems like I have, not that I would ever think that it was unimportant, but I just think it's more important than I thought, and more important than others think. So I think maybe this is something that I don't know if I've included before, important meaningful work, considered a profession" [June 15 interview]. The instruction aspect once again was not elaborated on and was quickly combined with the

importance of encouraging students. "Then obviously one who does, one who gives instruction, like for me the science material, but then like we had mentioned to before in the teaching descriptions I had said maybe you know presents material but maybe does these other things, encouraging others and obviously in teaching you're working to help others and hopefully by doing that you're making it a positive experience, make them do their best. Hopefully." [June 15 interview]

This third concept map (Fig. 6) is a very simple one, even compared to the first two that Sam created. It highlights one of the limitations of using concept maps. Sam was very tired during the interview and while drawing the concept map. Although the map contains some of the elements as the other two, and therefore is not necessarily inaccurate, it is not necessarily a complete representation of how Sam understood the concept of teaching. Clearly the energy level of the person drawing the map has an effect on the final product and should be taken into account during analysis.

When looking at all three, Sam saw some continuity in them as well as differences. He thought the mid-year one (Fig. 5) focused on "How I teach...maybe 'cause that's what, after I'd done it a little while" [June 15 interview]. He also commented on how he hadn't included the focus on the profession in the first two maps; he didn't think he had thought much about that aspect.

The concept maps that Sam created highlight the aspects of the work that he focused on through most of the year: presenting the material and providing an example/helping the students. While he would agree that other pieces are a part of the job of a teacher, such as taking attendance, grading students' work, attending meetings, etc., those are not the pieces that he talked about very much or that held his

attention. He began the year with a particular view of what was important to him and held to that throughout the year.

Summary

The first year of teaching for Sam was characterized by consistent comments of "the work is going good", "I haven't had any real problems", "I like my schedule", and "I like working with the people." He entered the year with confidence in his ability to work with the students and to teach the material. He took seriously his responsibility to introduce his students to the subject matter, expecting them to take their role of doing the work just as seriously.

Sam had little reason throughout the year to question or analyze the beliefs and expectations he held. Responses, both implicit and explicit, from the administration, his colleagues, and his students supported his approach. From Sam's point of view nothing occurred that was unexpected or out of the ordinary, so he had no impetus to rethink his methods or his assumptions. He began the year with a positive outlook and that continued consistently throughout, leaving him looking forward to another year of teaching just as positively.

CHAPTER 6

ANALYSIS AND CONCLUSIONS

Lance Celario and Sam Cott exemplify in many ways the type of person policy-makers and educators would like to draw into the teaching profession. Well-versed in their subject, they also got along well with people and had a strong sense of self-confidence. They took their responsibilities seriously, wanting to do the best job they knew how. They had a clear idea of what was expected of them and just as clear ideas of how to fulfill those expectations. Whether those qualities are sufficient to be a good high school teacher is the issue that will be taken up in this chapter.

The three areas of focus for this study were the participants' understandings of what it means to be a teacher, what they believed teaching to be, and how they viewed their students. The assumptions and beliefs that Sam and Lance held regarding these three areas were shaped by years of being a student along with cultural norms of school and teaching. These beliefs heavily influenced how the participants acted and reacted during their first year as a teacher. Whether Sam and Lance used their experiences as teachers to inform their views and to then make relevant changes in their work should have been an important aspect of their learning how to teach.

View of Teacher

The understanding of the roles and responsibilities of a teacher that Sam and Lance brought with them into the year were developed over years of being a student. Their interactions with their students, how they were addressed, the arrangement of the classroom, and how they spent their time at school were all aspects about which

neither participant had any questions. They knew what it looked like to be a teacher and had no trouble taking on the persona needed to fit in with their colleagues and their students.

These beliefs about what it meant to be a teacher worked well for Lance and Sam because the people with whom they worked agreed with their approach. The administration and the other teachers at the schools wanted someone who was organized, could keep a group of students under control, and could fulfill various duties needed to help the school function. Since Sam and Lance acted like the other teachers, they conformed to what the students were expecting as well.

In addition, East High and West High were similar, in many ways, to the high schools the participants had attended. Relationships between teacher and student, the rules and regulations, the length of classes, the daily schedule were all familiar ground for Sam and Lance. They had functioned well as students within that setting and assumed that they would therefore function well as teachers.

View of Teaching

The attitudes they held toward teaching and the methods they used replicated in many ways their own experiences in school and how they were taught. Neither Sam nor Lance could remember any "good" science teachers who had conducted class any differently from how they now did. That approach obviously worked well for them as students; both of them had been successful in school. The methods that had been modeled for them as they were going through school became the way to teach science.

Sam and Lance operated under the assumption that "teaching is telling." They had information the students did not have and it was their responsibility as teacher to

give that information, to "present the material." Their heavy dependence on lecturing supports this assumption. They would tell the students the information and expect the students to listen and take notes. The following interchange with Sam underscores this approach.

> SC: Like in the College, we finished the lab again today. I said about a million times that for density equals mass over volume you use the average of the two volumes you figure out for the volume. But still people couldn't understand that. They took an average of two volumes to get a volume to put into that formula. They couldn't understand that.
>
> SF: You think they just didn't know what you meant by average?
>
> SC: No. I just think they're not listening. I gave an example on the board yesterday.
>
> SF: So it's not that they don't understand the concept of averages?
>
> SC: No, 'cause I went over it. I mean some people did [understand], but some people just don't listen. [Sept. 22 interview]

The steps that made up teaching for Sam and Lance were presenting the material through lecturing, letting the students practice through homework and worksheets, and then testing the students on how well they had retained the information they had been told. While both participants would agree that this process should not be done only once for a topic -- student questions need to be answered and the information repeated a few times -- this was essentially the way to teach science.

For both Lance and Sam, teaching meant something different if it took place in a non-school setting. While Lance believed that some aspects transferred from one

setting to another, he also saw some significant differences between coaching gymnastics and teaching biology.

> Well, I mean in gymnastics it's not so much I'm, you know, my title is, you know, I'm their gymnastics instructor, gymnastics coach. But it's more, I'm more of a friend for them, I'm more of a safety net than anything else. I'm not a teacher in the same aspect I am here.....for instance, they call me Lance. So right off the bat I'm not Mr. Celario, I'm Lance. So that, that, that's set it up they relate to me like a big brother. And it's more of a physical thing than a mental thing too. You know, instead of me trying to explain something to them, I can show them, they can do it. Instead of like cell respiration or hypertonic solution, I show the kids that, but still you look at a board. And then showing the kids a handstand and having them do it, it's a lot different . . . . And here [at school], it's a little different. I'm Mr. Celario, I wear a tie. Over there I wear a sweatshirt and sneakers and shorts. You know, here I wear a tie and shoes . . . . I think the discipline [is different], 'cause you know in gymnastics you encourage them to be athletic, you're encouraging them, so naturally they're going to be talking all the time and you know maybe screaming. As long as it doesn't get too bad, it doesn't bother me. But here it's different. You know there's supposed to be a certain discipline they're supposed to follow, you know, a certain regimen that's supposed to, you know, work. When it's time to be quiet it's time to be quiet. [Dec. 1 interview]

Lance saw differences between school and non-school settings in how he was viewed as a teacher, the ways in which he could help the students learn the subject, and what was expected in terms of the student behavior. Approaches used in teaching gymnastics, such as getting the students actively involved in learning the subject, were simply not appropriate in a school setting; the distinction was a clear line.

For Sam, the contrast was just as sharp. Some similarities existed like working with young people and the need to prepare what he was going to do by writing out notes for himself. But the ways in which he helped the students learn the material were quite different.

> With baton it's more like one on one, kind of thing. Like even when I do like the clinics stuff and like a good number of people, I still, it's kind of like going around. Like every time I introduce something I still like, I feel like I have to go around and make sure everyone can do it. At least I can see if somebody can't do it, you can't really hide it, really. But then like, say in the [chemistry] class, if I say something and then I kind of ask does everyone understand . . . it's much easier to, some people have a permanent nod, you know what I mean? So they could hide it if they don't understand it, but they're nodding . . . I never really thought of it like that . . . . But see how that's weird how, like in the baton thing, even though I'm teaching it's kind of individual, but then here I can't do that. I mean I can't go around to, you know what I mean? Not really . . . like if we're taking notes and try to explain, I can't really, I guess I could say what does that mean to you or what does that mean to you. [Dec. 8 interview]

Teaching a subject in a school, for both Sam and Lance, brought with it certain "givens", aspects that were not questioned. The formality with which they were addressed and the behavior expected of the students were a part of school, not necessarily a part of teaching as an activity. While they clearly had ideas about the importance for their students in gymnastics and baton of individual attention and doing activities, they did not know how to bring those same aspects into the school setting when teaching science. Relevant for learning outside of school, those pieces did not fit in with what "school" was nor with how Sam and Lance had been taught in school. Neither of them had had any opportunities to question or discuss their assumptions nor encouragement to draw upon their teaching experiences outside of school.

One aspect of teaching science in school which neither of them questioned was relying on the textbook to determine what they were to teach. They had both been told to get through a certain number of chapters and throughout the year regularly compared their progress to that of other teachers. Sam and Lance rarely drew on material outside of the textbook, both concerned that if they did they would not get through as much material as was expected of them. Teaching science, then, became

teaching the textbook, emphasizing the learning of vocabulary and memorizing formulas. Neither of them questioned the relevance of the topics covered or the order in which they were covered. Those were the topics they had learned when they were in school and those were the topics they were now being asked to teach.

The focus on the textbook manifested itself in the preparation for class as well. For Lance in particular, the preparation done for class was based on the difficulty of the material. Easy topics, like those for his Computer-Assisted Biology class, meant he did not need to do much preparation. He could "fly by the seat of his pants" if the topic was insects or mammals because he knew the subject so well. Less familiar topics, like those for his Earth Science class, required more preparation. Who the students were, the interest, motivation or knowledge they brought, had little impact on how Lance thought about preparing for each class.

View of Students

Interaction with students was one of the main reasons both participants had decided to take a job as teacher. They both got along well with their students, attributing their rapport, at least in part, to the fact that they were not much older than the students.

Neither Sam nor Lance ever thought they had any real discipline problems with their students during the year. They continually hesitated to use the word "problem" when talking about the discipline in their classes and would disagree with the word if I used it in an interview question. The most common issue they brought up was extraneous talking by the students and both Lance and Sam assumed that some talking was inevitable. They both ignored it unless it interrupted their lecture or if the

students were taking a test. Except for the test situation, they rarely seemed to think about whether other students were being disturbed by the talking.

Though it was more overt for Lance because he had a wider range of levels, both of the participants had different expectations of the various class levels. While they both continually insisted that the issue was motivation and not ability, they also moved through the material more slowly, expected less work, and expected lower grades from the students not in the Honors level classes.

One of the results of this approach to the students, again, more obvious in Lance's classes, was that the students in the lower level classes, particularly Computer-Assisted Biology, were denied learning opportunities. They did not have any type of labs during the year and did not get to go on as many field trips. They were not encouraged or pushed to succeed in the same way as the College or Honors classes. They had more free time in class and less work was expected of them. Lance had determined that the majority of students in these classes were not going to college nor going into professions that used science. This became a self-fulfilling prophecy in many ways since by the end of the year those students had lost another year of opportunity to learn the material needed for college or for a science-related job.

Neither Sam nor Lance talked much during the year about student learning. Their focus remained on moving through the material or on the grades the students received. Each of them raised the idea of student learning once during the interviews, but it was almost as an afterthought, as if they did not really know what to think of it.

Part of the reason for this lack of emphasis on learning may have been because of what they assumed about it. How learning occurred was, for both of them, a natural result of putting in effort. If a student read the material in the textbook,

listened and took notes in class, did the homework, and studied for the test, then learning occurred. The kind of learning that occurred, for example, memorization of facts versus the ability to apply what had been learned, was never discussed.

Neither Sam nor Lance seemed to have ideas about how to help a student who was having difficulty beyond encouraging them to do the homework or offering to go over the material one more time. Students who had difficulty learning in this type of setting or by the methods Lance and Sam used were not helped. While Lance and Sam were concerned about these students, they also had the attitude that there would always be some students who would have trouble no matter what the teacher did. Their focus moved to the grades the student was receiving and as long as the student was passing the class, Sam and Lance were satisfied.

Time Commitment

Due to the circumstance that brought them into teaching, neither Sam nor Lance expected to teach more than a year. Medical school was the ultimate goal for each of them; teaching in a high school was only a temporary position. The effect this had on how they thought about the work and how they acted is unclear. When asked at the end of the year how they thought the temporariness may have affected them, both initially thought it hadn't made much of a difference. They each took the work seriously and put in what they considered reasonable effort. When encouraged to think of specific aspects of the work, they both agreed that had they been planning on returning the next year they may have kept better notes of what they did. By the time of that interview, Sam knew he would be returning for another year but couldn't think of anything he'd have done very differently even if he'd known earlier that he would teach for another year.

Given their views of what being a teacher means, this attitude is not surprising. They put in as much effort as they believed they needed to, thought of themselves as successful, and saw few areas where improvement or change was needed. Perhaps more relevant than how long they thought they might be teaching is that neither had ever seriously considered teaching as a career. They decided to take it on as a short-term job, like working in a lab, where they would do the best they could and be satisfied with that. Just as they would have if working in a lab, they both believed they had the skills and attitudes necessary to do the work and felt they had lived up to their expectations.

Context

As discussed earlier, one of the ways the context in which Sam and Lance taught affected them was their perception of what was appropriate for "school." Approaches or attitudes that had a place when teaching gymnastics or baton did not fit in with what "school" was and therefore were not used when teaching chemistry or biology. The setting itself contained for them certain structures that they did not question. They were bound, in many ways, by their picture of "school" which had been constructed while they were students.

The context had an impact upon the two participants in another way. From the very first interview with the district liaison, the clear message to both Sam and Lance was that they would be able to do the work of a teacher. At no time did anyone raise objection or concern about their lack of preparation or experience. They were given little supervision by either the departments or the administration. Each of them found a fellow teacher in their department to whom they went with questions or concerns and

from whom they received support, suggestions and resources. Sam and Lance did not miss the supervision and the schools clearly did not think they needed it.

The expectations the schools had for Lance and Sam matched closely the expectations the participants had for themselves. As mentioned above, the schools wanted people who were organized and could keep the students under control. The departments were interested in having a certain amount of the material covered from the textbook so that the students would be prepared for the following year's classes. Sam and Lance fulfilled those responsibilities.

How they taught, whether and what the students were learning, which students were having trouble and whether Sam and Lance were addressing those concerns were not areas either the administrations or the departments examined. Lance was observed once by the department chair for part of a class period and received an evaluation that was an approving summary of what had happened. The principal of Sam's school stopped to observe him a few times in class and complimented him each time on the work he was doing. Since this was the extent of the response the participants received regarding how they taught, it is understandable that they felt what they were doing was a good way to teach. No one at the schools raised any other possibilities than what Sam and Lance already had in mind.

Conclusions

In much the same way that a good actor is able to step into a role and perform it convincingly, so Lance and Sam were able to take on the role of a teacher. During their years as students, they had observed many examples of how a teacher looks, acts, and sounds. They had enough confidence in themselves, and in their understanding of what it meant to be a teacher, to be able to walk into the schools and

perform the duties of a teacher. Any casual observer in their classrooms would have seen little difference between them and any other first year teacher.

A deeper and more careful look into their work, however, reveals some problems that must be addressed. Their ability to act like a teacher did not ensure that they had the knowledge and skills needed to help each of their students learn chemistry or biology. They had a narrow understanding of what it meant to "teach" and of how teaching was connected to student learning. They accepted without question the tracking system in each of their schools and continued the practice of lower expectations and fewer opportunities for those in the lower level classes.

While they experienced few of the problems identified by first year teachers in Veenman's study (1984) (see page 17), part of reason for this is that they did not recognize those issues as problems. Some of the ones listed, such as motivating students and dealing with student differences, never came up in the interviews. Others, such as assessing student work or effective use of different teaching methods, were not raised because Sam and Lance had decided on a few ways of addressing both of those issues and did not question them further.

One of the aspects I was interested in when I began this study was what kind of change would occur during the year in how Sam and Lance thought about the work they were doing and how they would implement those changes. The two participants made very few changes in how they thought or acted. Given the experiences they had at the high schools, this should not be surprising. Change requires some type of impetus, whether it is uncomfortableness, uncertainty, an outside force or just curiosity. None of these occurred to either participant. Their expectations were met regarding what the work would be like, the administration and their colleagues were pleased with

what they did, and the students reacted in expected ways. Since very little that occurred during the year challenged their beliefs and assumptions in ways that the participants could understand and therefore respond to, Sam and Lance had little reason to make changes in how they thought or in how they acted.

The contexts in which the participants worked are a major factor in the discussion of whether people without preparation are able to do the work of a teacher. If high schools are interested in people who are able to stay organized, maintain a classroom full of students, and go through the process of presenting a subject and testing the students on it, then Sam and Lance fulfilled that role very well. They got along well with the administration and their colleagues. They took the work seriously, had a solid background in the subjects they taught, and cared about their students.

If, however, teachers are wanted who understand how learning occurs, can enable students with a variety of backgrounds and personalities to develop an interest in and learn the subject, can diagnose learning difficulties and create viable responses to them, then Sam and Lance do not fit that role. They simply did not have the knowledge and skills needed to address the complexities of learning, particularly not on top of the multitude of other responsibilities a teacher has on a day-to-day basis.

First year teachers with preparation

Four teachers, each of who had received professional preparation, were interviewed in the spring of their first year of teaching. The hour and a half interviews focused on their decision to teach, their preparation, and their experiences during their first year. The following section gives a brief introduction of each teacher, including what their preparation was like. I then focus on three aspects that seem most pertinent, given my analysis of Sam and Lance. The first is how they taught: what

methods they used and what they thought they should be accomplishing. The second aspect is what they thought about their students, and the final area is the impact of the context on how they worked and thought.

Shella taught at West High, in the room next to Sam's. She had done her student teaching there the previous year and the principal had offered her a job which she was happy to accept. Shella had attended a small college that did not have a teacher preparation program until the year after she graduated. She graduated with a biology major and an education minor and then stayed for a fifth year to get certification to teach high school. All of the students in the program took the same curriculum and methods courses, regardless of their particular field; there were no methods courses specific to the various subject areas. During her first year at Doherty she taught three College Biology courses (mid-level) and one Biology II course (highest level) as well as a lab for each of these classes.

Anita was offered a job at East High (where Lance taught) one week before school started and was given the textbooks for the classes she was to teach two days before the students came. Her teacher preparation had been at a private four-year college where she took child psychology, a methods course in science, a pre-practicum and student teaching along with biology courses. At East she was given a Practical Science class (the lowest level), two Earth Science classes (mid-level) and two Physiology classes (mid-level). None of her classes had scheduled lab periods.

Both John and Tim had been engineers before deciding to teach. John worked as an engineer for only two years before joining the Peace Corps and teaching physics in Botswana. When he finished his two years in Africa he came back to the U.S. and entered a one year intensive alternative certification program. Tim had been an

engineer for ten years before he too went through the same program as John. The certification program included a methods course in the subject area, lesson-planning, psychology, technology, and microteaching as well as student teaching and an internship in a business. Tim opted to do two semesters teaching rather than do the business internship.

John got a job in a regional high school that drew upon students from a wide area. He taught three sections of Physics, each of which had a lab period, and one section of freshmen Earth Science that did not have a lab period. Tim's first year was in a city high school where he was given four freshmen level Physical Science classes and one College preparatory Chemistry class which was mostly juniors and a few seniors. Only the chemistry class had a regularly scheduled lab period.

View of Teaching

All four of the teachers talked about lectures and note-taking as the primary way to get information across. Part of the lecture included questioning, stories, and examples as they each tried to find ways to get the students engaged. Other methods they mentioned were similar to the ones Sam and Lance had also talked about using: videos, homework, tests and quizzes, doing problems in class and doing library research. One approach that all four teachers discussed that neither Lance nor Sam used outside of labs was that of having the students work in small groups. All of them thought it was a good way for the students to learn, though Tim and John talked about the difficulties they had had getting students to actually do the work they had been assigned when they were in small groups.

View of Students

The major issue raised by all four teachers regarding their students was discipline, with the main problem being extraneous talking by the students. The teachers all talked about the difficulty of gaining control of the class and getting students to pay attention to the lecture or to the work they were expected to be doing. As was mentioned above, this aspect affected the methods they used to teach the material. Tim in particular talked about wanting to have the students work in groups but deciding to lecture instead because that was the only way he could stay in control of the class.

The issue of whether it was motivation or ability that caused students to have problems was raised in all four interviews. Each of them commented that they saw the lack of motivation and interest on the part of the students as being the primary reason that students had problems in class. John was the only one who hesitated on this point. He explained that since physics isn't required of all students most of his students choose to be there and so motivation wasn't as much of a factor.

This points toward another area that came out in each of the interviews. All four made distinctions between students based either on the level of course or on the age of the students. Students in low-level or mid-level classes were seen as less motivated, needing more hands-on work, and less reliable in doing work or bringing supplies to class. Similar descriptions were made of freshmen or sophomores.

Context

The experiences these four teachers had with the administrations of their schools was similar to what Lance and Sam experienced. Only one of the four teachers talked about the administration or the department as helpful and interested in

her work. At West High, Shella had received assistance with organizational and disciplinary problems when she needed them at the beginning of the year. The principal had walked through her room a few times and watched what she was doing. Shella was the only one of the four teachers who talked positively about the administration. The other three said their administrations had left them alone, doing at most only the yearly evaluations required for all teachers. They had been given the textbooks and shown their classrooms and were expected to do the work. If any of them had wanted help or had a question, they would have had to take the initiative to get answers.

Conclusion

Part of the reason that few differences seem to exist between the four with preparation and Sam and Lance is that all of the them have been influenced by the same system from the time they were young. The beliefs and assumptions about what it means to be a teacher and how to teach were built up over a long period of time. None of the four with preparation made any reference to how their preparation program may have challenged their assumptions or caused them to approach the work in a different way. In addition, the schools in which they now taught fit easily into the picture they held of "school." Nothing at their schools caused them to reconsider what they thought about teaching or about their students.

A caution must be raised about comparing these four teachers to Sam and Lance since the only data is a single interview for each. At various points throughout the year Sam and Lance would talk about wanting to do something in class, such as demonstrations or "hands-on" work that was not borne out in the observations. If the interviews had been the only source for data, I would have thought that they regularly

used demonstrations in their classes or used computers as a learning tool, when that was not the case. How they talked about what they did and what I observed them doing were, at times, quite different. The same may be true for the four teachers I interviewed. What they talked about, perhaps in part because of the questions asked, may not be completely representative of what they did on a day to day basis in their schools.

While the issues raised here contribute to the ongoing discussion about how to prepare teachers to work effectively in schools, they also point toward another area that must be considered carefully. The schools where teachers go to work once they have gone through preparation play an important role in how first year teachers develop. If the schools do not encourage and support approaches that contribute to the growth and learning of both teachers and students, then the impact of a teacher education program on the beliefs and assumptions of a new teacher will be minimized. If change is to be effective, then it must take place in both teacher education and schools at the same time.

Implications

This study has implications for three groups. For those involved with educational reform at either the national or state level, this study raises questions regarding the effectiveness of reducing or eliminating the amount of teacher preparation. If one of the concerns of those involved with reform is how to help more students learn more and be better prepared for college or the workplace when they graduate from high school, the experience of Lance and Sam suggests that having the teacher know the subject matter well is not enough. While there are some aspects of the work of a teacher that the two participants performed competently, they both had

difficulty knowing how to teach in ways that helped their students gain better access to the material. Sam and Lance replicated how they had been taught, perpetuating in many ways the very system reformers would like to change. In addition, the schools did not encourage them to expand their view of what it meant to teach. Schools are conservative institutions, slow to change. Placing the emphasis on new teachers having more subject matter knowledge and less preparation without addressing the context in which teachers work will not produce long-term changes in what and how the students learn.

The second group for whom this study has implications is teacher educators. This study suggests two areas that should be addressed in teacher education. The first is that of the assumptions and beliefs that prospective teachers bring with them into the program. Just as Lance and Sam entered the schools with clear ideas of what it meant to teach, so too do prospective teachers come with their own beliefs. They should be encouraged to articulate those beliefs and analyze them for their validity and effectiveness. Part of this probing and challenging of beliefs must include experiences in a variety of schools and other educational settings. Preservice teachers should be confronted with real situations and then be assisted in examining their beliefs in light of those experiences. This would create possible avenues for understanding where and why different approaches are needed.

The second area is that of educating prospective teachers about the contexts in which they will be working and the impact those contexts can have on how they teach. Many new teachers set aside knowledge learned and ideas gained in their teacher preparation program if the school in which they work does not support those ideas. Teacher education programs should help students develop perspectives and skills with

which they can observe and understand the cultures and traditions of the schools. Programs should also help prospective teachers develop strategies for how to work in settings that may not agree with their views.

The third group for whom this study has implications are colleges and universities. Most of the professors hired in these institutions have very little or no formal preparation in how to teach. They are hired for their expertise in their field clearly under the assumption that they can therefore teach it or that they will learn how through experience. This study raises questions regarding the effectiveness these professors may have in helping their students learn the material. Some students learn, just as some students in Sam's and Lance's classes learned. The focus moves to those students who have trouble learning the material and the kind of responses the professor may have to address that situation. If s/he has never had opportunity to develop knowledge about how people learn and how to facilitate learning for a variety of students, then students who have difficulties will not be helped.

Further Research

While this study focuses on only two people, so much of their background and experience is typical that I find little reason to believe that the outcome of other studies on unprepared teachers would be much different. What the participants observed as students, how they were treated as students, and the culture and norms of this society regarding schools and teaching are all aspects that many people share. Just as those aspects influenced and shaped the work Sam and Lance did as teachers, those same aspects would affect, in similar ways, how other unprepared teachers would teach. This study can, however, suggest a few areas for further research.

Since the context had such a powerful impact on how the participants operated, looking at unprepared teachers in a variety of settings may provide more insight into how the context affects the work teachers do. If the administration or department was more active in supervision or mentoring, or if the approach to teaching at the school was more nontraditional, the experience for the unprepared teacher may be quite different.

The extent to which the subject matter, science, affected how Sam and Lance taught was not explored in this study. The subject matter may play a significant role in how people decide to teach. Methods or approaches appropriate in social studies, for example, may not be appropriate in science. Research is needed that focuses on how unprepared teachers understand and teach specific subject matter, such as Grossman's (1990) work with English teachers.

Finally, Sam and Lance never expected to make teaching a career. Their expectations for a number of years had been to attend medical school. Teaching was a temporary position. As was discussed earlier, the extent to which this affected what they thought about and how they performed the work is unclear. People who have seriously considered teaching as a career or who have long wanted to teach may approach the work quite differently because they have already put more thought into what it means. Studies that look at teachers without preparation who have made the decision to make teaching a career may provide a different perspective.

APPENDIX A

INTERVIEW QUESTIONS FOR THE LONG INTERVIEWS

First interview prior to first day of classes.

1. Why did you decide to teach?
2. With whom did you interview?
3. When you interviewed for the job what were you told it would involve?
4. What do you know about the school, your classes, your schedule?
5. How much planning have you done over the summer?
6. What did you use for resources or ideas in planning the first few days or weeks of school?
7. What did you keep in mind while you were planning (e.g. student age, abilities, time, equipment)?
8. What goals have you set for yourself? For your students?
9. What do you think the students will be like--background, behavior, abilities?
10. What do you think will be easiest about the job? Hardest?
11. What are one or two things you wish you knew now that you think would make the first day or week easier?
12. What do you think the first day(s) of school will be like?
13. What plans have you made for the first day or week of school?
14. What are you most excited about? Most nervous about?
15. Describe teaching.

Construct concept map.

Second interview -- Mid-year

1. If you could start the year over, what are some things you would do differently at the beginning?
2. What are some things you would keep the same?
3. How does the amount of planning and preparation for each class compare with what you thought you would need to do?
4. What have you changed in how you plan a lesson or unit?
5. What have you changed in how you act in class?
6. Out of all the things you have done to teach your students chemistry or biology what do you think has worked the best?
7. What has been most surprising about the students in your classes?
8. What do you find most difficult about the work?
9. What do you find easiest about the work?
10. What factors - outside of yourself - make the work difficult?
11. What factors - outside of yourself - make the work pleasurable?
12. What would you consider your most difficult academic problem?
13. What would you consider your most difficult discipline problem?
14. If you had complete freedom to teach a group of high school students chemistry/biology, how would you do it?
15. What kind of experience(s)/preparation would have been helpful in preparing you for this work?
16. What experiences or background that you did have has been most helpful?
17. Describe teaching.

Construct concept map.

Final interview -- End of school year

1. What do you remember about the first day?
2. What do you remember about your expectations of the work?
3. How have you changed over the year?
4. How have your perceptions of the students changed over the year?
5. If you could start the year over, what are some things you would do differently at the beginning?
6. Think of what you have done in class to teach your students chemistry/biology. What do you think has worked best? What has not worked?
7. Think of what you have done regarding discipline. What do you think has worked best? What has not worked?
8. What do you see as your strengths as a teacher?
9. What are areas you would want to improve if you were going to teach again?
10. What knowledge and skills do you think are most important for a teacher to know/have?
11. What would it mean to you to be a successful teacher?
12. What impact has only planning on doing this for one year had? (i.e. what might you have done differently if you'd been planning on teaching longer?)
13. Describe teaching. Look at previous descriptions.
14. Construct concept map. Look at previous maps.

APPENDIX B

INSTRUCTIONS REGARDING CONCEPT MAPS

Concept maps are a way of visually representing how an individual understands a particular concept. They focus on the components the individual considers to be important aspects of the main concept and how those components are related to each other as well as to the main concept. (See examples next page)

You are asked to create a concept map on the topic of "teaching."

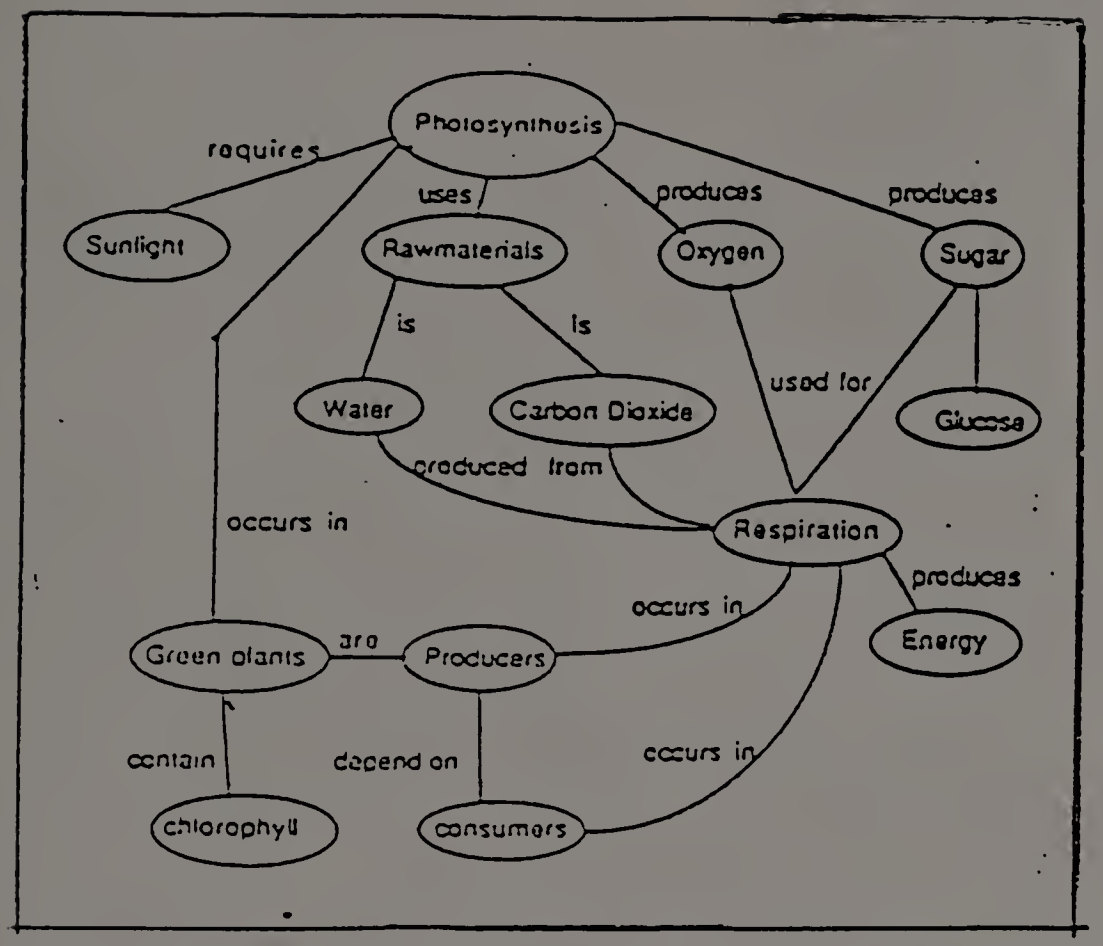
There are three steps to creating a concept map.

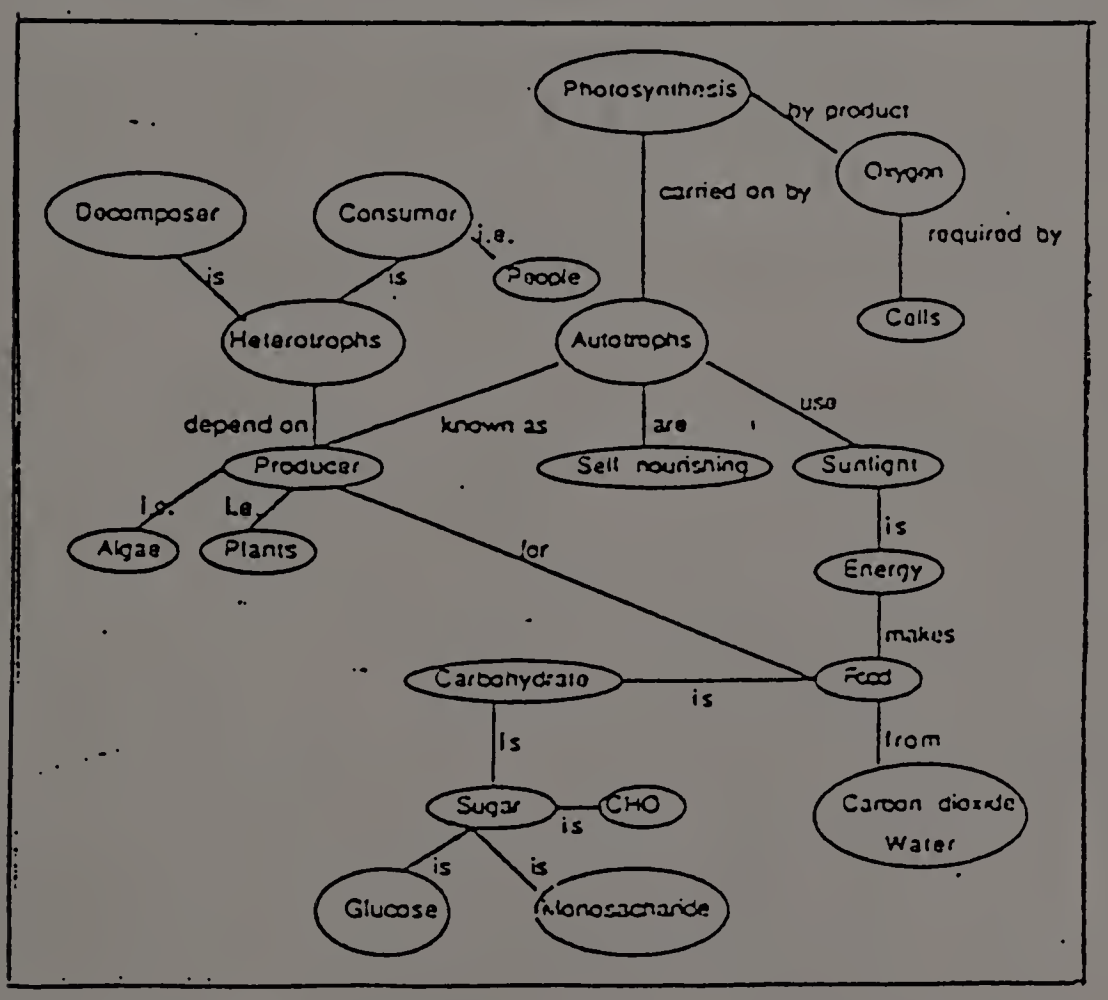
1. Generate a list of words or phrases that come to mind when you think of the concept of "teaching."
2. Arrange these words/phrases on the paper with lines showing connections between them, similar to examples. You do not have to use all of the words/phrases you listed and if you think of others as you are working they may be included
3. Label the lines with a word or two which help to explain how the two components are related. These connecting words are often verbs or prepositions.

You will then be asked to talk through the map, to explain the words/phrases you generated and how they are connected.

Please feel free to ask any questions. This is <u>not</u> a test of your ability to create a concept map. It is another way of helping me to understand how you think about teaching.

EXAMPLES OF CONCEPT MAPS





(Taken from Briscoe & LaMaster, 1991.)

APPENDIX C

INTERVIEW WITH FIRST YEAR TEACHERS

1. Why did you decide to teach? Why high school science?
2. What was your teacher preparation program like?
3. How does this high school compare with the high school you attended? With the high school where you did your student teaching?
4. Describe what the administration/department has done to help you this year.
5. What classes do you teach?
6. What goals did you have for yourself at the beginning of the year? For your students?
7. What kind of atmosphere did/do you try to set up in your classroom?
8. Describe what you do during a typical class.
9. What kinds of methods have you used in your classes?
10. How do you think teaching science is different than teaching other subjects?
11. What were your expectations of your students at the beginning of the year? How do those compare with what the students are like?
12. Think of a student or two from each class who you think is doing well/poorly. How do you know that? What are you using to asses them?
13. What is your responsibility toward a student who is doing well/poorly?
14. What from your background or education has been most helpful?
15. What knowledge/experience do you wish you would have had at the beginning of the year?
16. How will you start next year differently?
17. Describe teaching.

APPENDIX D

PERSONAL BIOGRAPHY

Preface

One of my most consistent characteristics over the past twelve to fifteen years has been an insistence upon finding (or creating) connections among whatever issues, ideas, or questions come up. Someone close to me used the analogy that I view life as a jigsaw puzzle that I am trying to put together. Maintaining a focus on a particular piece without trying to bring in many other pieces has been, and continues to be, very difficult for me. While this characteristic is perhaps commendable in some circumstance, I have found it somewhat debilitating within academic work, particularly something as focused as a dissertation needs to be. This attribute carries over into writing this short autobiography: the necessity of leaving many experiences out frustrates a significant part of my nature. The exercise, however, is good practice.

The other dominant aspect in my life has been a deep concern about social justice, grounded largely in my heritage as a Mennonite. This has shaped and informed the work I have done, my reactions to world and local events, and my interest and direction in the field of education.

The Journey

Halfway through my undergraduate career, after a discouraging and difficult year as a pre-med major, I spent a semester in Chicago at a program run by the Urban Life Center. The program had two major objectives: one was to provide college students with an opportunity to learn about and work with a variety of issues and problems associated with urban life; the second was to encourage the individual to take responsibility for her/his own learning. The first of these was addressed by

courses offered in Urban Issues, Arts in the City and a required practicum. The second purpose was accomplished by requiring each student to develop a contract for the semester, detailing what s/he wanted to study, why, how, and what form evaluation would take. This was the first conscious opportunity I had had to completely take charge of my own learning. It was both a liberating experience and a very frustrating one.

For my practicum, I chose to work in an afterschool program for African American children in one of the poorer sections of the city. I spent two or three afternoons a week attempting to tutor eight to ten year-olds in reading and math. Out of this experience I developed some very passionate ideas about education, learning and schooling. I think part of my reaction came from the juxtaposition of the freedom and encouragement I was being given to explore my interests and abilities and the rigidness that these children faced in what and how they were being taught. I spent most of that semester clarifying what I wanted to do with the rest of my college years and developing detailed plans for the kind of school I would operate if given the chance.

I went back to my college the next semester and, with the help of a team of advisors from the Peace Studies department and the Education department, created a major in Peace Studies with emphasis in education. Most of the courses were in sociology, psychology and Peace Studies (conflict resolution). I took only one education course, an independent study of readings and discussions with one of the education professors.

The lack of courses in education was very deliberate. The reactions of family and friends who had gone through the teacher education program had convinced me

that I did not want to waste my time in any of those courses. I was still undecided about whether I wanted to be an elementary school teacher and so did not want to go through the coursework until I had had a chance to try it out.

In fulfillment of the practicum required for my major, I spent a year working as a teacher's aide in an alternative grade school in Denver. The school (K-9) operated on an open school concept, both in the design of the building as well as the structure of the curriculum. I worked with two other teachers with a group of 55 fourth through sixth graders. I had a variety of responsibilities throughout the year, similar in many ways to the role a student teacher would have.

In many ways, that school embodied the model school I had created in my mind. The way the students and staff were treated, how they interacted with each other, the ongoing efforts on the part of the staff to continue to learn and to evaluate their work, all of these allowed me to test theories and ideas I had developed over the previous two years. I had opportunity to learn both the value and the complexity of many of those ideas.

One of the most significant outcomes of that year was the decision that I did not want to become an elementary school teacher. While I loved the teaching-learning interaction with the students, I did not enjoy the disciplining aspect and I found that taking up the majority of my time and energy. I was still very interested in education and assumed that I would somehow end up teaching at the college level though I did not know in what field. A variety of experiences over the next few years as a facilitator of workshops and classes confirmed my interest in and enjoyment of interacting with others in a teaching-learning environment.

In the fall of 1987, I began a Masters Degree program at Lesley College in Cambridge. Lesley College provided the opportunity for the student to create her/his own program of study. My focus was Women and International Development, looking at the role women have played in development as well as how they have been affected by policies and programs. Throughout the course of that semester (I did not finish the program), my readings, writing, and thinking became more and more focused upon the importance of education in affecting social inequities. I began to think seriously about graduate work in education, particularly looking at the history, philosophy and politics of education.

As I soon discovered, the University of Massachusetts at Amherst was one of the few schools in New England which offered a graduate degree program in Foundations of Education. The university had the added attraction for me of a strong program in International and Nonformal Education which I thought would provide an important perspective to my understanding of education as well as allow me to continue my interest in international development.

My work, both academic and assistantships, as a graduate student has focused increasingly on teacher education, particularly the role of foundations of education (history, philosophy, sociology, anthropology, politics) in the preparation of teachers. The inclusion of foundations in their preparation can introduce prospective teachers to a variety of perspectives with which to think about and approach their work. I see this an one important step to enabling them to help their students be aware of and value different ways of thinking and acting. I anticipate that my future work will continue to build upon this interest in foundations and in teacher education.

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