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Teachers' beliefs about learning

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TEACHERS' BELIEFS ABOUT LEARNING

by

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Kathy G. Short ______ 8/19/92
Date

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Merçi Joe pour ton encouragement,
pour la critique de chaque page que tu as fait avec le don
d'un vrai man of letters,
et pour m'avoir soutenu en plusieures façons
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Now we're even: I've got a Bachelors in Aerospace,
and you've got a Masters in Language, Reading, and Culture.

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and for helping me author my own.

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ABSTRACT

This is a study of six elementary school teachers' personal constructs about learning. I used ethnographic methods to interview each teacher twice. The questions guiding this study are: How do these teachers believe learning happens? How clearly do they express these beliefs? And who are these teachers as learners themselves?

My premise is that teachers must also be learners, and must be aware of their own learning if they are to help others learn. Besides being interested in whether or not these teachers were familiar with their beliefs, I was interested in their view of knowledge, whether constructivist (knowledge created by the learner) or objectivist (knowledge transmitted to the learner).

I found that some teachers were more familiar with their beliefs about learning than others. This seemed to be related to the kinds of opportunities they had had for discussion and reflection: workshops and inservice sessions, or long-term training programs.

CHAPTER 1

BACKGROUND AND DESCRIPTION OF THE STUDY

Last winter in Aspen I learned how to ski again. It was again because Joe, my husband, had taught me once before in Missoula. I remembered how amazed he had been that I had learned so quickly and skied so well. But that was four years ago, and I hadn't been on skis since.

This time, we had only a few days, but all the conditions seemed perfect: a friend owns a ski shop and lent us just the right equipment; we had been running stadiums so our legs felt strong; and the weather and snow were perfect, or so the locals said. I felt no fear.

As soon as I put my ski boots on, though, I was in unfamiliar territory. I clumped around the ski shop, feeling ungainly and looking around to see if anyone noticed I was new at this. Joe made me pull them off, and showed me the right way to put them on-- pull the tongue up hard, step in, then kick my heel on the floor to settle into the boot. That felt better.

Walking up the stairs and onto the snow was another story. I clung to the rail with one hand, barely managing to hold onto my uncooperative skis with the other. At that point I gave up trying to look like I knew what I was doing, and concentrated on staying upright. When the gondola swung toward us, Joe showed me how to put my skis in the rack on the side, and we climbed in and sat down. I copied Joe as he leaned down and unclipped his boots-- it would be a long ride up.

The scenery was spectacular, and I relaxed. I wanted to keep my mind in a higher plane, above the mechanics and hard work, in the realm of beauty and grace. I told myself not to think too much, not to be afraid to let off the brakes: I wanted to feel the rhythm. I tried to imagine how the skiers below me were feeling as they flowed down the mountain. Joe pointed out the really good ones-- they were the ones who kept their feet together, their weight forward, their shoulders pointing downhill, and who made the fewest turns.

We stepped out of the gondola at the top, hauled our skis off the rack, and followed the crowd out to the snow. We found a flat spot and threw our skis down. Joe stepped into his so easily-- click, click-- but as soon as I stepped on the first one it began to slide away. It was a mad scramble to catch it, keep my balance, and hold on to my poles and my dignity. Joe showed me how to plant my poles beside my skis, and where to hook the toe of my boot. I was in.

How did I ever work these before? Would I ever feel graceful in these huge heavy things? Of course, the tips immediately crossed and I fell over. Joe helped me up, and said, "Okay, follow me. Just glide along. Do you remember how to snow plow?" I did, and practiced as we glided faster and faster. I felt myself tightening up, felt a little fear creeping in. I pulled up beside Joe, and asked him to tell me again what to concentrate on. I did remember quite a bit from the last time, including how much it had helped to be able to follow Joe and imitate his movement. So he reminded me to keep my knees bent, my hands where I could see them, my shoulders facing downhill, my head up-- just to relax and feel smooth.

I was ready to try. I felt strong, confident, and I trusted Joe to get me through this first run. I knew he wouldn't take me through anything I couldn't handle, and that he would stay right with me.

Oh, exhilaration! Fresh air! Success! I actually whooshed up to Joe and gave him a kiss, just like in the movies. He had watched me come down the first hill, and told me how good I looked-- I moved well, looked strong, and had let myself go fairly fast. He reminded me to keep my hands in front of me, and turned to lead me down the next section.

By the end of the afternoon, I was on my own. Joe had gone to the black diamond slopes, and I was heady with my successes. A few times I scared myself-- I fell three times hard, and lost my way at least twice-- but each time I would stop, go over the basic mechanics, then clear my mind to let the feeling of grace and smoothness take over. Whenever I saw Joe, I would laugh and shout and keep going.

Back in the ski shop, I stomped the snow off my boots, and told our friend all about it. Joe couldn't say enough about how well I had done; I felt proud of myself, too. I knew exactly what I wanted to work on the next day: facing my shoulders straight ahead, keeping the top half of my body steady, and making turns from the waist down. I could feel it already. We headed for the restaurant upstairs to celebrate.

In telling this personal learning story, two things come to mind. First, it was to my advantage that I understood how I learn. I was able to ask my teacher for what I needed, and I was able to keep failures in perspective. I knew I had to go through the whole process if I was going to learn. Second, this learning story is a good example of how I believe learning usually happens for most people. I had an interest in learning how to ski, so I was willing to extend myself beyond my comfort zone. I connected the new experience with what I already knew about skiing and learning. I put out a great deal of effort, and kept trying even after failures. I made effective use of a good tutor. I celebrated and shared my successes. And finally, I reflected on the whole process at the end of the day, going over each exciting and difficult moment, and deciding what I would do the next day to improve.

My awareness of my learning process began four years ago in a university class when the professor asked us to write about how we learned to read. This was a new approach; we had all spent years studying how children learn to read in school, and now we were asked to think through our own learning history. It was an eye-opening experience, because I began to realize that the way I learned as a child is similar to the way I learn now, and very much like the way other children learn, too. It also became clear that learning in school, so often separated from the rest of our lives, can and should happen in the same way that we learn elsewhere.

These insights into my own learning led me to be interested in how other teachers learn. From looking at my own experiences, I turned to looking at the collective experience of teachers in American schools, and more specifically, to being interested in what teachers believe learning is for themselves and for their students. This study is therefore an inquiry into teachers' beliefs about learning, their ways of describing these beliefs, and their perceptions of themselves as learners, both in and out of school settings. I will ground the study of their beliefs in theories of knowing and learning derived from my own experiences and from research and theory on learning. In this chapter I will present the underlying concerns and rationale for this study, as well as the the questions, beliefs and hypotheses guiding the study.

Underlying Concerns and Rationale

My learning story demonstrates a personal awareness of learning. My basic assumption in this study is that teachers as promoters of learning must be aware of their own learning processes if they are to facilitate learning for others. Even more, teachers should enjoy learning, and be active learners in school and out of school. In short, we as teachers must live the life of curiosity, inquiry, and eagerness that lifelong learning requires. Donald Graves (1990) writes, "Learning is a way of life for teachers and even more so for the literate person who wishes to teach reading and writing. . . Teachers who are learners themselves like to watch themselves learn. These professionals are as much students of learning itself as they are of reading, listening and writing" (p. 105).

However, there is reason to believe that many teachers do not or cannot live this kind of literate life. One teacher I interviewed for this study said, "It's not very often we are asked to assess and verbalize our beliefs and ideas and thoughts. I don't think, as educators, that we take the time to reflect and share thoughts with others-- by the time we finish our teaching day, meetings, grading papers, preparation for the next day, etc.-- then we go home and truly do not have the time and opportunity for the reflection with other professionals." This realization is not uncommon, and I often encountered it during my years teaching in a public school. Teachers are often overwhelmed with the demands of work and home. A literate life as Graves describes it seems to be something one does when there is time left over. And teachers who are not taking the time to study their own learning may not be aware of their fundamental theories of learning.

Anders and Richardson (1990), in their study of reading instruction, found that teachers' theories do not consistently match their actions. They write, "Teachers' theories may not be particularly coherent, and contradictory beliefs may be held by the same teacher" (p. 7). They quote Duffy, who found that "only four out of ten teachers . . . exhibited classroom practices that consistently reflected their beliefs" (as quoted in Anders and Richardson, 1990, p. 7). While this study does not examine teacher practices, it is my premise that unclear beliefs lead to inconsistency in practice, to an overreliance on commercial materials, and cause teachers to distance themselves from their students.

Students benefit from being with a teacher who loves learning and understands it thoroughly. As Graves (1990) writes,

> By demonstrating how they learn to their children, they encourage the children to learn in the same way. . . . They listen, read, and write in order to understand the world around them -- for themselves. But their literacy and learning also provide a backdrop for what the children do and serve as an open invitation to them to explore the wonder, complexity, and mystery in the world around them. Although as teachers your professional lives are centered in the children, you first need to read, write, listen, and learn *for yourself.* (p. 124) [emphasis added]

My concern that many teachers may not be aware of their own learning and my conviction that they must be, form the basis of this inquiry.

Questions, Theory, and Hypotheses

Good learning starts with a question, a curiosity, and with wondering. Likewise, good research must be driven by well-framed questions. As Eisner (1991) writes, "The most difficult of intellectual tasks is not primarily in solving problems but in formulating the questions that give rise to them" (p. 14).

The questions which sparked this study were sincere but vague. I wrote my original questions in my journal: "I want to talk with teachers about themselves as learners. We want children in our schools to grow up to be learners: curious, interested in things, able to solve problems, literate, and doing high-level thinking. Are teachers themselves living life like this? Are we the kind of people we want our kids to grow up to be?" (1/20/92). It became clear, though, that these were questions about personality and teacher effectiveness, and therefore unanswerable.

These next questions expressed my concerns and interests more clearly, and are the core questions for the study:

How do teachers believe learning happens?
How clearly do they express these ideas?
Who are they as learners themselves?

It is not my goal to define or judge teachers but to listen to them and describe their thoughts. One way to understand this distinction is through the theory of personal constructs. In this study, my goal is to understand, as closely as possible, each teacher's personal constructs about learning and knowing. Personal constructs are the sense each person makes of the world. Bannister and Fransella (1971) write, "Each of us sees our situation through the 'goggles' of our personal construct system. We differ from others in how we perceive and interpret a situation, what we consider important about it, what we consider its implication" (p. 22). Our construct system is our frame of reference, or our paradigm. We understand others by attempting to understand their construct systems. The most we can do is describe what we know of those systems, since it is impossible to define others' systems accurately from the outside.

Goodman, Smith, Meredith and Goodman (1987) describe a similar idea which they call personal conceptions. Personal conceptions are "one person's thematic clusters of related facts, impressions, images, feelings, and value judgments around an order of phenomena. They are not simply intellectualized and verbalized restatements of public or scientific concepts" (p. 104). A public concept is "what is left of a general nature when all specific and personal aspects are taken away" (p. 104). It may not be scientifically accurate, but may express conventional wisdom or hearsay. An example in education might be *application*, or *all kids can learn.* A scientific concept is a studied, documented concept, "objectivized by a process of verification and abstraction, resulting in agreements among the scholars" (p. 104). In education, a scientific concept could be *Learning Styles* or *assimilation.* As teachers we combine all three kinds of concepts in our theories about learning and knowing. A teacher who is aware of her own beliefs about learning, though, will express them as her own personal conception of public or scientific concepts. What I was interested in understanding from the teachers I interviewed were their own ideas about the process of learning, backed up by examples from their own experiences. I was interested in hearing their personal conceptions of public or scientific concepts. If the teachers are simply giving "restatements of public or scientific concepts," (Goodman et al., 1987, p. 104) without explaining them, then it is questionable whether they are speaking from their own personal construct systems.

Understanding a person's ways of looking at the world goes beyond evaluating them or judging them. As Belenky, Clinchy, Goldberger and Tarule (1986) describe it, understanding entails acceptance. "It precludes evaluation, because evaluation puts the object at a distance, places the self above it, and quantifies a response to the object that should remain qualitative" (p. 101). In attempting to understand and describe teachers' personal constructs about learning and knowing, I wish to remain beside the teachers, not above them.

The key terms of this study, theory and belief, are so common that it is necessary to define them as they relate to this study. They are very similar: both originate within a person, they both can and should be periodically revised, and neither of them constitute fact. Bannister and Fransella (1971) write that a theory is "a working tool and not a sacrosanct credo-- it is to be used, developed, and ultimately replaced. It should provoke us to ask new questions while providing an orderly framework within which we can seek new answers. It should enable us to transcend the obvious" (p. 9). This definition of theory applies to teachers and researchers alike, since all theories have value, and no theories are closed to scrutiny or revision.

Beliefs in essence are the same. Like theories, they extend beyond the obvious, and describe what a person feels is true, even though it may not be provable. And like theories, they are replaceable as new information comes in. Dewey (1933) writes that a belief "covers all the matters of which we have no sure knowledge and yet which we are sufficiently confident of to act upon and also the matters that we now accept as certainly true, as knowledge, but which nevertheless may be questioned in the future" (p. 6). Since the terms theory and belief have such similar functions in shaping our construct systems, I will use them interchangeably in this study.

Perhaps the clearest description of the function of beliefs and theories comes from Harste, Woodward and Burke (1984). After detailing their underlying theories about language development, they write, "These new beliefs constitute our best guess given what we currently know and, as such, provide us a research and curricular frame from which we will proceed until we gather evidence which shows these beliefs faulty" (p. 51). This is the way I used the terms belief and theory throughout the interviews: as a person's best guess given what they currently know.

Also, I am taking the teachers' statements to be expressions of their beliefs. Anders and Richardson (1990) take a similar view of beliefs: "beliefs consist of a set of assertions held by informants and realized in the natural language as declarative sentences" (p. 40).

Through language, the teachers explore and name their beliefs. Language is the matrix of personal knowing (Goodman et al., 1987), and I took the statements made by the teachers as expressions of what they know personally about learning and knowing.

My own best guess about how learning happens is based on personal experience as well as extensive reading of scholarly literature. I believe that learning starts with a question, an interest, or a curiosity, large or small. The question must come from the learner if the ensuing experience is to be be meaningful. When the learner encounters any kind of new information, she works to fit it into her ever-evolving construct system or way of understanding the world around her. To do this, she explores alternatives, asks more questions, makes connections, and evaluates all information in light of what she already knows. The process continues as the learner reflects on what has been learned both to herself or within her community of fellow inquirers, and develops new questions. This process can be formal or informal, intentional or incidental.

Goodman et al. (1987) describe the basic process of learning according to Dewey. "Knowing is a transaction between the individual and the environment, with language at its center" (p. 95). They go on to say that "there is no such thing as absolute knowledge, only a process of knowing involving actions and word-meanings together" (p. 95). The process they describe has three phases of mental activity:

> 1. Perceiving new data in the environment: Perceiving is that first contact through the eyes, ears, nose, or skin with an object or an event that people are drawn to or select from the vast complex that surrounds them at any one time and place. (p. 99)
> 2. Ideating upon the perceptions (ideation includes conceptualizing and generalizing): The moment that individuals begin to talk and to think about what they have perceived, the phase of ideating has begun. We must come to terms with what has been perceived. . . . the new "percept" is brought into relation with previous ideational and affectual constructions built through past experience. (p. 102)
> 3. Presenting ideations to oneself and others. After people have conceptualized a perceived event, they then give their conceptions back to the world to be tested against the notions of others. (p. 116)

Goodman et al. write, "This process is always happening, and it never becomes final or fixed" (p. 95). It is a cyclical process: "the cycle begins again as those presentations meet new events and ideas that have to be newly perceived and conceptualized" (p. 98).

This description of the learning process, in combination with my personal beliefs about learning, forms the basis from which I will interpret what the teachers say about learning. The terms perceiving, ideating, and presenting are useful in that each one is broad enough to apply to many events, and distinct enough to describe the parts of the process. However, as Goodman et al. point out, the categories are not perfectly distinct, and are not necessarily sequential. "Perceiving, ideating and presenting overlap and interplay almost simultaneously as individuals attempt to come to terms with a new object or event brought into their life-space" (p. 99). I will refer to the process described by Goodman et al. as the Goodman model of a learning cycle for the sake of clarity.

As we transform new ideas into something useful, as we make them our own, they become knowledge. It is impossible to isolate theories of learning from theories of knowledge and knowing, since one is grounded in the other.

Lester and Onore, in Learning Change (1990) present two different perceptions of knowledge which they call *objectivist* and *constructivist*. In their admittedly stereotypical description of autocratic classrooms, they write about the objectivist way of perceiving knowledge:

> All knowledge, that which teachers have and which is contained in textbooks and curricula, is a fixed entity or a commodity, bounded by teachers' interpretations and understandings, texts, tests, and time. Knowledge doesn't seem to have been produced by anyone. What matters is that students consume whatever knowledge teachers and textbooks have, not that students come to know how to make knowledge for themselves. Knowledge is transmitted from those who know to those who don't. The mind might be described as a kind of duplicating machine that makes exact copies. (p. 17).

In this view, knowledge is outside of the learner. The implication is that the learner's work is to assimilate whatever the teachers or experts tell him he should.

The other view of knowledge, constructivist, is described as what takes place in so called democratic classrooms:

> From this perspective, knowledge does not exist independent of a knower, but, instead, is brought into being through a transaction between the learner and the environment. Learning is not reacting passively, but building constructively, actively, and passionately "a theory of the world in the head" (Smith, 1975). Transactions are not one-directional. A classroom built from a constructivist perspective would be a place where learning is initiated by both teachers and students. (Lester and Onore, 1991, p. 23)

As I began to study my original question having to do with teachers' beliefs about learning, this distinction between two views of knowledge became critical. Indeed, it became my core construct for understanding the teachers' theories of learning. My main hypothesis or conviction in this study is that teachers must be active learners themselves, and aware of their own learning. Teachers' perceptions of knowledge most likely influence their beliefs about learning. Since learning is essentially knowledge-getting, a person's view of knowledge would probably determine how they think knowledge becomes part of the learner. For instance, does the learner acquire knowledge from a higher authority or expert? Or does a learner develop and construct knowledge through their own experience?

My additional hypothesis for this study is that teachers who take an objectivist view of knowledge may see their own knowledge as having come from experts, and thus may not express coherent theories of their own. Teachers, on the other hand, who take a constructivist view of knowledge may see their own knowledge as shaped by their experience, and may thus present more coherent and clear theories of learning. The difficulty, of course, is in determining whether teachers' views of knowledge are objectivist or constructivist. I think that teachers are more aware of their beliefs about learning than they are of their perceptions of knowledge. Their statements about learning may reveal their views of knowledge.

Learning and knowledge are two sides of the triangle that is education. Just as it is impossible to separate learning from knowledge, it is difficult, and even unwise, to consider beliefs about learning without thinking about the third side of the triangle, curriculum and teaching. For Short and Burke (1990), curriculum means putting a system of beliefs into action. "It is the orchestration of a set of beliefs about learning, knowing, and social relationships" (p. 6). Although I did not observe teachers in their classrooms as part of this study, their teaching practices frequently entered into our discussions. Their comments about curriculum and teaching may help me better understand their constructs about learning and knowing.

Summary

My concerns about teachers as learners led to the driving questions for this study: How do teachers believe learning happens? How clearly do they express these ideas? And who are they as learners themselves? The second question is supplementary to the first, in that I am interested primarily in their thoughts about learning. The clarity with which they express these thoughts is interesting, also, because of my hypothesis about the relationship between view of knowledge and expression of beliefs. However, the first and third questions are most relevant to my thesis.

Essential to a study of learning theories is an understanding of two core views of knowledge: objectivist and constructivist (Lester and Onore, 1991). In the objectivist view, knowledge is separate from the learner, and learners must acquire it with the help and direction of experts. In the constructivist view, learners construct their own knowledge through meaningful experience. Teachers' learning theories are most likely based on one or the other of these two views, or, more probably, on some combination of them. If we imagine a continuum with constructivist view on one end and the objectivist on the other, every teacher will most likely be at a different place on the continuum, and not either at one end or the other. Another factor to consider, and which will be addressed later on, is the idea that teachers may take an objectivist view when it comes to learning in school, and a more constructivist view when it comes to their own learning out of school.

An important aspect of this study has been watching my own learning process. From its inception, I have been regularly going through perceiving, ideating, and presenting phases. I find that as a learner I need the support of a community of learners. Also, the term "risk taking" becomes very real when I am the one who has to make decisions, meet teachers for the first time, or write chapters with conviction. It would be impossible to detach myself from this study, because I am simultaneously involved in a kind of meta-analysis: in studying how teachers believe learning happens, I must examine how I, as a teacher, believe learning happens, and how I learn throughout the study.

CHAPTER 2

REVIEW OF RELATED LITERATURE

A review of related literature has two purposes. It allows me to take into account other beliefs and approaches to knowing and learning. Also, it is important for me to know where my study fits into the large body of research in this area. Therefore, I will begin by taking a close look at three interview-based studies in which the voices of other researchers and teachers are clear and helpful. Next, I will examine broader views of knowledge and learning, as well as specific beliefs about learning held by other theorists. Finally, to ground this study within the larger picture of research on teaching, I will look briefly at the teacher knowledge and thinking literature.

Significant Studies: Other Voices

Three studies based on interviews of teachers were instructive in both their content and format. The first is Freema Elbaz' (1983) Teacher Thinking: A Study of Practical Knowledge (London: Croom Helm). Elbaz' guiding assumption is "that teachers hold a complex, practically-oriented set of understandings which they use actively to shape and direct the work of teaching" (p. 3). She conducted a case study of one Canadian teacher, Sarah. Elbaz is interested in the idea of teacher involvement in curriculum planning, and in adding evidence to the argument that teachers are indeed knowledgeable, capable people. The attitude Elbaz fights against is that "the teacher could at best be a facilitator, someone who had taken the trouble to understand the approach of the [curriculum] developer, to adapt it minimally to her own situation and to convey it faithfully to students" (p. 3). This difference between teacher as a holder of knowledge and teacher as implementer of knowledge can be compared to the two views of knowledge described in Chapter 1, constructivist and objectivist.

In her description of practical knowledge, Elbaz discusses what many teachers know, and how they know it. Her view of learning involves integration of different kinds of knowledge and information into one's personal construct system-- local knowledge of school and classroom, as well as theoretical knowledge.

> "This [practical] knowledge encompasses firsthand experience of students' learning styles, interests, needs, strengths and difficulties, and a repertoire of instructional techniques and classroom management skills. The teacher knows the social structure of the school and what it requires, of teacher and student, for survival and success; she knows the community of which the school is a part, and has a sense of what it will and will not accept. This experiential knowledge is informed by the teacher's theoretical knowledge of subject matter, and of areas such as child development, learning and social theory. All of these kinds of knowledge, as integrated by the individual teacher in terms of personal values and beliefs

> and as oriented to her practical situation, will be referred to here as "practical knowledge." (p. 5)

Sarah's personal constructs are shaped by her experiences in the school setting and within the community. They determine many of the decisions she makes. In this description of what constitutes practical knowledge, a teacher's knowledge is not limited to the school setting, but extends into her own life experiences and learning stories.

Elbaz interviewed Sarah five times, and observed her classroom twice. She transcribed and re-read each interview, and asked Sarah to read it before their next discussion. As a researcher, Elbaz was intentionally close to her informant. She knew her before the study, and did the research with her, not on her. In a time when educational research is still relatively empirical and quantitative, research done in collaboration with teachers is gaining ground. I believe that there is a difference between doing research *on* teachers as opposed to doing research *with* them. Researchers who do research on teachers often consider themselves as experts, and may implicitly hold the objectivist view of knowledge. On the other hand, researchers who collaborate and do research with teachers understand that teachers are also creators and holders of knowledge. The researcher in this case may take a constructivist view of knowledge. Elbaz' research design shows that she is one of the latter.

Lester and Onore's (1990) study, described in <u>Learning Change</u>, is an equally informative and helpful study. The researchers are conscious of their own learning process even as they study the learning and change they see happening within the school district. Lester and Onore act from a constructivist view of knowledge, and chronicle their own changes as well as those of the teachers they study. They work with teachers, not on teachers. They were willing to change even as they asked teachers to change.

Learning Change is the study of one New York school district's four year effort to implement language across the curriculum. Lester and Onore were hired to work with the teachers, and they conducted inservice sessions in the three schools in the district. In their workshops, they used "learning logs, writing, sharing, and revising, professional readings, small group work, and the like" (p. 2). However, not only did they help teachers immerse themselves in these experiences, they helped teachers distance themselves from the experiences in order to reflect. They write, "What we began to recognize as essential in our workshops was that this process of distancing, or reflection, had to be linked to whatever hands-on activities we engaged in. We began to ask the question, '*What* and *how* did you learn?' " (p. 3). [emphasis theirs]

They realized, as they talked with teachers about teaching writing as compared to other subjects, that views of learning were directly connected to views of knowledge and of who had control over knowledge. For example, students regarded learning about writing and learning about science differently. When they were learning about writing, "the process was to share, through talk, their different meanings and expressions" (p. 4). On the other hand, when they were learning about science, their job was to learn specific facts handed to them by the teacher. Lester and Onore write, "We see two different views of learning here that reveal contrasting underlying assumptions or beliefs about how knowledge is constructed" (p. 4).

In their study throughout the project, Lester and Onore were trying to identify teachers' personal constructs as they related to learning and teaching. The core construct, they found, had to do with the way "an individual defines the nature of knowledge, and by that we mean what knowledge is, how people acquire it, and how we decide whether knowledge has been acquired" (p. 6). They remind us that teachers and adults are not the only ones who hold views of knowledge-- students' views of knowing and learning play an equal part. Students also can hold objectivist or constructivist views of knowledge.

A third study is Ken Macrorie's (1984) collection of conversations with teachers (Twenty Teachers). Each chapter introduces a different person, and he has found teachers from across the U.S., teaching every age of students, in many different subjects. He chose people to interview who do good work, and who help their students do good work. In his summary he writes that teachers, whom he prefers to call enablers, do many things: they "get people doing a good work that counts for them, their peers, the enabler, and the people beyond the classroom; along with learners, they start a good work of their own; they begin to know learners as people rather than students; and they make it plain that they have faith in learners to work at high levels of excellence" (p. 231). Macrorie's study is a good example of what can be learned by listening to teachers. It is also uplifting to hear these teachers' high level of trust in their own learning and in their students' abilities to learn.

Elbaz, Lester and Onore, and Macrorie are all researchers who align themselves with teachers, and who make it evident that they are living lives of inquiry and wonder themselves. It is helpful to compare my own inquiries with theirs, and to use their studies in making decisions about research styles and formats.

Learning and Knowledge

There is ample support in the literature for the view that knowledge is constructed by the learner rather than transmitted to the learner. Some of the researchers and writers who take this view are Atwell (1991); Cohen (1988); Goodman, Smith, Meredith and Goodman (1987); Graves (1990); Greene (1978); Harste, Woodward and Burke (1984); Short and Burke (1991); and Smith (1975). In varying ways, they all express the belief that teachers must be personally aware of their own learning processes if they are to promote learning in their students.

Much has been written for teachers by theorists who are themselves teachers. This trend indicates a definite shift from seeing knowledge about education as belonging primarily to the planners and "experts," to seeing knowledge as belonging to and created by teachers. More than that, these books support teachers as they work to understand teaching and learning beyond what is written in guidebooks and measured in standardized tests. Teachers are encouraged to add to their practical knowledge, and to view themselves as learners and enablers of learning. None of these researchers promote a specific method, although they each have a view of how learning and teaching best occur. To close the gap between knowledge and knowers seems to be their common goal. Moreover, "teachers" are not some group of people out there, but are close and present. Since the researchers are also teachers, they use first person plural in their speaking and writing to include themselves in that group.

Atwell (1991) writes about teacher research at a time when teachers are becoming critical thinkers within their school environments. She urges teachers to be models of how learning happens. "We know that children learn by example and by making sense of meaningful situations. Think of the example we set as teachers who conduct research, of the payoff when we make learning make sense, of the model we provide when we demonstrate curiosity and thoughtfulness" (p. 13). Atwell stresses the importance of teachers being caught up in learning, reading, and writing for themselves. "We need to learn about the writing and reading process by reading the best in our field, but also by reading and *writing* literature for ourselves, for our own pleasures and purposes, our own letters, stories, poetry, opinions. When we know these processes from the inside, we can extend generous, sensible invitations to our students to join us in a literate community" (p. 52) [emphasis Atwell's]. Teachers who are this involved become the kind of people "to whom students wish to apprentice themselves" (Atwell, p. 70).

Short and Burke (1991) write about teachers and students creating a community of learners together in which each has a voice. Teachers are seen as natural learners in the same ways as their students. What Short and Burke write about learning can be read with teachers *and* students in mind. This statement is key:

> As learners, we integrate our own personal knowledge with what we learn from others by developing the capacity to really listen and talk with others while continuing to speak and listen to ourselves. We constantly search for connections between what we already know and what we are currently experiencing in order to construct our own understandings or stories. Knowledge for us is always constructed and we recognize the temporary nature of what we know and that the knower is always an intimate part of the known. We examine, question, and develop our systems to use in constructing knowledge through our interactions with others. We do not depend on authorities to provide us with our answers or with the questions and the procedures to get the answers. We pursue our own questions and answers with the support of other learners to find the connections that make our world meaningful and our thinking productive. (p. 31)

This statement is a thorough expression of what seems to be a common belief among those researchers who are teachers and learners themselves in authentic and realistic ways.

Goodman et al. (1987) write that if the learner has ownership over both language and experience, "then the process of education becomes a process of personal discovery under the guidance of teachers who are aware of the validity of this process in their own learning" (p. 96). Similarly, Graves (1990) describes the literate life that he values for teachers and students. "Literate people have a passion for asking questions, both big and small, a hunger for learning new things and for making connections. In short, they have a particular stance toward the universe: one of constant engagement and learning" (p. 105).

Maxine Greene (1978) writes about the "wide-awakeness" needed on the part of teachers, who even as they set students free, must guide them in clear decision making. In order to help students overcome indifference, teachers must be "persons able to present themselves as critical thinkers willing to disclose their own principles and their own reasons as well as authentic persons living in the world, persons who are concerned-- who care" (p. 48). When I began this study, I wondered whether we are living the kind of lives we want our children to live. This may indeed be a question of personality, but Greene and others turn it into a question of duty, of responsibility.

Harste, Woodward and Burke (1984) tell some stories which show the other side of the picture-- what can happen when teachers do not examine their underlying assumptions about language and learning, nor leave room for the learners to express themselves. They tell of Alison, a first grader, who was already a writer before she went to school, but whose knowledge was not considered valid by her teacher. "All of the activities given to Alison by her teacher effectively forced Alison to operate within the teacher's assumptive bounds, never providing her the opportunity to demonstrate what decisions she, as a language user, was interested in and capable of making" (p. 14). They challenge teachers to reexamine their assumptions about language and learners, to become researchers, and to make learners their focus.

Watching children learn language helps us understand how children learn in general (Halliday, 1975; Goodman et al., 1987; Lindfors, 1987). Harste, Woodward and Burke (1984) describe the difference between a transactional view and a behavioral view of language learning, which are basically different ways of discussing constructivist and objectivist views of knowledge. "From a transactional view, language is an open sign system which in operation involves an active interpretation on the part of the language user. From a behavioral view, the language learner is passive, a receptacle, and irregularities in learning are not rule-governed, but random, created by inconsistencies in the delivery system" (p. 60). Thus, Harste, Woodward and Burke recognize the significance of those two views of knowing and learning.

Oliver (1990) also describes these two educational approaches, and discusses "the technical, knowledge-as-separate-object approach, versus the grounded, knowledge-as-intimate-relationship approach" (p. 67). He writes that in schools, we have traditionally operated from technical knowledge, and have neglected grounded knowledge. Students learn, in his view, when they have personal experiences with nature and with interesting events.

A review of the literature reveals two contrasting views of knowing, and thus of learning. In my view, what teachers believe about learning stems from their perceptions of knowledge. Those who understand knowledge to be that which is transmitted from one who knows to one who doesn't may view learning as memorizing, assimilating and acquiring. On the other hand, those who believe that each learner, including themselves, constructs knowledge through making sense of experience, may view learning as what is done by learners as they integrate new experience with old, and make connections through questioning. A closer look at learning theories helps clarify this distinction.

Learning Theories

Frank Smith (1975), in his book Comprehension and Learning, asserts that "individuals perceive the world and respond to events in the manner that makes the most sense to them personally at the particular time, in terms of their past experiences and current predilections" (p. 3). The Goodman model's phases of perceiving and ideating, as described in Chapter 1, are present in this view, as is the belief that the learner acts to make knowledge for himself. Smith sees the child as an experimenter in the scientific sense. "When a scientist discovers that his theory is inadequate in some way, or when he wishes to expand it, he conducts experiments. . . . Like the scientist, the child [and one could say, the learner] uses his own theory, or cognitive structure, to make sense of the world around him" (p. 125). Smith's view of the basic learning process is fairly common, and is similar to the scientific method I remember being taught in school (p. 125):

(a) Generate a hypothesis based upon a tentative modification of cognitive structure

(b) Test the hypothesis

(c) Evaluate feedback

(d) Confirm or reject the modification of cognitive structure.

This is a widely held view, as Bruner (1966) observes. "These [phases] have been described in various ways by different writers. But all descriptions agree on one essential feature: there is a cycle involving the formulation of a testing procedure or trial, the operation of this testing procedure, and the comparison of the results of the test with some criterion. It has variously been called trial-and-error, means-end testing, trial-and-check, discrepancy reduction, test-operate-test-exit (TOTE), hypothesis testing, and so on" (p. 51).

Putting Smith's view side by side with the Goodman model of the learning process makes it clear that they complement each other, filling in important ideas that may not be explicit but are implied in each.

Figure 1

Goodman and Smith Models of Learning

Goodman et al. (1987)	Smith (1975)
Perception	Generate a hypothesis
Ideation	Test the hypothesis; Evaluate the feedback
Presentation	Confirm or reject the hypothesis

Of his view of the process, Smith (1975) writes, "In order to learn in this way, the child must interact with the world around him. Such learning is active; it involves deliberately seeking information that will facilitate the process of constructing a theory of the world" (p. 127). The learner, in other words, is the one who constructs knowledge.

Perhaps one of the clearest learning theories is the Authoring Cycle model described by Short and Burke (1991). In this model, teacher and students are all learners-- it is a learner centered model.

Authoring, in their view, is anything a person does or makes: writing, reading, thinking, artwork, drama, mathematics, and so on. As they create meaning, "empowered learners become authors of their own lives" (p. 34). Short and Burke include past experience, personal engagements, reflection with others, revision, presenting, and sharing in their model. They extend their learning model to include "examination of sign system processes" and "invitations to further engagements" (p. 35), which involve the learner in thinking about how she learns as well as what, and lead her to new questions.

The cyclical nature of learning has been mentioned by several theorists in the sense that learning leads to better questions and further learning. Short and Burke (1991) write, "To be a natural learner is to be in a state of constant growth as one question leads to another" (p. 12). Oliver (1990) believes that learning encounters in school "could be seen as significant occasions that provoke the most profound qualities of wonder and questioning" (p. 67). In other words, learning can lead to "a host of other feelings and questions to explore" (p. 67). Eisner (1991) highlights the importance of questioning, wonder, and imagination in the school setting. "I believe our schools should create the kind of environment and provide the kind of tasks that elicit and develop respect for wonder and stimulate the imagination" (p. 15). Learning in such an environment is cyclical-- wondering leads to more wondering-- and is in opposition to a more "narrow and shortsighted" way of conceptualizing schools, where the one right answer cuts inquiry short, or interrupts it (Freire and Faundez, 1989).

Reflection is when the learner mulls over her questions and the answers found to that point, and her mind reaches ahead for what is next. As Dewey (1933) writes, reflective thinking "is the kind of thinking that consists in turning a subject over in the mind and giving it serious and *consecutive* consideration" (p. 3) [emphasis added]. Consecutive consideration implies that the thinking goes on, and follows from what has been discovered. Freire and Faundez (1989), in a chapter titled "The Pedagogy of Asking Questions," have this to say. They are speaking here about academic thesis writing, but their ideas extend to all learning and inquiry:

> *Antonio*: I believe that the value of a thesis lies in discovering and formulating basic questions which will arouse the curiosity of other research workers. The value lies not so much in the answers, because the answers are definitely provisional, as in the questions.
>
> But, as we identify the basic questions, which will enable us to find answers and discover fresh questions, a chain is being created which will enable the thesis to be constructed...
>
> *Paulo*: I believe in this regard that students engaged in the continuing process of education should be adept at asking questions about themselves. In other words, it should be impossible to pass through a day without constantly asking yourself questions. (p. 39)

These learning theories reinforce the idea that learning is not linear, but cyclical; it does not stop at a given point, such as the end of the school day. As Short and Burke (1991) write, "The brain naturally functions to turn events into meaning. It does this unobtrusively, intuitively, and non-stop" (p. 11). By implication, neither can learning be *made* to happen at a given point, on cue.

An alternative learning theory, one which is still prevalent in our schools, is described by Dunn and Dunn (1975). In a chart showing what they perceive as fallacies and realities in learning and instructional theory, they offer these beliefs:

> Children and adults learn through different perceptions and although repetition through varied perceptions tends to *reinforce* [italics theirs] learning, information, skills, and values should be introduced through major perceptual strengths. . . . Children (and adults) absorb varying amounts of content at different rates. . . . much depends on the interest, the frame of reference, the maturity level, and the elements of training and experience for each youngster" (p. 20, 21).

They also describe this model, one of their five ways to individualize instruction, which is called "Programmed Learning."

> In essence, the student is diagnosed by preestablished instruments and then programmed into the learning resources at the point at which the materials are either developmental or partially repetitive for him. All students proceed through essentially the same sequence but may pace themselves and

learn through resources that are appropriate to their level of comprehension and achievement. (p. 25)

Terms which signal an objectivist view of knowledge in both descriptions are *repetition. . . to reinforce, absorb. . . content, elements of training, diagnosed by. . .instruments. . .then programmed.*

Robert Fulghum (1990) writes that "there are as many ways to learn something as there are people" (p. 92). Dunn and Dunn (1975), among the original proponents of the Learning Styles theory, would probably agree. They write, "each youngster learns in a manner that is uniquely his own, through perceptual strengths that either fortify or discourage his acquisition of knowledge and skills, and with a learning style that tends to dominate his every effort to achieve" (p. 19). However, this is one area where Dunn and Dunn's theory differs from the learning theories already described. The difference is that perception, as Goodman et al. (1987) describe it, is only one part of learning. Besides perception, learning includes ideation and presentation, and is a continuous process. Even if people perceive in different ways, learning still happens in the same basic process. What has come to be called Learning Styles could perhaps better be called Perception Styles.

A red-flag word in this theory is *acquisition.* The assumption behind this word is that knowledge and skills are outside of the learner; the learner works to acquire them. This is in contrast to the view of learning and knowing where the learner constructs knowledge through experience. In Dunn and Dunn's (1975) view, a body of knowledge must be given to the learner; the only question is how.

In their "how to do it" book, Dunn and Dunn's (1975) view of learners is clear in the way they talk about teachers: "The literature and the 'experts' assume that educators will be able to translate theory and philosophy into practice and emerge with their own creative contribution to the field. Not so" (p. 20). This lack of trust in the learner, whether student or teacher, is at the root of the view that knowledge must be given to the learner-- the learner cannot possibly create the right kind of knowledge or contribute to his community appropriately. And since teachers are incapable, in Dunn and Dunn's opinion, of understanding how their students learn, they have "provided teachers and administrators with precise guidelines for organizing, managing, supervising, and evaluating individualized programs" (p. 20). Teachers have no need of a theory of learning, since they would simply be implementing that of someone else.

Dunn and Dunn's (1971) theories are discussed at length here because they are widespread, even though so much of the literature talks about learning in categorically different ways. Nearly every teacher I interviewed mentioned Learning Styles at least in passing. And predesigned curriculum is still considered by many teachers to be the most scientific and/or convenient way to teach (Shannon, 1983; Oliver, 1990; Brophy, 1982).

Predesigned curriculum, like Learning Styles theory, comes from an objectivist view of knowing. It usually describes a body of knowledge that must be given to the learner. However, as Atwell (1991) writes, "the problem with programmed instruction is that it limits what kids can do. It cheats them. Scope and sequence can never include everything of which our students [and teachers] are capable. And it can never allow for the obsessions that are so much a part of learning, when something hooks us and we become deeply involved and pursue it single-mindedly" (p. 52). Darling-Hammond and Wise (1983), in a study of the teaching profession, found teachers to be frustrated by remote control methods for governing education. "Teachers who teach in remote control school systems complain that they cannot involve their students in writing projects or in classroom discussions or interesting ideas. . . . They feel constrained in their ability to meet what they see as the needs and interests of their children. They also feel resentful of infringements on their teaching time" (p. 68). These same frustrations are no doubt felt by the students whose teachers use a remote control system of governing their classroom and learning. Students as well as teachers feel disempowered when they are not seen as constructors of knowledge, but simply as receivers.

Patrick Shannon (1983) deplores an over-dependence on scientific approaches to learning and knowing, such as Dunn and Dunn (1971) describe, especially in the area of reading. The search by schools for scientific mechanisms to reassure the public of their high standards "has reduced the goals of reading instruction from the development of students who love and analyze literature to a standard identifiable level of reading competence" (p. 69). In other words, Shannon sees reading instruction as being carried out mostly from an objectivist viewpoint.

In summary, the models of learning offered by Goodman et al. (1987), Short and Burke (1991), and Smith (1975) are especially helpful in orienting this study within a constructivist frame of reference. The learning theory of Dunn and Dunn (1975) is equally helpful in illustrating what an objectivist view looks like. If we proceed from the theories of learning described by Goodman et al. (1987), Smith (1975), and Short and Burke (1991) and if we embrace the view that learners construct knowledge through making sense of the world around them, then we must trust the learners, and ourselves as learners, to be wide awake (Greene, 1978).

Teacher Knowledge and Thinking

Research on teaching is an evolving field. It has progressed from being a technically driven study of teacher effectiveness and a search for quality control, to being a study of what teachers think about, how they make decisions, and what they believe; in other words, a study of teacher knowledge and empowerment (Doyle, 1990). Carter (1990) describes this change in educational research. "The emergence of systematic research on teachers' knowledge and its acquisition signaled a substantial shift from a preoccupation with behavior and with what teachers need to do to a concern with what teachers know and how that knowledge is acquired through formal training and classroom experience" (p. 295). In the past, research on teaching generated knowledge that was used to control teachers. Doyle (1990) writes, "In the context of emphasis on quality control, trust is placed in procedures to train and evaluate teachers rather than in teachers and their ability to make appropriate decisions" (p. 12). The conflict between an objectivist and constructivist view of knowing is present in these approaches to research. Process-product research is another name for research which relates "measures of classroom performance (processes) to objective measures of outcomes (products)" (p. 12). More lately, however, "emphasis is being placed on the role of teachers as owners of their knowledge and their destinies" (p. 13).

As the body of teacher research grows, however, so may the number of accepted approaches. Elbaz' (1983) case study, for example, while being a study of a teacher's practical knowledge, views that teacher as a whole person. She writes,

> The notion of the teacher's perspective is not to be understood narrowly. It encompasses not only intellectual belief, but also perception, feeling, values, purpose, and commitment. This breadth of perspective which underlies knowledge is captured in psychological theories which emphasize the individual's 'construct system.'... To characterize knowledge in general, and teacher's practical knowledge in

> particular, in this way is to speak less of knowledge-as-product than of knowledge-as-process, the act or acts of creating knowledge. It is to emphasize the active, constructive and purposive nature of mind and of knowledge. (p. 17)

While teachers' knowledge in the school setting is what directly and observably affects the students, it is their underlying, life-shaping constructs which are examined in this study, and which, in the long run, color what happens in schools the most (Elbaz, 1983). Carter (1990) describes three kinds of teacher knowledge which constitute what teachers do in school: information-processing, practical, and pedagogical content knowledge. The knowledge teachers have and use, though, extends beyond what we see in their classroom actions to include grounded knowing. Oliver (1990) describes grounded knowing, which, in contrast to technical knowing, "begins with and includes vague sensibilities, feelings, inarticulable thoughts and imagination, as well as the more precise and technical description of occasions as they come into being, as they exist, as they pass on" (p. 65). Elbaz and Oliver highlight the broad and personal nature of the knowledge teachers hold as persons, not just as teachers.

Clark and Peterson (1986), in their review of research on teacher thinking and thought processes, write that the ultimate goal of this research is to "construct a portrayal of the cognitive psychology of teaching for use by educational theorists, researchers, policymakers, curriculum designers, teacher educators, schools administrators, and teachers themselves" (p. 255). They write that it is a new field, with most work done since 1976. Teachers' theories and beliefs, in their view, are just two areas of teachers' thought processes, and represent "the rich store of knowledge that teachers have that affects their planning and their interactive thoughts and decisions" (p. 258). In studying teachers' theories, methodological difficulty arises in how to "elicit and interpret valid and reliable self-reports about cognitive processes" from teachers (p. 259). Therefore, research has tended to stay within studies of teacher planning and decision making, and in teachers' attributions of the causes of students' performance (Clark and Peterson, 1986).

Manley-Casimir and Wassermann (1989) conducted such a study, leading a group of teachers in exploration of their values and decision making by viewing films and discussing them in small groups. One of the teachers they studied wrote in her journal, "Who we are as people will influence our professional choices. We can't separate the person from the teacher or the professional. . . ." (p. 293). Another wrote, "We must know ourselves before we can successfully teach others" (p. 293). However, as Manley-Casimir and Wasserman found, even the best teachers may not be consciously aware of how they arrive at decisions.

A study which attempts to get at what teachers believe is Anderson's research (1990), titled "Educators' identification of salient principles of learning." Anderson believes that it is not enough to have technical teaching skills; teachers must have theoretical knowledge in order to help their students learn. "Teachers' views of how learning best occurs influence their acceptance of student behavior and classroom climate, their preference in matters of classroom management, their selection of curriculum materials, and their selection of instructional techniques" (p. 231). Despite this, Anderson found that teachers were able to make only vague generalizations about learning, and that teacher preparation programs were not emphasizing theory as much as method.

It is the purpose of this study to discover teachers' beliefs about learning, to find how explicitly they state them, and to get some sense of who these teachers are as learners themselves. In some ways it is an isolated study. Clark and Peterson (1986) write that "research on teachers' implicit theories constitutes the smallest and youngest part of the literature of research on teacher thinking" (p. 285). Nevertheless, other studies done with teachers, as well as models of learning and knowing put forth by thoughtful researchers, show that while learning and knowing are difficult concepts to describe, it is worth our while to explore them in relation to teachers as well as students.

CHAPTER 3

METHODOLOGY

Research Methodology and Planning

Schulman (1988) discusses the often-ignored intersection of ideology and method in research. He writes, "One of the enduring problems in research methodology has been the tendency to treat selection of method as primarily a technical question, not associated with the underlying theoretical or substantive rationale of the research to be conducted" (p. 3). The ideology of this study clearly calls for a more qualitative, ethnographic methodology: the questions are intentionally broad, encouraging the informants to think aloud. Also, the goal is to describe and interpret, not to declare. There are no right or wrong answers, and the answers lend themselves more to description than to statistical manipulation. And as Clark and Peterson (1986) write, "The purpose of research on teachers' implicit theories is to make explicit and visible the frames of reference through which individual teachers perceive and process information" (p. 287). To make frames of reference visible and explicit requires careful description of teachers' learning stories, their approaches toward their own and their students' learning, and their belief statements. Qualitative research methods lend themselves to this kind of description.

The terms *qualitative* and *quantitative* have pervaded descriptions of educational research, and each is essentially vague and inappropriate. Qualitative research usually consists of case studies, ethnographies, and the like, where the researcher is trying to portray special characteristics of a population or a setting (Schulman, 1988). Specifically, ethnography is the work of describing a culture. Spradley (1979) writes that "the essential core of this activity aims to understand another way of life from the native point of view. . . . Rather than *studying people*, ethnography means *learning from people*" (p. 3) [emphasis Spradley's].

Wolcott (1988) warns educational researchers against saying they are "doing ethnography" when they are really "borrowing ethnographic techniques." (p. 202). The latter is true of this study. While I am incorporating what people say, I am not directly including what people do (through observation) nor what people use. This study is not ethnography in the anthropological sense, where the researcher scrutinizes actions and artifacts as well as listens to informants (Spradley, 1979). Some of the techniques I borrowed include record keeping, interviewing techniques, data collection and analysis techniques, and ethnographic write-up techniques (Spradley 1979, Miles and Huberman, 1984, Goetz and LeCompte, 1984; Wolcott, 1988) as well as the general ideological approach of description and making inferences.

Teacher Informants

An informant is a source of information for the ethnographer, someone who speaks the native language and who can help the researcher understand the culture from the insider's point of view (Spradley, 1979). The informants for this study were elementary school teachers. Because of time and logistics, as well as for the sake of quality, I interviewed six.

The teachers were chosen from one district in Tucson, Arizona, with the help of the district's reading specialist. I selected this district because it is the district in which I taught for four years. Selection of teachers was made on the basis of three or more years of experience, and general philosophical orientation. The reading specialist was familiar with these teachers' philosophical orientations from having visited their classrooms or from having worked with them at some point. She chose some teachers who would say they taught from a Whole Language philosophy, and some who would say they were more traditional in orientation. I asked the specialist to choose good teachers, in order to take the burden of judgment off myself. She gave me a list of 13 teachers, and I called six: three traditional and three non-traditional. Those distinctions will not necessarily be important in the study; they were more important in the selection process in order to create a diverse group.

The six teachers are identified by fictitious initials in order to provide anonymity. I will begin describing them here briefly in the order they were interviewed. In Chapter 4, more will be said about each teacher's views and background.

The first three teachers I called, A.B., C.D., and E.F., were new to me. We met for the first time when I walked into their classrooms. The next three informants, G.H., I.J., and K.L., were teachers I was already acquainted with. I had worked briefly with I.J. and K.L., and I know G.H. quite well as a friend.

A.B., the first teacher I interviewed, teaches first grade in a relatively new school which serves families from a variety of socioeconomic levels. She has been teaching for five years, and is involved in the district's Career Ladder program. As part of that she works closely with her first grade colleagues to plan and assess students' outcomes and progress. A.B. has her bachelor's degree, and is married with a one year old son. She is an avid reader, especially in the summer time.

C.D. teaches fourth grade in a school which serves a mostly low income area. He has been teaching for approximately 24 years, 21 years in this district. He has a bachelors degree in History and Economics, and a masters degree in Education. He reads a combination of Finance and Education magazines, as well as the newspaper. He would like to retire in 5 or 6 years. C.D. is married, and has a teenage son.

E.F. is a third grade teacher in the same school as A.B. In all, she has been teaching for about 21 years, with 6 years in this school. She has her bachelor's and master's degrees. She is involved in planning with other teachers for K-3 budgeting. E.F. loves to read, especially in the summer. She is married, and has three children.

G.H. is the teacher I knew the best before our interviews. I had worked with her on a research project, and been in a support group with her for a year. I visited her classroom while I was teaching, and we have spent time together socially. When I told her about this study, she volunteered to be one of my teacher informants, and I readily agreed. G.H. has been teaching in a school which serves mostly low-income families. For a number of years she has taught the same class for two years in a row, trading grades with another teacher every other year. G.H. is in the Career Ladder program. She is an avid reader, and receives the newspaper, and several magazines. Recently, her school has gone through a major change, and G.H. and the other teachers have moved to other schools.

I.J. is a first grade teacher in the same school as G.H. She has been teaching for six years, and before that she worked as a Counselor. I.J. has also been trained in Reading Recovery, and taught it last year. Her life in the last year was taken up with caring for her husband through a terminal illness. The experience has reminded her of what is most important in her life, and she has reprioritized and redirected her energies. I.J. has two children.

K.L. is a multi-age (grades 1-3) teacher in a school serving middle to upper income families. This is her third year of teaching; she came back to it after her children were old enough to be in school themselves. K.L. is in the Career Ladder program, and does much of her planning with a colleague who is also a multi-age teacher. K.L. is married, and has teenaged children.

I also interviewed two University of Arizona graduate students, M.N. and O.P., who are teachers. These interviews served as a pilot for the interview questions, and to see if the questions were giving me the kinds of information in which I was interested.

I interviewed M.N. and O.P. two times each, either at their homes or at mine. They are both friends, so we lost no time in getting right to the issue of their beliefs about learning. Both of these teachers emphasized the importance of their experiences as students in understanding how they learn. M.N. said, "In the process of discovering myself as a learner I'm discovering my former students as learners, too." Both teachers also noted that in the past they had their students doing things that they themselves would feel uncomfortable doing, and that now, having been students, they will be more careful with assignments. M.N. spoke at length about the importance of risk-taking in learning, and told numerous stories about times when she had not been willing to take risks, and had forfeited a learning experience. M.N. and O.P. both approach learning as the making of meaning on the part of a learner, within a community of learners.

As a result of these two interviews, some new questions emerged. When one of them mentioned Learning Styles, I began to be interested in what other teachers would have to say about that theory. Also, I added the questions, "Can somebody learn even when they've said they don't want to?" and the question I used in closing, "Do you feel like you've been able to adequately express you current beliefs about learning in these two interviews?"

It was important to have these two pilot interviews, because it was not until I began to sit face-to-face with teachers that I realized what I could improve in my interviewing and questions.

Interviews

In describing studies of teacher thinking, Clark and Peterson (1986) write,

> Prior to the researcher's intervention, these systems [of beliefs, values, and principles] are typically not well specified, and the central task of the researcher is to assist the teacher in moving from an implicitly held and private belief system to an explicit description of his or her cognitive frame of reference. (p. 287)

This is a very difficult task. The questions guiding this study are geared toward listening to people's beliefs and uncovering personal construct systems about learning and knowing. For that reason, the decision was made to interview teachers face-to-face rather than observe their teaching, or send out surveys. I decided not to observe the teachers in action because I want to hear how they talk about their ideas. By choosing to do face-to-face interviews, I created a problem for myself: should I only ask questions and listen, or should I be more conversational? I chose to be conversational, and told this to the teachers. This had positive effects, as well as limitations.

On the positive side, ethnographic interviewing "shares many features with the friendly conversation" (Spradley, 1979, p. 58). It is not interrogation, and my job as interviewer is to help the informant feel comfortable enough to open up. I was able to accomplish this most of the time. Spradley (1979) describes the rapport building process as going from apprehension to exploration to cooperation to participation (p. 79). In all of the interviews, the cooperation phase was reached, at least by the end of the second interview. All of the teachers were very open to discussion, willing to explore their thoughts, and friendly towards me.

There were limitations, however, to this conversational, teacher-to-teacher relationship I chose. First and foremost, there were assumptions made on both sides that the other person understood what was meant by certain terms. For example, I assumed that the teachers would know what I meant by *beliefs about learning*, and would describe their beliefs based on a common understanding of the term. As a result, I did not specifically define the term, nor did I set up my study or my questions as thoroughly as I could have. Also, the teachers assumed that I understood certain terms they used, such as *Madeleine Hunter, Learning Style, portfolio,* or *outcomes.* I am familiar with those terms, and have defined them for myself. As a researcher, though, I cannot assume that my definitions are the same as theirs. The teachers did not explain many of their terms because, as one teacher wrote, "Any educator knows these techniques of learning styles, or I *assumed* they do." However, because of the conversational tone and teacher-to-teacher relationship, I was not vigilant in singling out those terms and asking for how they are used (Spradley, 1979).

Another limitation came from being not only teacher-to-teacher but friend-to-friend, as I was with G.H. I believe it was important to talk with people I knew because of the depth we could reach. However, it was difficult for me not to interject my ideas and thoughts along with theirs, as I might do in a friendly professional conversation.

The conversational tone I chose for my research had the advantage of establishing rapport and of helping teachers to reflect and open up. On the other had, it had limitations because of assumptions made about terms, and because it tended to lean too far toward friendly conversation.

I interviewed each teacher twice. The first interview was approximately 45 minutes, and the second was about 30 minutes long. The interviews occurred one or two weeks apart, over a period of three months in the Spring.

The teachers had the choice of location and time for each of their interviews. This was beneficial in that the teachers felt more comfortable than they might have been had I dictated our meeting place and time. Also, having taught elementary school I realize that a teacher's time is precious, and is carefully divided between responsibilities. The teachers were able to choose times that were convenient for them. Their choices of location and time are as follows, given in the order that the interviews occurred:

Figure 2

Setting and Times of Interviews

Teacher	Interview #1	Time	Interview #2	Time
A.B.	Classroom	2:30	Classroom	2:30
C.D.	Classroom	1:10	Classroom	1:10
E.F.	Classroom	1:45	Classroom	1:30
G.H.	Restaurant	3:30	Restaurant	3:30
I.J.	Staff Lounge	3:30	Classroom	3:30
K.L.	Classroom	2:30	Classroom	2:30

Most of the interviews were held in classrooms after school, or while students were in another class. The advantage of this is mainly convenience, as mentioned. It also puts the interview in a more professional setting, with which the teachers and I are both familiar.

There are drawbacks to having interviews in the classroom and in the afternoon. First, teachers can experience an energy drain at the end of a day's work. As C.D. commented later, "at 2:00 p.m. a teacher has too much on his mind," implying that he might have been more focused at a better time. However, I am making the assumption that what the teachers said at that time of day is comparable to what they might have said at any other time.

Another drawback is that being in the classroom may have influenced the teachers to talk mostly about learning in the school setting, whereas I was interested in hearing about learning in their whole lives. One teacher commented on her returned Summary that she does learn things at home, and listed several hobbies in which she is currently involved. The classroom setting may have subtly directed both of us to focus on school. The two interviews in restaurants, on the other hand, did touch on more personal learning. This could also have been because I knew G.H. better than any of the others, but it was also encouraged by the relaxed, congenial atmosphere. It would be interesting to interview these same teachers in their living rooms, back yards or even city parks, and to see if our conversations include more about learning in all of life.

Because of the advantages, and despite the drawbacks, giving teachers the choice of setting and time was important in establishing comfortable relationships, and in making good use of our time.

As a way to repay the teachers for their time, I offered to take their classes for the same amount of time we spent talking, to give them some planning time. Four teachers accepted the offer; one teacher let me type some of her students' stories, and one teacher had lunch with me.

The interview started with a basic set of questions, and evolved throughout the study. I included descriptive, structural, and contrast questions (Spradley, 1979) as a way to approach the ideas from different directions. I attempted to ask each question in context, and if not, to explain it thoroughly. One teacher felt that my questioning led him to ramble instead of focus on his ideas, and another felt that there was not much opportunity to talk about her learning out of school. However, I believe the questioning left as much room as possible for each teacher to roam around and to find his or her ideas. This is a common way to think through things. Canning (1991) realized, in her study of what teachers say about reflection, that "teachers found they often made connections in their ramblings. Often new ideas would emerge, and other times they were able to focus on something after expressing seemingly unrelated ideas" (p. 20).

I used the interview questions as a reference point. In general, I asked most of the questions on the list, although I asked them in varying order and in varying ways. As I told each teacher, I wanted to keep the interviews conversational, and to hear what they had to say about the subject, and that I would refer to the list of questions from time to time. I realize that as I got to know the list better, I asked those questions naturally in the course of the discussion. And in answering the first grand tour question (Spradley, 1979), many teachers answered several questions at once.

In arranging the first interviews over the phone, I asked each person to bring with them an item relating to something they had recently learned. This allowed us to start by having the teacher talk about something familiar, and it also was a good starting place to talk about how they learned themselves. One teacher commented that it was a helpful way to start her thinking about the subject of learning, and how she herself learns. In some ways, the item brought by the teacher may have set the tone for the interview. Not every teacher brought something. A.B. brought a plastic spoon, which she related to learning about her son's feeding needs. Our interview started off with this story, and she later referred all the learning that goes on from having a child. C.D. showed me some teaching materials he had gotten from a workshop on Bloome's Taxonomy. Likewise, our interview stayed on the subject of learning in school, and he focused largely on what teachers do to help students learn. E.F. brought her needlework, and our interview started with her recounting how she learned a new technique. She referred to her needlework in describing her learning process, and that learning story, which took place out of school, led to other learning stories such as learning a new computer program at home. G.H. did not bring an item, perhaps because she knew me, or because her learning story had to do with a counseling session. Nor did I.J. bring an item. Her learning in the past year revolved around her family, and her husband's illness, and redirecting her life. She stated that she couldn't think of one item which represented all of her learning. Finally, K.L. did not bring an item to our first interview, since her learning story was about a math class. I believe that these beginnings to our interviews were significant in setting a tone for the interviews, and in giving us a starting off point for the interview questions.

The interview questions are as follows.

INTERVIEW QUESTIONS

Tell me about your own learning story related to the item you brought.

Describe how you believe people learn in general.

What are the best circumstances for learning to take place?

Are there things which can prevent someone from learning, or slow it down?

Can somebody be learning even when they've said they don't want to learn?

When do you learn most? When do you learn least?

Were you ever in a situation when you didn't learn?

When do you get to talk about your learning with someone?

How does the way you learn relate to the way your students learn?

What are the ways that a classroom can support children's learning?

What do you think about talking with students about how they learn?

How do your students view your learning?

Describe what you believe is evidence of learning.

> If you could take six months to learn anything anywhere, what would you learn? (This turned into "go anywhere and do anything.")
>
> What is it like for you to talk about these ideas?
>
> What is a belief, in your view?
>
> Do you feel that you were able to adequately express your current beliefs about learning in these two interviews?

In the first interview with each teacher, I attempted to cover most of the questions in order to get a broad view of the teacher's beliefs about learning. The teacher and I were usually just getting to know each other, and we often spent some time discussing my study and our teaching situations past and present. As I explained to the teachers, the second interview was to give us both time to reflect on the first and add to it if necessary. To prepare for the second interview, I read through or listened to the first, and pulled out the more significant statements about learning and knowing. I typed these up, with a copy for the teacher, and in the second interview we read through these. If the teacher wanted to add anything he or she could do so. I often asked them to clarify their ideas, or to further organize them. Since we were more familiar with each other by the second interview, the discussions were often more authentic and fruitful.

What Barbara Walters and Jay Leno do with such apparent ease is actually very difficult, as I realized after my first interview.

My interviewing skills both helped and hindered the effective expression of teachers' beliefs about learning.

To help the teachers express their thoughts, I practiced good listening, and often restated what the teachers said to make sure I understood it. My skills improved as the interviews progressed. I consciously refrained from responding with judgmental comments such as "You're right," or "That's a good idea," and responded instead with a more neutral "Yeah," or "That's interesting." I also noticed that I was interrupting teachers, so instead I worked at listening for their complete thoughts. I left most of the interviews feeling that the teacher and I had understood each other. I believed they understood my questions, and that I had heard what they wanted to say in response.

At times, though, my interviewing style got in the way of teachers expressing their own ideas. In re-reading the data, I realize that I often interjected my own thoughts and ideas into the interviews. This is normal in friendly conversations; people interrupt each other, finish each other's sentences, and bounce ideas back and forth. Although it was stimulating to think things through together, it would have been better to keep my comments to a minimum in order to let the teachers think through their ideas on their own.

I have described the interviews from my perspective. The teachers also had interesting things to say about them. I asked each teacher, at the end of the second interview, whether they felt they had been able to express their current beliefs about learning. A.B.

said she had to some extent, although she feels it is a big subject which she is still thinking through. C.D. was also hesitant to say he had thoroughly described his beliefs. "After all, it's something I've never really written out. . . " But he thought the interviews had given him a chance to think about it.

E.F., on the other hand, felt that she was able to touch on her beliefs fairly completely. It helped her to talk through her own learning story. She said, "That really helped focus in on what the steps were that I actually had gone through." She pointed out, however, that most teachers do things intuitively without thinking about the steps or the process. Talking about her beliefs was a new experience for her. I.J. felt that she definitely had expressed her beliefs. She also said, "I learned a lot from just that interview about myself and the whole process. . . it was a good exercise for me." K.L. saw the interviews as "comprehensive." It helped her to know in advance what we would be talking about. She said, "it made me start thinking about how I learn."

The interviews were influenced by the setting and time, by the nature of my relationships with the teachers, and by my skills as an interviewer. There were advantages and disadvantages to the choices I made in each area. However, the teachers' responses to the interviews, both verbal and written, were positive. And since four out of six teachers felt they expressed their beliefs about learning, I believe that the interviews were effective, and that the data are therefore significant.

Data Analysis

I recorded the interviews onto cassette tape, and transcribed them as soon as possible after each interview. This not only enabled me to remember what the teachers were saying in unclear sections of the tape, but it helped in planning the next interview.

Analysis of the data was both unstructured and structured. Unstructured analysis involved all the thinking and ideating that occurred during and after each interview. By structured analysis I mean intentional analysis, done according to set methods and rules. In designing the analysis, I wanted to be able to make both general and specific statements about the teachers' beliefs. Unstructured analysis lets me think generally about them, while structured analysis allows me to be more specific.

In unstructured analysis, I made mental note of significant statements, compared interviews with previous interviews, and related them to what I believe and know from my own experience. Many of these thoughts were written in my journal as part of my ethnographic record (Spradley, 1979), and in Memos to myself (Miles and Huberman, 1984). Analysis also occurred when I listened to the first interviews in planning for the second. New questions came up, or new ways of rephrasing questions. Throughout all this, I made note of my own reactions to what teachers were saying in an attempt to separate my theories from theirs.

As I typed up the interviews, it was very interesting to read the spoken word. I realize that we write much differently than we speak, and there are complications involved in setting down speech. For example, does one write "kind of," "kinda," or "kindof"? I had to make some decisions. I decided to omit filler words such as "Um..." and "U-huh." Although I responded often with "U-huh," or "Yeah" to show I was listening, I did not include all those in the transcripts. Nor did I include false starts, unless they showed development of thought. I did choose to type nearly all the extra words such as "kindof" (my invented spelling), "you know," and "sort of," because I feel they are used when a person is thinking out loud, or uncertain about an idea. I occasionally left them out, especially in data analysis notes.

Unstructured analysis also happened when I read from the related literature. As I read, I thought about the interviews I had done to that point, and related the new insights into the process of learning and knowing to what the teachers were saying.

All of this constitutes unstructured analysis; it is a continual process. I conducted structured data analysis mainly through two methods which I designed with help from Miles and Huberman (1984) and by keeping my own questions in mind.

The first method of analysis was a summary of the interviews. For an example of an interview summary, see Appendix A. I summarized the interviews in order to think about each person carefully, and to hear what they were saying. The summaries were done in the order that the interviews were conducted. To reflect on this, I asked myself three questions and wrote down my thoughts:

How does this teacher believe learning happens? How clearly did this teacher describe these ideas? Who is this teacher as a learner? I mailed the summaries and reflections to five out of six teachers for comment (one teacher could not be reached). The teachers responded by writing in the margins and sending back the interviews. This provided important validation of the interviews, as well as additional thoughts from the teachers. Nearly every teacher responded positively to the summary. C.D., E.F., I.J. and K.L. added comments to clarify some of their statements, or added information which was helpful to me in understanding their original thoughts. C.D. also noted some areas in which our interpretations of the interview differed. He disagreed with some of the direct quotations I included. All of this feedback was important and helpful to me.

The second structured method of data analysis involved studying the primary statements about learning made by each teacher, and organizing them into charts. I arrived at this method after trying domain analysis (Spradley, 1979) and coding (Miles and Huberman, 1984).

To make the transcripts ready for analysis, I "chunked" each interview: I divided each one into sections or chunks according to topic. This, in a sense, was unstructured analysis also: I listened to the tape of each interview again to hear voice inflection and emphasis. This helped me separate statements according to topic by the teacher's use of pauses and inflections.

Using the chunked transcripts, I underlined each statement that was a direct assertion about learning, or a primary belief statement about learning. This called for some judgement on my part. In reading each interview again, I chose statements which I felt the teachers emphasized strongly as they were saying them. Those sentences are mostly in the declarative mode. I chose statements related to learning, whether it was on the part of the student, the teacher, or everyone. I did not underline statements having to do with other subjects or teaching methods.

I then typed these separately, and under each statement I typed any explanations or examples given by the teacher in support of that statement. I indicated with a 1, 2 or S whether the statement came from the first or second interview, or from their comments on the Summary. This allowed me to see what the teachers discussed only in the first interview, or what they reinforced or repeated in the second. I was also able to see whether a statement had many examples and explanations or only a few, or even none.

In pulling out key statements I was able to turn each set of interviews into a document that could be analyzed with my three questions in mind: How does this teacher believe learning happens? How clearly does this teacher express these ideas? Who is this teacher as a learner? For the first question, I concentrated on describing my understanding of each teacher's beliefs about how learning happens. To analyze data for the second question, I looked more closely at each teacher's examples and learning stories to see if they supported what the teacher was saying about learning. And for the third question, I looked at what I knew about each teacher as a learner from what they said about their own learning in and out of school.

In order to analyze what each teacher is saying about learning and knowing, it is necessary to lift the particulars from the text, and to isolate them with the examples which surround them.
The complete interviews must still be kept in mind, for they carry the mood, tone, and inflections of the discussions.

As I read the key statements, it became clear that the teachers were making three different kinds of statements about learning. They were talking about: (1) what a learner actually does; (2) what a learner needs in order to learn; and (3) what a teacher does to help learning happen (or to make the student learn). I decided to organize the statements and examples into these three categories using a chart (see Chapter 4, p. 80). The chart helped me sort the interviews into statements made specifically about students (S), specifically about that teacher or adult's learning (T), and statements about learning which are true for all people in general (A). When the teacher's key statements about learning were categorized in this way, I could see what they talk about most and least. I could also use the charts to compare how terms were used by the teachers, and to understand the teachers' views of knowledge. For example, if a teacher talks mostly about what teachers do to make students learn, I can infer that the teacher's view of knowledge is probably objectivist, since she sees the student as dependent on her for learning. The chart will be discussed further in Chapter 4, where I will include each chart in my description of the teachers beliefs about how learning happens.

The limitation of using the chart is that it is simply a summary, and I run the risk of ignoring the bulk of the data which are the interviews.

My goal is to understand the theories of six teachers concerning learning and knowing. I want to listen for clarity and authenticity. I want to get a sense of how these teacher perceive their own learning, in and out of school. Through unstructured and structured analysis, I can interpret what the teachers said in their interviews, and describe what I believe to be their theories of learning and knowing.

Researcher Background

As I have mentioned, an interesting aspect of this study is my own approach to it. This is the first research project I have designed and carried out on my own. Therefore, it has been a learning experience from the start. As such, it has corroborated my learning theory.

In both structured and unstructured analysis, it is crucial that I remain aware of the assumptions I bring to the analysis. A large part of description is inference and interpretation (Spradley, 1979), especially where theories and beliefs are concerned. These are not directly observable, which is why this kind of study is both interesting and complicated. In reading through the interviews, I am transacting with the text (Goodman et al., 1987), and bringing my background to the experience. In that sense I alter the text, and the text changes me.

I have already described my learning theory, and acknowledged my constructivist viewpoint. Other information may be helpful to keep in mind. I have taught elementary school for seven years. The first three were in a small International school in Cameroon, on the coast of Central Africa. The next four were in the district in which this study was conducted. During my first three years, I taught mainly using the textbooks and manuals provided. However, with experience I learned that they did not provide the kinds of interactive experiences I nor the students needed. Moving to a new district provided the opportunity for change that I needed. From colleagues, books, and classes I learned the basic principles of the Whole Language philosophy which involves "keeping language whole, and in the context of its thoughtful use in real situations" (Goodman et al., 1987, p. 7)). Also, since we learn to read by reading, think by thinking, and write by writing (Goodman et al., 1987), I began to organize my curriculum around authentic experience and quality literature. Instead of following a textbook's planning guide, I began to develop thematic units incorporating all subjects. It was important for me and for the students to see all learning as interconnected and real. This was lonely business. Although I had the support of my principal, only one other teacher at my school was interested in this approach to teaching and learning. She and I formed a mini support group, and I also joined the larger community of Teachers Applying Whole Language (TAWL). My masters degree program helped me ground my developing beliefs in theory and research.

This background predisposes me to regard traditional practices and thoughts with alarm, and to concur with expressions of whole language beliefs. It is important for me to recognize this tendency so as not to jump to conclusions about the teachers I interviewed.

Summary

I borrowed ethnographic methods to conducting this study of teachers' beliefs about learning. Six teachers were interviewed twice, and the recorded interviews were transcribed. Unstructured analysis occurred continuously as I reread each interview, and recorded my thoughts about my research and the teachers' statements. Structured analysis consisted of summarizing the interviews and returning them to the teachers for comment, and pulling key statements and examples about learning out of the interviews and sorting them on a chart into the categories of what learners do, what learners need, and what teachers do. In this way I was able to see which statements constituted a theory about learning, or described a process that learners go through. I used the summaries and the charts to make generalizations about the teachers' views of knowledge, and about the clarity with which they discussed their ideas.

CHAPTER 4

PRESENTATION OF DATA AND FINDINGS

To go back to my personal learning story about skiing, this section of the report is the equivalent of stopping at the top of the hill to think about what I know so far, or of telling the day's stories in the ski shop. In my own theory of learning, as well as in the Goodman, Smith, and Short and Burke models of the learning cycle, an important part of learning is reflecting on what has been learned, and presenting it to the learning community or to fellow learners. This section of my report, then, is both a presentation of my findings from the twelve interviews, and a reflection on the significance of those findings. I believe the best way to present what I have found is to take each of my three questions and to discuss my findings for each one, teacher by teacher. I will discuss my findings teacher by teacher in the order that they were interviewed. My three questions are: How do these teachers believe learning happens? How clearly do they express their beliefs? And who are they as learners themselves?

In examining these questions, I found that their answers are strongly influenced by a person's view of knowledge and how it is acquired or developed. The two perceptions of knowledge, which I described in Chapter 1, have become central to my interpretation of these teachers' beliefs about learning. Lester and Onore (1991) call the two views constructivist and objectivist. Harste, Woodward, and Burke (1984) refer to them as transactional and behaviorist. Throughout this chapter I will be using the terms constructivist and objectivist to refer to the two main views of knowledge.

In an objectivist view of knowledge, "knowledge is an entity capable of being transmitted from one who knows to one who doesn't know" (Lester and Onore, 1991, p. 16). In this view, the teacher teaches and the student receives. In a constructivist view, on the other hand, knowledge is seen as "the active creation of meaning by the learner," (p. 16), whether that learner is a teacher or a student. I believe these two perceptions of knowledge are crucial to understanding teachers' beliefs about how learning happens, since learning consists of acquiring or developing knowledge (depending on your view). Although teachers may not be aware of their views of knowledge, their statements may reveal their views and may help me understand their personal constructs about learning and knowing.

Four models of the learning process, described in Chapters 1 and 2, illustrate meaning making by learners. These are the models described my Goodman et al. (1987), Smith (1975), Short and Burke (1991) and myself. Although they appear to be linear in Figure 3, they are cyclical; each model describes the process as continuing with new questions, interests, and hypotheses. Although the models present learning as a process of steps, the authors describe these steps or phases as often overlapping and as happening simultaneously. I will be comparing the teachers' descriptions of the learning process to these models as I explore my first question.

Figure 3

Learning Theory Models

Author	Model of the Learning Process
Goodman et al. 1987, p. 95	Perceiving, or encountering new information (not just static; may be sensory); Ideating, or thinking about what has been perceived; Presenting, or sharing with others to hear what they say.
Smith, 1975, p. 125	Generate a hypothesis Test the hypothesis Evaluate the Feedback Accept or Reject the Hypothesis
Burke and Short, 1991, p. 35	Uninterrupted Personal Engagements; Collecting Ideas, Exploring Meaning with Others; Revision and Reflection; Presenting and Sharing; Examining the Operation of the sign system; Invitations to Further engagements.
Grutzik (1992)	Question, Curiosity, Interest New Information Fit new information into construct system Reflect for Self Reflect with Learning Community and Friends Create new questions

How Do These Teachers Believe Learning Happens?

To answer this question I will summarize what each teacher said in their interviews, and relate what they say to the two views of knowledge and the three models discussed above. My aim is to outline what I understand to be their personal constructs regarding learning and knowing. I will begin by describing the teachers' beliefs specifically, and from those I will make some generalizations about their learning theories.

What I mean by *learning theory* is a theory or belief about how learning happens mentally, or about what a learner actually does to learn. To help me see what each teacher was saying about what learners actually *do* as opposed to what they *need* or what *teachers do*, I organized the teachers' statements using a chart. I did this by selecting what I believe to be key statements about how learning happens and what learners and teachers do, and also selecting examples and explanations which support those statements. I then organized those key statements and examples into columns of *What the Learner DOES*, *What the Learner NEEDS*, and *What the TEACHER DOES*. In my view, these are different kinds of statements. A learning theory consists of the first kind of statement made about everyone's learning, not just students or teachers.

A representation of the chart I devised is shown below, with explanations in each square of how I decided which statements to place in that particular square. As the chart in Figure 4 shows, a teacher's learning theory, according to my definition, would appear in the lower left hand square on the chart.

Figure 4

Chart Explanation

	What the LEARNER DOES	What the LEARNER NEEDS	What the TEACHER DOES
S.	What the teacher says about students' or children's learning only.	What students or children need in order to learn.	Statements about what students can do to teach each other.
T.	What the teacher says about his or her own learning, or about adult learning only.	What the teacher needs, or what adults need for in order to learn.	Statements about what this teacher or all teachers can do to help or make learning happen. BELIEFS ABOUT LEARNING EXPRESSED AS BELIEFS ABOUT TEACHING.
A.	What the teacher says about learning in general, or for anyone. THIS SQUARE IS WHERE I EXPECT TO FIND LEARNING THEORIES.	What people in general need in order to learn.	Here I put broad statements made about teachers in society.

S= Student Learning T= Teacher or Adult Learning A= Learning by All

The chart also helped me understand what each teacher's view of knowledge might be. For instance, if the chart showed that a teacher mostly talked about what learners *do*, then their view of knowledge may be constructivist, where learning happens through interpretation of an event, or through experience. If, on the other hand, the chart showed that a teacher talked mostly about what *teachers do* to or for the learner, then their view of knowledge may be mostly objectivist, where learning happens when a teacher tells a learner what to learn an how to learn it.

The chart for each teacher will be in the text near my description of that person's beliefs about how learning happens.

A.B.

This teacher spoke at length about what learners do, and her chart shows this column to be the fullest. Early on in our first interview she described a learning process, and reiterated it in the second interview. Her clearest description of the process all learners go through is that "a lot of it is trial and error, like the situation where you maybe process some information, then figure for yourself, you try it out yourself, and then you decide upon that what you're doing. It's like this give and take thing." As a learner you "develop your own schema. . . a new hypothesis. . . . it attaches to something that you already know, and so now you have taken that information and you have added new information, created something better or new." This can be compared to Smith's (1975) process of generating a hypothesis, testing the hypothesis, evaluating feedback, and accepting or rejecting the hypothesis. Her reference to a college psychology class may give a clue as to the origins of her theory, but A.B.'s own learning stories corroborate it. She told about "figuring out" what her baby son was trying to tell her about eating, that he wanted to try using a spoon. And she described a process she and

Figure 5

A.B. Beliefs About Learning

	What the LEARNER DOES	What the LEARNER NEEDS	What the TEACHER DOES
S.	Experimentation, watching, copying, mimicking, taking risks. Learning styles: visual, auditory, kinesthetic. Utilize higher levels of thinking: synthesizing, evaluating.	Know where they are, know what they're trying to do. Self confidence, positive attitude. Take risks, try again. Kids were [developmentally] ready, and they took it right in.	
T.	Revised, looked at how we were teaching. Sit down and figure out for yourself. Bounce ideas with a team. Learn through talking about things, by being interested. Wrote a reflection about what [we] learned, how outcomes process affected our teaching. Adults have learning styles. How I approach the whole thing [children's reading] has changed. I've realized things through my experience. I watch children, read new things, watch other people do things... redefine that idea.	Humbling experience to learn that I don't know everything.	Tap into learning styles, or you can totally close off a learner's ability. Outcomes: look at what you want, the top thing you want to exit. Check for understanding. Get them to that goal. Know... the standards of what you want. [Expectations] have a lot to do with learning. Assessment... wasn't an end-all thing. Constantly evaluating what's going on. Teach things when children are ready for them. Show them in their terms. "I'm learning as much as you do."
A.	Trial and error; process some information; figure for yourself; try it out yourself; decide... what you're doing; give and take thing. Figure out how info relates to previous knowledge. Attaching new categories. Decide what's important, what's not-- how does that fit? Develop your own schema... add new information, create something better, new. Sifting and sorting to see what's going on.	As you gain more experience, you learn.	If you're not growing and learning new things all the time as a teacher... it's all over.

her teaching team went through for Career Ladder. They sat down and looked closely at how they were teaching, made a plan, and at the end of the year they discussed the results and wrote a detailed reflection paper about their growth and further plans.

In A.B.'s view, the teacher has a strong role in directing the learning. The teacher sets the goals and standards she wants, and teaches things when the students are ready for them, at which point they "take it right in." This indicates an objectivist view of knowledge in which the students need her to give them information to learn. On the other hand, she sees her own knowledge as developing through experience and says, "As you gain more experience, you learn." Her stated learning theory revolves around "trying it out for yourself, and figuring it out." This indicates a constructivist view of knowledge.

A.B.'s beliefs about learning and knowing demonstrate what I see as a dichotomy between school learning and life learning. When she focuses on learning in the school setting, her statements tend to indicate an objectivist view. And when she tells of trying to figure out her baby son's feeding habits, or other personal learning stories, she seems to speak from a constructivist view of knowledge.

C.D.

During our two interviews, C.D. did not seem to describe a learning process. There was not one place in our conversation where he consolidated his thoughts into what I would call a learning theory.

Figure 6

C.D. Beliefs About Learning

	What the LEARNER DOES	What the LEARNER NEEDS	What the TEACHER DOES
S.	Self-evaluation. Take risks. See your growth. Mastery. Model it. Teach it to someone else. Learn by doing.	Connection with the real world. Lifetime skills (for jobs). Portfolios to monitor their work. Practice, application. Good class climate. Take ownership into their learning through mastery. Experience, application. Love from parents. Excitement about learning. Visual images on the screen.	
T.	Start from a neat idea. Go to a workshop, bring something relevant back, and use it. Adapt it more. Apply it to my real life.	Workshops; meaningful inservices. Excitement. Conferences. Interest.	Build the lesson. Give clear verbal information. Make the process... relevant to them. Build it into the real world. Build purpose, focus [into the lesson]. Reward, praise. Pep talk. Put samples [of writing in portfolios. Develop [idea from inservice] and practice it in the classroom. Teach them to take a certain amount of risk. Show them their growth through test scores. Communicate, be honest. Set a standard for them; encourage them to go on. Tie in what kids learn in their environment. Light the way for kids to learn. Adapt the lesson to fit them. If you get it simple enough, it will stick with them. Modelling... in such a way that they can understand it. Give experiences, exposure. Pull out their prior knowledge. Gear teaching to multiintelligences. Be creative, efficient, effective.
A.	Learn by doing.	Relevancy Interest.	

For that reason, I cannot make a comparison between his beliefs and either of the Goodman, Smith, or Short and Burke models. Nonetheless, he had much to say about learning in general, and was very clear about the role of the teacher in learning.

I got some insight into C.D.'s beliefs about learning from two learning stories he told. The first was about going to a workshop, getting new materials, and bringing them back to try out in his classroom. He enjoys this process, and sees it as central to the formation of his beliefs and methods. Learning in this case is acquiring information from experts. The second story involved making a switch from teaching reading from the basal to teaching reading from a literature-based approach. There came a point when he realized that trying to effectively manage reading groups was spreading him too thin. He asked himself how he could change. And from going to conferences and workshops, he learned the literature-based reading approach. He adapted it to his class that year, and adapted it again the next. In this story he also takes information from experts, but he seeks out that information to answer a question from his own experience. This is the only example he gave of his learning through questions or inquiry.

I believe that C.D. takes his teaching very seriously. While he had little to say about what a learner does to learn, he had much to say about the role of a teacher, as can be seen by the full third column on the chart. The teacher "builds relevancy into the learning," makes the all-important connection to the real world, and designs lesson plans which have purpose and focus. The teacher also works to build a positive class climate. Students need honesty and communication from the teacher. They learn better when they're interested in the material, and perform better when their parents support them. Practice is essential, and he described at length how he helps his students memorize multiplication facts. Another important part of learning is "giving the students lots of experiences."

The students in C.D.'s beliefs about learning seem to be passive whereas the teacher is active. Although C.D. talked about the students "buying into their learning," he did not discuss how they could do that. Instead, he seemed to claim ownership of their learning. C.D. made frequent statements such as "I think all kids can learn," "Anybody can learn anything," and "We learn all our life." C.D.'s learning stories, though, do not support these views. For example, he told of a girl in his class who only scored an 83% on the math test. He said, "At the first of the year she was 60%, then it was 70, 80, but I can't get her to do 100%. I don't know what it is." It sounds as though he feels she is unable learn her math facts. As far as his own lifelong learning, C.D. briefly mentioned his interest in Finance and Investing, but did not relate any learning stories in that area.

C.D.'s view of knowledge, as I understand it, is objectivist. First, he seems to see the teacher as the primary agent in the classroom, and essential to any learning that occurs. The teacher originates the questions, and creates purpose and direction. The students are there to learn the information he gives them. Second, he gets much of his own knowledge about teaching from experts in the field-- through reading, conferences, and inservices. He does not usually seem to construct his own knowledge through experience or from personal inquiry, or if he does, he does not recognize those as important to his learning.

E.F.

When I asked her to bring an item relating to something she had recently learned, E.F. brought her counted-cross stitch needlework. Using her own experience of learning this skill, she described her beliefs about learning. "I think something has to be shown, I think you have to try it, then I think you have to practice it. I think all those steps are involved, and I think even an older person would have to be introduced to it, they would have to try it, practice it, and do it themselves, and then be able to show somebody else to show that they mastered it." E.F.'s description of the learning process is in some ways similar to the Goodman model: being introduced to a new thing involves *perceiving*, practicing it involves *ideating*, and showing it to someone else involves *presenting*. E.F. gave the example of a computer to parallel how the mind may work in learning and memory. Information is on a hard disk, and gets brought to the screen to be worked on, then gets put away again and saved.

E.F.'s chart shows that what learners do and what learners need were addressed in similar amounts. In her view, certain conditions

Figure 7

E.F. Beliefs About Learning

	What the LEARNER DOES	What the LEARNER NEEDS	What the TEACHER DOES
S.	Teach somebody else to make it concrete for them, show they've mastered it. Go from easier to harder in math. Kids sometimes learn in spite of themselves. There may be other students who learn differently, by a diff. teaching style-- auditory learner, visual, and those kinds of things.	More time to learn something. Cooperative group of kids that get along and encourage each other and help one another. Mistakes are no problem. Scoring their work using Rubric lets them see how they are doing. Good class personality.	Cross-level tutoring helps build confidence.
T.	Having somebody show you, by reading it, by trying it, and by having a reference that I can go back to in case I forget... Going from easier to harder in needlework. Constantly assessing my progress in the needlework pattern. Just hearing it I'm not as good as sitting down and actually reading it or looking at it.	Takes less time than a kid to learn something. Being in the business of teaching kids... we need to be renewed with having somebody teach us things that we can put into practice. Put me with people I know... and I'm much more open to learning. Need to apply [knowledge] to something.	Readily admit things I'm not good at, to show mistakes are okay. Reviewing what they already learned, and adding to it as you go so they're able to progress along. Go over and over something, so it sinks in. I try to incorporate some of every-thing in what I do to try to adjust for [Learning Styles].
A.	Something has to be shown, you have to try it, you have to practice it... and be able to show somebody else to show they've mastered it. Practice and repetitiveness ingrains it, makes you comfortable with it.Being able to progress from the easier to the harder. Storage capability of the mind. Computer illustration: have things on the hard disk that stay there; But you bring them up and use them, "Oh, I remember now!" And then you put them away again when you're not using them.	Confidence comes when you can teach somebody else. Environment of being able to make mistakes while you're learning. Non-threatening situation. Wanting to learn, feeling that you can do it, confidence. Exposure to new things. Need time to learn new things and process them and try them out, practice. If you don't use it through your life you tend to forget.	

help learning happen: an environment of being able to make mistakes, a non-threatening situation, confidence and the attitude of wanting to learn, and much practice. E.F. briefly discussed Learning Styles, saying that some students may learn better by a different teaching style, and that there are auditory learners, visual, and other kinds as well which she did not list. She emphasized that as a teacher she tries to incorporate some of everything in order to give all students a fair chance at learning.

Another dimension of her description of the learning process is repetition. With a lot of repetition, things do sink in, whether the students are aware of it or not. The image of sinking in is much different than that of trying something, practicing it, and mastering it. E.F. seems to feel that there are things which must be learned in school, and repeating them will help reluctant learners absorb that information.

This view counters the more constructivist process she described as being the way she learned needlework. Therefore, I believe that E.F.'s view of learning is mostly objectivist. Her learning theory starts with the statement that the learner must be shown how to do something. This may be true in many situations, but it implies that knowledge is outside the learner and must be given to him and absorbed (or must sink in). Also, her own knowledge about teaching comes from outside herself. "Being in the business of teaching kids. . . we need to be renewed with having somebody teach us things sometimes that we can put into practice." In this statements it appears that renewal comes from someone else, not from within. This gives evidence to what I see as her objectivist view of knowledge.

<u>G.H.</u>

This is the teacher I knew the best, so whatever she said about learning and knowing I mentally checked against what I know her to be like. G.H. combined statements about what learners do with statements about what they need. On her chart, though, most of her comments fall in the "What All Learners Do" category. G.H. believes that humans learn by mimicry, by observation, and by questioning. Learning also happens when a person has "discrepancies or differences in what they already have and perceive, and something else that they see by coming up against something that doesn't already fit into a picture or a concept that they have in their head." In addition, people "learn by active involvement, actively doing things, whether it's physically, or being stimulated mentally in discussions." And people learn from each other. "We don't learn in a vacuum." Held up beside the Goodman model (1987), G.H.'s beliefs touch on all three elements of perceiving, ideating, and presenting. In her view, learning is cyclical because it leads to more questions. Evidence of learning, in fact, is a change in questions. "You learn a certain amount and then you know a better question to ask, which then leads you in the direction of something else, and then you know a better question." Self-evaluation is important, and she believes

Figure 8

G.H. Beliefs About Learning

	What the LEARNER DOES	What the LEARNER NEEDS	What the TEACHER DOES
S.	For optimum learning you want engagement.	Blocks of time where you can be doing something of your choice.	
T.	I just know how much better I understand, I clarify my thinking if there's somebody to talk to about it, if it's cooperative, if there's a social aspect to it. Students know I'm a learner; they know I'll take risks.		I'm definitely aware of how I learn. That's very much what I try and do in my classroom. Peer over their shoulder and get into their books. I model that learning as something you do all your life. I talk to them about the things I do outside of school. I have as many of the senses used a possible. Teacher excited gets students excited.
A.	Humans learn by observation, mimicry, questioning. By having discrepancies or differences in what they already have and perceive, and something else that they see by coming up against something that doesn't fit into a picture or concept that they have in their head. By active involvement, actively doing things, whether it's physically, or being stimulated in discussions. Put that into words... try and articulate something... be ready to back it up with reasons. What was your strategy? Asking better questions. Applying, teaching somebody else. Comparing. Self-evaluation.	An environment they can trust, where they feel safe physically, emotionally, psychologically. Being stimulated by the environment. We learn from each other, we don't learn in a vacuum. Dignity accorded to those people [by the professor]. Understand the way we compensate or cope with that. Learners having choice, having that buy-in where they make the choice that they WANT to do this. A standard by which to judge their work.	

second and third graders are capable of seeing their own growth. Her students "are developing that ability to say [to each other], 'You know, it's not really as polished as it could be. . . What could you think of in your presentation that might be more original than just drawing a picture?' "

In terms of what learners need in order to learn best, G.H. believes they need an environment they can trust which is also stimulating; other people to learn with; choice in what to learn and research; and time to do quality work or indepth reading. Her students know that they are to be self-directed learners. G.H. discussed Learning Styles mostly in relation to differences in perception, not differences in learning processes.

G.H.'s role as a teacher includes being aware of how she learns in order to share that with her students. She shares their curiosities and questions, motivates the students through her own interest and excitement, and helps the students to "think out loud and articulate" and to develop strategies for solving problems.

I believe that G.H.'s view of knowledge is constructivist. She described research studies in which students choose their own topics and questions. She seems to see her role as helper, not expert. Her own learning comes about through experience and sometimes difficult searching. Her learning theory includes active involvement and learning from others. Both she and the students are active in the school setting. All of this points to a constructivist view of knowledge.

I.J.

At the time of our interviews, I.J. was in the middle of processing an important learning experience: her husband had died five months earlier. I.J. she said that our interviews provided her with a chance to think it through to some extent. Before becoming a teacher, I.J. was a counselor. She has also been trained in Reading Recovery, a reading instruction method originating in New Zealand.

I.J. believes that learning starts at a perceptual level, both physically and mentally. She sees learning as a process, although she does not specifically describe that process. For that reason I cannot make a comparison between her views and the models of Goodman, Smith, or Short and Burke. Much enters into a person's learning: previous experience, genetics, attitude and motivation, and degree of focus. A learner is "not just a sponge," but chooses to learn. "You can choose to be open or closed. Am I going to get everything out of this, or am I not?"

From her training in Reading Recovery, I.J. brings several important beliefs. Learning proceeds from the known to the unknown in every situation. Also, a learner is responsible for his own learning, and for monitoring his own learning.

In order to learn best, a person must be alert, healthy, and calm. I.J. is distressed by how fragmented people can get in their work. She understands now the importance of setting priorities in life, and of stepping back to "take stock" of everything that she has learned.

Figure 9

I.J. Beliefs About Learning

	What the LEARNER DOES	What the LEARNER NEEDS	What the TEACHER DOES
S.	Internalize, build their own strengths inside to fix what they're having the problem with. Behavior changes if something is learned. Develop an internal voice instead of relying on the teacher. As they learn, they learn HOW to learn. Exponential.	Self esteem. Down-time, to recharge. Independence, responsibility for their own learning. Thinking about what they're doing. Learn how to support themselves. Social confidence, critiquing skills	
T.	I internalized what [Reading Recovery teacher] was saying. We had to respond to her by heart, take her to the page where we found our answer. I started reading again.		Slow down, prioritize. Be aware of tone used with kids. Set the tone in the room. Meet their basic needs first. Motivate and stimulate, while maintaining calm. Do not coddle the little kids. Watch them to see if they've learned it. Provide scaffolding-- help them along the way, be the brace. Respect the children. Help them think about their behavior. Teach conflict resolution. Take them from the known to the unknown.
A.	Perceive, physically and mentally. Bring previous experience to the learning. Focus. Choose to be open or closed. Monitor your own learning. Go from the known to the unknown.	Experience. Set priorities; slow down. Attitudes.	We are prime examples. If we're not living what we're doing, or what we're talking about all the time...

I.J.'s chart shows that a large number of her key statements fall in the category of what a teacher does. This may be because much of her focus is on her own learning at this point. I.J. sees her role as a teacher as setting the tone in the classroom, meeting the students' basic needs for safety and love, and motivating the students. In her view, a teacher is there to provide scaffolding while the student learns. I.J. defines scaffolding as "helping the kids to grow themselves. . . . They have to do the work; we're just the brace for them to fall back on. . . . After a while you back off. They're doing it themselves. You're basically teaching them how to support themselves." This leads me to believe that I.J.'s view of knowledge is basically constructivist. Learners are actively perceiving, learning responsibility, and developing focus. I.J.'s learning story, about the months during her husband's illness, shows that she believes knowledge is constructed by each learner through experience.

K.L.

K.L. is very clear on her beliefs about learning because she has recently been a student herself. She participated in a summer class, and as a student she "experienced some of the same feelings that the kids have." She said, "It was real interesting to me to go through that as a learner. And then to see how my students are doing the same kind of process." In speaking of her own learning, K.L. sees it as happening "through hands-on working with things, and by talking with people and sharing." The largest area on K.L.'s chart

Figure 10

K.L. Beliefs About Learning

	What the LEARNER DOES	What the LEARNER NEEDS	What the TEACHER DOES
S.	A-hah reactions, making connections, being able to teach somebody else, coming to a conclusion– show evidence of real learning. Get to ideating stage, then they start knowing what they don't know. Pursue their own interests.	Connecting home with school. Homework to do with parents. Setting which encourages creativity, searching. Figures instead of desks. Free to move around. Cooperation, interaction. Weave their own path.	The kids help each other. Writing together. Sharing in the Author's Chair gives ideas. Partners.
T.	Beneficial to work with someone else, then maybe by myself a little bit.	Support from somebody else who had been through the program. Support of colleagues. We forget as adults how much background knowledge we have... when we're teaching kids we forget that they don't have the same knowledge that we do. My attitude... I still enjoy my learning.	Focus on how I learn, which helps me know how the kids learn. Go through that as a learner, see my students are doing the same process. Need to stop and have the kids sit down and write something (reflection). Let them take the lead as to where they should go. Flexibility. Have high expectations.
A.	First, gathering knowledge, getting back-ground information, trying to tie that in to knowledge you already have, how does it fit. Developing a kn. base, creating new knowledge. Individual interests. Solidify thoughts by writing, reflecting. We all learn in basically the same way: Gather info, share it with other people, write about it, have all that jive into something that you remember and you own, that becomes yours. Different rates at different stages. Questioning. Be willing to take risks, to try.	Establish a community, comfortable with each other, natural. Sharing, integration of themes, topics, knowledge. Curiosity, enthusiasm for learning, attitude that I want to learn and I can learn. Process of rejuvenation with teacher and kids. If you feel successful in the past with your own learning, you can help other people feel that success.	

is the category of what all learners do. K.L. describes the learning process as beginning with gathering information, "getting background information and trying to tie that in with the knowledge that you already have, and how does this fit and how is it different." Learners pursue their own interests and questions as part of this stage, and also share what they are finding. Next, as a learner you solidify your thoughts through reflection either in writing, or in group sharing. Writing helps people think about what they're doing. According to K.L., we all learn in basically the same way, "as far as being able to gather information, share it with other people, write about it, and have all that jive into some kind of thing that you remember and that you own, . . . and that you can go and build on that knowledge." Learners must take risks and try things even if they are afraid.

K.L. knows that learning has occurred when students have "A-hah!" reactions, or when they are able to teach someone else what they have learned. Also, when they have "a real strong knowledge base, and they start getting to that ideating stage, they start knowing what they don't know," and the questions start coming. K.L.'s beliefs about learning are similar to the Goodman (1987) model. The learners are perceiving, then ideating, and presenting. They continue the process through further questioning.

For optimal learning in K.L.'s view, a learner needs a community in which she feels comfortable; an integration of themes, topics, and knowledge within that community; curiosity and enthusiasm for learning; and experiences of success as motivation to continue. She herself appreciates the support of colleagues, and realizes that for her it is beneficial to work with a partner.

As a teacher, K.L. believes it is important to remain aware of her own learning, to help the students reflect on their learning, to "let them take the lead as to where they should go," and to be flexible enough to let them question beyond her plans. K.L. sees her students as teachers for each other. They help each other write, solve problems, and tell stories, among other things. In any case, she is not the sole authority or expert in the classroom.

I believe that K.L.'s view of knowledge is constructivist. Her beliefs about learning start with gathering information, and she sees learners, including herself, as capable of creating knowledge for themselves.

Discussion of Findings

Analysis of the data through summarizing and sorting shows that although every teacher has strong ideas about learning, especially as it relates to teaching, only four of the teachers described a definite learning process. There are some differences and similarities in what these teachers believe about how learning happens. One interesting way to highlight these is to compare the lower left hand square from each of their charts, which I believe shows the teachers' stated learning theories, in the way I have defined learning theories (Figure 11). Looked at in this fashion, their different sizes are what first catch the eye. C.D.'s learning theory, as it applies to all learners and not just students or teachers, is very short, whereas K.L. has the most to say about what all learners do.

Figure 11

Comparing Teachers' Learning Theories

A.B. Trial and error; process some information: figure for yourself; try it out yourself; decide... what you're doing; give and take thing. Figure out how info relates to previous knowledge. Attaching new categories. Decide what's important, what's not-- how does that fit? Develop your own schema... add new information, create something better, new. Sifting and sorting to see what's going on.	G.H. Humans learn by observation, mimicry, questioning. By having discrepancies or differences in what they already have and perceive, and something else that they see by coming up against something that doesn't fit into a picture or concept that they have in their head. By active involvement, actively doing things, whether it's physi-cally, or being stimulated in discussions. Put that into words... try and articulate something... be ready to back it up with reasons. What was your strategy? Asking better questions. Applying, teaching somebody else. Comparing. Self-evaluation.
C.D. Learn by doing.	I.J. Perceive, physically and mentally. Bring previous experience to the learning. Focus. Choose to be open or closed. Monitor your own learning. Go from the known to the unknown.
E.F. Something has to be shown, you have to try it, you have to practice it... and be able to show somebody else to show they've mastered it. Practice and repetitiveness ingrains it, makes you comfortable with it.Being able to progress from the easier to the harder. Storage capability of the mind. Computer illustration: have things on the hard disk that stay there: But you bring them up and use them, "Oh, I remember now!" And then you put them away again when you're not using them.	K.L. Hands-on working with things. Talk with people, share ideas. Sharing of knowledge, experimenting. Finding different ways to do things. First, gathering knowledge, getting back-ground information, trying to tie that in to knowledge you already have, how does it fit. Developing a kn. base, creating new knowledge. Individual interests. Solidify thoughts by writing, reflecting. We all learn in basically the same way: Gather info, share it with other people, write about it, have all that jive into something that you remem-ber and you own, that be-comes yours. Different rates at different stages. Questioning. Be willing to take risks, to try.

Another difference has to do with the verbs used by the teachers in the squares above. Bruner (1988) discusses how verbs in life narratives reveal views of time or action in the tellers' lives. He writes that language "provides us with a way of ordering experience and reflecting on it as well" (p. 574), so it is appropriate to look at which verbs these teachers use, intentionally or unintentionally, in describing what all learners do. Earlier, in answering my first question about how these teachers believe learning happens, I interpreted the teachers' views of knowledge. Their use of verbs corroborates my interpretations (Figure 12). If I imagine a

Figure 12

Teachers' Use of Verbs

C.D.	E.F.	A.B.	G.H.	I.J.	K.L.
learn	be shown	trial	observe	perceive	working
doing	practice	error	mimic	bring	talk
	show	process	question	focus	share
	mastered	figure	perceive	choose	find
	ingrain	try it	see	monitor	gather
	remember	doing	doing	go	try
		attach	try		tie in
		decide	articulate		develop
		add			
		create			
		sift			
		sort			
(Obj.)	(Obj.)	(Obj./Con.)	(Con.)	(Con.)	(Con.)

continuum with the objectivist view on one end and the constructivist view on the other, I see C.D. and E.F. as being closer to the objectivist end. The verbs they use (C.D. uses almost none) match this view of knowledge as something outside the learner which must be acquired, shown, practiced, and remembered. The other teachers were closer to the constructivist end (A.B. was in the middle), and their verbs show the constructivist view of knowledge, where the learner is actively seeking and experiencing: try, figure, observe, perceive, choose, and so on.

There are some interesting similarities in what these teachers have to say about how learning happens. C.D.'s idea, learn by doing, is reiterated by four of the other teachers, and is a common idea about what learners do: "try it out yourself" (A.B.), "you have to practice it. . . Practice and repetitiveness ingrains it" (E.F.), "By active involvement, actively doing things, whether it's physically, or being stimulated in discussions" (G.H.), "Hands-on working with things" (K.L.). Most teachers emphasized the need to put newly learned material to use in order to remember it, or to make it part of one's knowledge. "Use it or lose it," although not said in those terms, was a common belief.

Another idea expressed by five of the teachers is that previous experience or knowledge is important in learning. The learner must connect the new information to what is known. For example, the teachers said, "Figure out how information relates to previous knowledge" (A.B.), "progress from the easier [or what is already known] to the harder" (E.F.), "[learners] see differences in what they already have and perceive [and the new information]" (G.H.), "bring previous experience to the learning. . . go from the known to the unknown" (I.J.), and "tie that in to knowledge that you already have" (K.L.). The idea that past experience and prior knowledge is necessary for learning to occur is a common belief among most of these teachers.

Oliver (1990) writes that "the predominant approach to legitimate knowing in today's schools is technical" (p. 65), or objectivist knowing (Lester and Onore, 1991). In looking at this group of teachers, it seems that the predominant approach to legitimate knowing is constructivist knowing, or what Oliver would call grounded knowing. Using Scott Peck's (1978) metaphor of a road map, most of these teachers seem to believe that our individual road maps are always under construction, and that each traveller must draw their own map. Learning, in this view and in the view of the majority of teachers I interviewed, is coming to a fork in the road, thinking about what one already knows about this road and its direction, making a choice about which road to take, and adding that to one's map. Learners are willing to revise their maps when new information comes in. Using this same metaphor, two of the teachers seemed to view learning as following a preprinted map, or waiting for someone else to tell them which road to take.

In summary, a close look at my first question, how do these teachers believe learning happens, shows that these teachers have different views of what learners do to learn. In other words, they have differing views on the role of the learner in learning. The verbs they use in their descriptions support this in that they show different actions by the learner: practice, remember, and master show different actions than choose, monitor, and gather. The teachers have some beliefs in common, though. Most teachers believe that learners must be actively involved in order to learn, and that they must put their learning to use if it is to become part of them. Also, most teachers believe that prior knowledge plays an important part in learning. These are significant similarities.

My next question supplements the first one. It is not enough to ask what teachers believe about learning. Hearing their answers leads me to ask where those answers come from, and to think about how clearly they were stated.

How Clearly Do These Teachers Express These Ideas?

In asking this question, I am interested not only in clarity but in the authenticity of the teachers' beliefs, and in how close to the surface these beliefs seem to be. I am hypothesizing that if teachers are aware of their own learning, then not only will they be able to describe how their learning and learning in general happens, but their description will not simply be borrowed from someone else, but will be their own: they will own the belief.

In some ways I have already addressed the clarity issue. If the teachers' own descriptions were clearly expressed, then I was able to understand them more easily, and describe them myself.

In looking at whether or not the stated beliefs are owned by the teachers and come from their personal constructs, I would like to return to the idea of personal, public, and scientific concepts discussed in Chapter 1. A personal concept is a collection of impressions, images, ideas, feelings, and value judgments around a phenomenon (Goodman et al., 1987). Goodman et al. further define a personal concept as "the cluster of ideas of a thing or phenomenon that will always include key attributes that distinguish it from another concept. These attributes will be a mixture of affectual, judgmental, and factual matter" (p. 104). Personal concepts can be influenced or changed through what others say or write about that event, but still each person interprets the event according to their own concepts. In asking my second question, I am interested in whether what teachers are saying comes from their own collection of impressions, images, and value judgments, or whether they are borrowed or restated scientific or public conceptions. My hypothesis that teachers must be aware of their own learning and beliefs makes this distinction necessary.

Scientific concepts, on the other hand, are "derived from summarizing activities of scientists in various fields of study as they digest the results of recent research and theory and incorporate them into explanations that students and the public can understand"

(Goodman et al., p. 115). Scientific concepts are documented and factual, although they, too, are subject to change. Public concepts are not necessarily founded on research, but are "carried by means of public communication. . . . Sometimes they are merely bits of conventional wisdom that seem persuasive at the moment, or they may be as profound as a public policy" (p. 115). Public concepts are more like popular opinions or hearsay.

Teachers can and often do restate public or scientific concepts in talking about how learning happens. In my own experience, using the terms which the experts use somehow validates what I say, especially if I am talking with people who doubt my capability. Those public or scientific concepts, however, may or may not be part of teachers' deep personal constructs about learning and knowing. Therefore, in trying to determine which beliefs are personal concepts and which are restatements of public or scientific concepts, I will look for the explanations and examples the teachers give. If a teacher uses a public or scientific concept and explains it thoroughly through stories and examples, that shows it to be part of his or her personal conception of the event of learning. I believe that the teachers' learning stories, whether about their own learning or their students' learning, will reveal much of their personal conceptions about learning and knowing. Lester and Onore (1991) write that "stories are the representations of the systems of constructs that both predict and guide our actions. . . our stories about ourselves constitute a way of knowing, a mode of thought, a view of the world" (p. 100). The teachers' stories and examples will be crucial to answering my second question. If, on the other hand, a teacher uses public or scientific concepts without examples or explanations, it is more likely a restatement, and not a personal concept.

The most important of the three questions I am asking is the first one: How do these teachers believe learning happens. This second question, How clearly do they express their beliefs, is secondary to the first one, but necessary since I want to describe teachers' personal constructs about learning and knowing. The degree to which teachers are aware of their own learning, and can explain it, is what is interesting in this study.

One of my hypotheses, as expressed in Chapter 1, is that teachers who take an objectivist view of knowledge may see their own knowledge as having come mainly from experts. They may not be as clear in explaining their own beliefs about learning. On the other hand, teachers who take a constructivist view of knowledge may see their own knowledge as resulting from their experience and created through their own inquiry. They may be more clear in explaining their own beliefs about knowledge. I would like to look at each teacher's view of knowledge, as I interpret it, and look at how they express their beliefs in order to see if my hypothesis is valid. Something I want to keep in mind is the intuitive nature of teachers' beliefs. When teachers have difficulty explaining their beliefs, this could indicate that their beliefs are intuitive and deep, not that they are undeveloped or unexplored.

A.B.

A.B. 's view of knowledge, as I see it, is a combination of objectivist and constructivist views. Although she sees her own knowledge as constructed through experience or, as she says, "figuring things for myself," at the same time she talks about directing her students' learning, and giving them information at a time when they can take it right in. Certain ways of talking about teaching reinforce this. "At the beginning of the year you look at what you want, you look at the top thing you want to exit. . ." It seems as though the teacher plans the goals and holds the expectations, and the student performs.

A.B.'s explanation of her beliefs about learning was cohesive and clear. In our interviews, I could see her pausing to think before she spoke. When she was explaining how people learn, she seemed to be thinking it through for herself out loud; it started off muddy and cleared up as she went. Some of her ideas had been recently reviewed as part of her first grade team's assessment of the year.

Some public terms which A.B. used are *trial and error*, *expectations*, *self-confidence*, and *taking risks*. I see these as public concepts because they are terms which are often used in teaching circles in talking about students' learning. However, as some examples from our interviews show, A.B. used most of these in the context of her learning stories and explanations. She used other terms to clarify *trial and error*, such as "sifting and sorting," "you filter that information to think about what's important," and learning by experimentation. *Expectations* were what she had for her students in setting up the specific goals for them to reach. She wanted them to get to certain points and to show certain skills. *Self-confidence* was what you must feel as a person if you are to learn; it is a positive attitude toward what you are doing. *Risk taking* is what she and her team did when they revised their teaching methods. "In the beginning of the year we were all shaking in our boots. At the beginning it was really difficult."

She also used the term *higher levels of thinking* to mean getting kids to be "really synthesizing and evaluating, those types of things," and showing them that they could learn to write at a higher level of thinking. Although she discusses the need for high expectations for her students, she does not explain what a higher level of thinking is, and so I see it as a restatement of a public concept, not her personal one.

One public concept she used is that of Learning Styles. I see this as having once been a scientific concept because it is the name of a theory backed by the research of Dunn and Dunn (1975). The only thing A.B. had to say about that theory in the first interview is, "I learn some through reading, but I would learn a lot more by talking about what I've read. . . I think kids have different learning styles. 'Cause some learn through visual versus auditory versus kinesthetic. There's all kinds of learning that can take place through the way the kids learn." Later, she described some differences in the way she and her husband remember things: he must write down everything, whereas she commits everything to memory right away. She called this a difference in learning styles. Neither of these uses showed an understanding of the original theory of Learning Styles.

I described Dunn and Dunn's (1975) theory briefly in Chapter 2. Figure 13 shows a chart adapted from their book (p. 77). According

Figure 13

Learning Styles, Dunn and Dunn (1975)

STIMULI	ELEMENTS			
ENVIRONMENT	Sound	Light	Temperature	Design
EMOTIONAL	Motivation	Persistence	Responsibility	Structure
SOCIOLOGICAL	Peers	Self Pair	Team Adult	Varied
PHYSICAL	Perceptual	Intake	Time	Mobility

to Dunn and Dunn there are eighteen different elements which constitute learning styles. Most teachers, including A.B., refer only to the perceptual element (visual, auditory, kinesthetic), which appears in the lower left hand box in the chart. As teachers we have taken a scientific concept and turned it into a public concept by using only a small piece of the original idea. This public concept is touched on briefly by A.B., and I do not believe it is part of her personal conception of learning. A.B. seems to guard against taking public terms or ideas at face value. In our second interview, she said,

> I think education's interesting. Because every ten years they want a new way, and it's like Back to Basics, or it's this, or it's that. . . You know, two years ago it was Cooperative Learning, this year it's Student Directed Learning, and it's just one buzz word after another. And I think that you really have to sit down and figure out for yourself, "What is this all about here? What's the foundation?

Her own awareness of this tendency to take theories from experts without making them personal supports my view that her own stated beliefs are indeed personal. Furthermore, her partially constructivist view of knowledge may be what enables her to seek out the "foundations" and to express her own theories. A.B.'s statements lend support to my hypothesis that teachers with a constructivist view of knowledge clearly express authentic beliefs about learning.

C.D.

I believe C.D.'s view of knowledge is primarily objectivist. He is one of the teachers who did not explain a complete learning process. He had much to say about teaching, though. And since teaching and learning are so closely connected, it would be possible for me to deduce what he believes about learning from what he believes about teaching.

C.D.'s beliefs about how learning happens were not clear to me in our interviews. They seemed scattered and unfocused. For our second interview, I made word cards of some of his key terms from the first interview. I asked him to organize them in a web or in groups to show how they related and to help him talk about how people learn. He organized them very quickly as I handed them to him, and did not rearrange them once he had them in place. In his comments about them he seemed to list them, and made different kinds of connections between ideas than he had in the first interview. For instance, in our first interview, C.D. stated that "practice and application are such a way to learn," but on his chart of terms and phrases, *practice* and *application* were not connected in any way. Also, in our first interview, his first statement about learning when I asked him how learning happens was, "I think you learn by doing. I really believe in that." However, on his chart, "All kids can learn" was the center of the web, and he did not use the word *doing* anywhere in his chart. These kinds of discrepancies point to the possibility that C.D. was not stating his own personal conceptions about learning, but was restating public concepts. In our two interviews, his own personal concepts about learning remained largely unclear or untapped.

Some of the public concepts he used in the first interview were, "You have to teach [students] to *take a certain amount of risk*, like in their learning. . . . They have to *take ownership* into their learning. . . I think we *learn all our life*. . . ." [emphasis added] None of these were clearly explained by C.D. in either interview, and were not backed up by personal learning stories. They were said almost in passing, and often in isolation. Also, C.D. mentioned that he is "a real big believer in Madeleine Hunter and relevancy," and "I'm a real M.H. person." In this case, a person is the public term. He explains what he means by relevancy, but does not explain the theories of Madeleine Hunter in which he believes. This leads me to see his reference to her as a restatement of a public or scientific concept, not as a personal one.

C.D. tends to use familiar public concepts to describe his beliefs about learning, teaching, and knowing. His personal learning stories mostly have to do with getting information at workshops and trying it in the classroom. The stories do not clearly illustrate risk taking, ownership, or the theories of Madeleine Hunter. They do illustrate learning by doing, although in the second interview, as I have stated, he did not include "doing" in his word card web.

C.D. was hesitant to say whether his theories and beliefs about learning had all been covered in our interviews. This gives me the impression that his own constructs about learning and knowing are not consciously known to him. Undoubtedly many of his beliefs are intuitive. However, it could also be that his objectivist view of knowledge has allowed him to accept theories from experts as his own, without examining their connections to his own learning. I believe that C.D. is giving restatements of public or scientific concepts instead of giving his personal conceptions. C.D.'s statements lend support to my hypothesis that teachers with an objectivist view of knowledge do not clearly express beliefs about how learning happens.

E.F.

E.F.'s view of knowledge seems to be mainly objectivist. The learning process she described for herself is that she learns by "having somebody show you, by reading it, by trying it, and by having a reference that I can go back to in case I forget when I get right in the middle of it." Practice and repetitiveness are essential to ingrain the learning, and E.F. relates learning to memorizing. This implies that knowledge is a collection of information and facts that must be learned, mostly in school. Her statements indicate that learning is applying something until it sinks in and you really have it.

E.F.'s ideas about learning and teaching were expressed clearly. There were times when I could tell she was thinking carefully about what she wanted to say. I got the impression, though, that she sees students' learning as different than her own learning. My comment in the Summary was that "perhaps something is done *to* the learner in school, then the learner has to do something (apply it) in order to make it permanent learning." E.F.'s response reveals some of the difficulties teachers may have in connecting their own learning experience to their students' learning. "I think that my learning examples came from a one-on-one situation (needlepoint and computer) and the classroom situation is a one-to-thirty situation where you don't have the time or the resources to have the one-on-one environment, which might be why the classroom examples seemed to have something done *to* the learner."

In describing her own learning process, E.F. seemed to use very few public or scientific concepts. This may be because she had specific learning stories in mind when she described her beliefs about how learning happens. She talked about Learning Styles, but in connection with teaching styles. "You hear about the auditory learners, and the visual learners, and those kinds of things." She recalls hearing about Learning Styles in a college class, but does not explain the theory. The fact that she said she has heard about learning styles puts that theory in the group of public concepts as a popular but misunderstood theory.

Expressing her beliefs all at once in this way was new to E.F. She believes that good teachers "don't think about all these little specific things. I think that they are more intuitive." Still, I believe that what she described as her view of the learning process came from her own experience and learning, and even though it was sometimes at odds with what happens in the classroom, it is an authentic theory. E.F.'s statements refute my hypothesis that teachers with an objectivist view of knowledge have difficulty expressing a clear belief about how learning happens, since she was able to do so.

G.H.

From the learning stories she told, and from the beliefs she stated throughout our interviews, G.H. seems to have a constructivist view of knowledge. She looks for knowledge through her experience more than from experts. And in her classroom, students are able to do the same. Students choose their own research questions, and she finds herself "peering over their shoulders and getting into their books." She believes people learn from each other, and she practices this in her classroom.

G.H. described her specific beliefs about learning early on in our first interview, and supported them through learning stories and examples about herself and her students. Her beliefs were stated concisely and without hesitation, as if she had thought them through before. She described a process of learning, as well as that which supports learning. Her descriptions and statements included few unexplained public or scientific concepts. For example, she said humans learn by mimicry and observation. In saying this, she had infants in mind, and believes they learn in this way. The idea of being stimulated mentally in discussions was supported by stories of discussions with her husband about learning, and of the support group to which we both belonged. And the concept of an environment where learners feel safe was explained in her story of a counseling session with her sisters.

Since the other teachers had mentioned Learning Styles, I asked G.H. what she thought of that theory. Like some of the other teachers, she did not describe Dunn and Dunn's (1975) original theory. Instead, she saw Learning Styles as being ways of perceiving, and spoke of trying to include as many senses as possible when presenting something new to the students. So Learning Styles was a restatement of a public concept, and did not match her description of the learning process. Other public terms she used were choice and buy-in. However, since she gave numerous examples to illustrate them, they are more than simply restatements.

I believe that G.H. expressed beliefs and theories which were well thought through and authentic to herself. She did not refer to outside experts as a source of knowledge, but referred to the support of colleagues in thinking through her beliefs. G.H.'s statements support my hypothesis that teachers with a constructivist view of knowledge are able to express clear views of how learning happens.

I.J.

I.J.'s views of personal learning and knowing as expressed in our interviews centered on her own past and current experience of dealing with a loved one's illness and death. Although she did not describe a specific learning process, her beliefs about learning center on experience, and on what each learner brings to their learning. She sees the fragmentation in teachers' lives as a result of outside pressure to perform and of unrealistic demands on their time, saying, "I don't know how you can react to children with all that people deal with. I think people need to cut back. And I think schools need to require less of us. . . I think a lot of teachers work really close to the edge." I.J. believes that teachers, indeed all learners, need focus and clear priorities which originate from within themselves. All this contributes to my belief that I.J.'s view of knowledge is primarily constructivist.

I.J. did not describe a learning process, even though her background is in Psychology, a science which specializes in cognitive processes. Her beliefs about learning, however, are clearly stated and there is no doubt about what she believes to be important: experience is vital to learning; learners must periodically take stock and reflect; learners need to have their basic needs met before they can learn other things; we choose to learn, and children are not simply sponges; and learners are responsible for their own learning.

I.J. included some public and scientific concepts in her belief statements, and usually explained them with stories or examples. One such phrase is *the tone in the classroom*. She goes beyond saying it is vital. She describes the way teachers talk to children, social skills she helps them learn, and the building of a community and closeness. In fact, she explained that the tone in her classroom was closely connected to the tone of her life.

Another example of the way I.J. included scientific concepts as part of her own personal concepts was her use of the term *scaffolding*. She described how she supports learners and then backs off when they can do things on their own. She experienced scaffolding from a student's point of view in her Reading Recovery training.

I.J. uses concepts from her background in counseling as well. She extends the concept of good communication to include students' writing as well as handling conflicts. And she extends the concept of respect for others to include students' respect for each other, her respect for them, and her respect for herself.

It is my belief that I.J. expressed authentic beliefs which are deeply rooted in her experience. She said that many of her beliefs are intuitive, and this may account for the lack of description of a specific learning process. My hypothesis that teachers with a constructivist view are able to clearly describe a learning process is not supported by I.J.'s statements, which although authentic did not describe a cohesive process.

K.L.

I believe K.L.'s view of knowledge is mainly constructivist. Her description of the learning process begins with gathering information and developing a knowledge base. It is each learner's responsibility to pursue their own interests and ask their own questions. Her own learning stories include this knowledge-through-experience approach. When she described her summer math class, she emphasized the hands-on aspect of it, and that they were given time to experiment and even play with the manipulatives as part of their knowledge building. Another reason I believe her view to be constructivist is that she counts herself as a learner more than as an expert. She spoke often about children teaching other children, and of letting the students take the lead and "weave their own way" according to what they are interested in.

K.L. expressed her ideas clearly and reinforced them through stories about her own learning and her students' learning. At the same time, she made it clear that she is still ideating and processing what she is experiencing as a teacher who is a learner. "At some point I'd like to write about it, but I'm still at the ideating stage. All this is jelling, and it's starting to make so much sense." She visibly enjoys this learning process. "This is a continuous growth process for me, this class, and I have found it challenging, and yet I find I'm going home almost every day with a smile on my face, and feeling good about what's going on." I got the sense that our interviews were part of her learning process as well.

K.L. included public concepts in her explanation of the learning process, and she explained them. For example, with risk-taking, she told stories to show that "you might be a little afraid at first, but then if you jump in and you go ahead and try it. . ." you will succeed. And in talking about positive attitudes, an often overused term, she shows insight about children who are not doing well. "It's generally because they don't feel that they've been successful in the past, and haven't had anybody to guide them along the way and help them change that attitude." And cross-level tutoring for her was more than a day's exchange with another class. The exchange prompted two of her students to write together on a regular basis, and to "produce some really neat things that neither of them could have done on their own." When I asked K.L. about Learning Styles, she said she is uncomfortable with that term because she herself does not learn the same way each time. It depends on what she is learning.

It is my belief that K.L. expressed theories about learning and knowing that are her own personal concepts. They include public concepts, but she has done more than restate them. K.L.'s statements support my hypothesis that teachers with a constructivist view of knowledge can more clearly express their beliefs about learning.

Discussion of Findings

As part of this study I was interested in how clearly teachers express their beliefs about learning and knowing. Clearly expressed and well explained beliefs would indicate that teachers are aware of their beliefs and personal conceptions, and that they are not simply restating public or scientific concepts. My way of determining whether I thought their beliefs were authentic was to consider what I see as their view of knowledge, examine the public and scientific concepts they used, and hold those up against their own learning stories and explanations to see if they were supported.

Macrorie (1984) showed how teachers combined statements about learning with learning stories to convey their personal concepts about learning and knowing. He interviewed Sam Bush, a Woodwork instructor, who described how he helps his students design and build items of their choice. He is there to help them realize their plans, and to encourage their efforts. Sam Bush's statement near the end of the interview would make no sense without the stories that preceded it: "The aim is to get kids to make their education rather than receive it" (p. 10). I understand from his stories that each student creates a plan, instead of building what the teacher says he must build. It is this kind of collaboration of stories and statements that I was looking for in answering my second question.

Five out of six teachers I interviewed expressed what I believe are authentic and well explained beliefs about how learning happens. Their key statements were supported with stories or examples, and when public or scientific terms were used, they were for the most part explained in ways that showed them to be part of the teacher's personal concepts. One teacher seemed to mostly restate public concepts. Many of those statements were unsupported, and this teacher was not consistent in explaining them the same way in both interviews.

There is another aspect to consider in answering this second question of how clearly the teachers expressed their beliefs. One of my hypotheses for the study is that teachers who take an objectivist view of knowledge may see their own knowledge as having come mainly from experts, and thus may not be as clear in explaining their own beliefs about learning. On the other hand, teachers who take a constructivist view of knowledge may see their own knowledge as resulting from their experience, and may be more clear in explaining their own beliefs about knowledge.

I found, however, that this is not necessarily so. In four cases, what I hypothesized seemed to be true. A.B., C.D., G.H., and K.L. expressed their beliefs in ways that my hypothesis led me to expect. If I described their view of knowledge as being mainly constructivist, I noticed that their beliefs were more clearly expressed, as though they had had more opportunities to reflect on their own knowledge. And if I described their view of knowledge as being mainly objectivist, I was not surprised to see that their expression of beliefs was less clear. Perhaps they had received knowledge and ideas without exploring them.

But in the cases of two teachers, E.F. and I.J., my hypothesis was not valid. One clearly explained a learning process, although I had described her view of knowledge to be mainly objectivist. And the other, whom I had described as holding a constructivist view of knowledge, did not explain a complete learning process. My new understanding of the relationship between view of knowledge and clarity of beliefs is that teachers' views of knowledge, objectivist or constructivist, do not necessarily determine whether or not they can clearly express authentic beliefs about learning and knowing.

However, there does seem to be a relationship between teachers' views of knowledge and the opportunities they have to discuss and explain their beliefs. Four of the teachers had recently had opportunities to think through their beliefs with others. The district has what they call a Career Ladder program, which demands much from teachers in terms of detailed planning and assessment. Three of the teachers were involved in that program at the time of our interviews, and referred to it as being instrumental in forcing them to articulate their ideas. A.B. said, "It was intense. It was really neat, though, because you were able to look at the whole year." G.H. said, ". . . it's being forced to articulate something. . . Career Ladder did that for me. 'Why? What's your rationale for choosing this particular activity?' " K.L. described Career Ladder as something that has helped her share what she is learning. I.J. had also had an opportunity to think through her beliefs about learning through her Reading Recovery training. She said she felt much more clear as a teacher and also as a learner. She was made to ask, "What is it that I want to accomplish, and why do I want to do it?" All four of these teachers had been in programs where they had to explain their reasoning, and discuss issues, plans, and assessments. And these four teacher take a constructivist view of knowledge.

On the other hand, two teachers did not seem to have had recent opportunities to think through their beliefs with their peers. I believe it is not a coincidence that these are the two teachers whom I believe take a more objectivist view of knowledge. C.D. mentioned workshops in which he picked up new ideas, but did not speak of having to struggle with ideas for himself. E.F. described her experience of learning how to do new tasks, but she also said that talking about her learning was a new experience for her.

Therefore, my study shows that there is a relationship between having opportunities to explain, and debate beliefs about learning and knowing with peers, and view of knowledge. Those who have had the opportunity to do so seem to take a constructivist view of knowledge, in which learners are actively constructing meaning for themselves. On the other hand, those who have not had that opportunity seem to take the view of knowledge where learners depend on authority or experts for their knowledge. Does a person's view of knowledge determine whether or not they choose to become involved in these opportunities? Normally, teachers have a choice of which programs to join. It may be that teachers who have a constructivist perception of knowledge choose to participate in challenging and sometimes difficult learning experiences. However, this is an interesting question for another study.

To summarize, five of the teachers I interviewed clearly expressed what I believe are authentic beliefs and thoughts, and supported their statements with explanations or examples. There is not a relationship between a teacher's view of knowledge and their ability to express ideas clearly. However, there is a relationship between a teacher's view of knowledge and the opportunities they take to examine their ideas.

There are also other factors which influence a person's potential to verbalize what they know to be true. One may be what Greene (1978) calls being "grounded in their personal histories, their lived lives," or landscapes (p. 2). "To be in touch with our landscapes is to be conscious of our evolving experiences, to be aware of the ways in which we encounter the world" (p. 2). My third question addresses the ways in which teachers encounter the world, and their awareness of their encounters.

Who Are These Teachers as Learners Themselves?

The third question I asked as part of this study is perhaps the most significant. Earlier, I wrote that my underlying assumption for my research is that teachers must be learners themselves if they are to help others learn. Other theorists hold similar views. Torbe and Medway (1981) write, "Teachers recognize that however they teach, the students have to make their own knowledge-- there is no other way. So they encourage this: and as the students work on their own constructions of knowledge, they help them. They do this. . . as people with experience and alternative viewpoints to be set alongside the students' own ideas" (p. 143). In order to do this, the teachers must be in touch with their own ideas, and see themselves as learners. Greene (1978) is even more emphatic in her belief that teachers must also be learners. "I believe, you see, that the young are most likely to be stirred to learn when they are challenged by teachers who themselves are learning, who are breaking with what they have too easily taken for granted, who are creating their own moral lives" (p. 51). Since these thoughts underlie my inquiry into teachers' beliefs about learning, I was very interested to hear from the teachers about their own learning.

Couched within my third question, Who are these teachers as learners themselves, are many smaller questions: What kinds of learning stories do they tell? What do they wonder about? Do they notice when they learn? Do they extend themselves beyond their comfort zone? Do they ever look up at the stars? What do they like to read? Or do they read? I will describe what I know of each teacher's own learning, although most of what I am interested in remains elusive.

A.B.

A.B. talked mostly about learning in the school setting with her first grade colleagues. But she referred twice to her college learning, and once told about a learning experience in grade school, which leads me to believe that she is aware of her own learning over time. She says, "This is my fifth year of teaching and I've changed a lot, and I think I've refined things, I think I've realized things through my experience." A story she told about learning out of school had to do with her baby son. But in telling that story she hinted that there is much more to it than she told me about. "Having a child is definitely. . . I mean, I look at that and it's a whole new experience for my husband and I, and we're constantly learning what's going on with him."

A.B. seems willing to take risks as a learner herself, as her account of breaking away from the basal attests to. She does not mind letting her students see her mistakes, and they laugh together about them. "Oh, Mrs. A makes mistakes all the time, too!" Also, even as she described some of the assessments she does of her students, she told of the assessment she and her team did together.

A.B. does not seem to view her own learning as being much different than what her students do in school. She believes that teachers should be active learners. "If you're not growing and learning new things all the time as a teacher, I really feel strongly that it's all over."

A.B. considers herself to be an avid reader, especially during summer vacation. Besides novels, she reads magazines about parenting, and reads the newspaper every day. In talking with A.B., most of my questions about who she is as a learner were answered.

<u>C.D.</u>

Of the six teachers, I understood the least about C.D.'s own learning. I know from his learning stories that he enjoys learning how to be a better teacher, and appreciates good workshops and inservices. "When you have an inservice it's got to be meaningful to you, something meaningful that you can develop and practice in the classroom. And then that inspires you, gets you excited."

C.D. said that he tries to teach his students to "look at the beginning of the year and evaluate where they are now," but his own learning stories did not include this kind of self-evaluation. Neither was it clear whether or not he takes risks in his learning.

He did mention the importance of being interested in something before he learns it. "For example, I'm not going to sit down and really watch a cooking class. . . because I'm not really into it. But I have an interest in Finance and Investing, and I find it really interesting to learn a lot about that." He learns about that mainly through reading.

Aside from that personal learning story, C.D. did not reveal his own learning outside of school. He reads books like Money Angles, and reads the paper daily, as well as a combination of finance and education journals. He did not describe how his reading contributes to his learning.

I am sure that if we had talked longer, and if I had made my purposes clearer to C.D., I would have found out more about his own learning. As it was, I am left with the impression that there is a large gap between his learning as a teacher and other personal learning.

E.F.

E.F.'s personal stories about out-of-school learning centered on learning how to do needlework and learning how to run a computer program. In the first, she was motivated to learn because she wanted to give the needlework as a gift. In the second, her motivation was teaching her husband how to run the program. An important aspect of this learning was being in "an environment of being able to make mistakes." As a learner, she felt free to try, fail, and try again until she had it.

Another personal learning story E.F. told was of traveling to Europe with her son's soccer team. That helped her appreciate everything we have in the United States. "I really did learn a lot from going someplace else. . . I like to come back and appreciate what I have here."

E.F. appreciates the opportunities for learning which the district provides, such as workshops and inservices. "It was really fun to be able to go and learn how to do something new and then come back and try it out and teach the kids." This kind of learning has a strong social aspect which E.F. enjoys, and which she feels helps her learn more. "You put me with people that I know and feel comfortable with and I just think I'm more open to learning."

E.F. enjoys different kinds of novels, from frivolous ones to novels of adventure and suspense. She also reads the newspaper daily, and a variety of magazines. Reading, according to E.F., is one of her favorite pastimes, especially during holidays and the summer.

In general, I believe that E.F. enjoys learning, and takes opportunities to learn in and out of school. While reflecting on her beliefs was a new experience for her, she took it on as an interesting experience in itself. Our two interviews gave me a good idea of who E.F. is as a learner.

<u>G.H.</u>

From having known G.H. over a period of time, I had a good idea of who she is as a learner even before our interviews. Although

I am sure those impressions affected the way I listened to her, I would like to answer my third question mainly from the data.

The personal learning story G.H. told concerned a counseling session she had with her three sisters. Her learning involved gaining insights into how she copes with difficulty, and how her sisters perceive her. The most interesting thing to me is that she went into the session eagerly, found it to be difficult, yet chose to repeat it again when her sisters came for a visit. Even though the learning was "extremely painful in a lot of ways," she stayed with it. "I'm really excited about it. I think that it's a tremendous opportunity and gift, really, that we can do this." This reinforced my understanding of G.H. as a person who seeks learning experiences, and is willing to extend herself beyond her comfort zone.

Since I knew G.H. had been taking university courses, I asked her to describe herself as a student, and her experiences with teachers. One thing she remembers was being given the time and help she needed. As a student she expected much of herself, and appreciated the attitude of one teacher who said, "If you really want it, I'm here to help you, and if you want to keep trying, you keep trying." She also admired a teacher who "was willing to risk, willing to share, and [was] able to take that right into the classroom and practice those things she had modeled." G.H. recognizes that personal learning happens in and out of school, and she appreciated that teacher who was a learner even as she was a teacher.

One learning story G.H. told was about reading up on dogs with her daughter before they got one. The books sparked an awareness, and she began to notice and name dogs on the street. She told this story to illustrate that it does not take much to learn-- just a question and an interest and being aware. I believe this to be a good example of who G.H. is as a learner.

I.J.

One of the first things I.J. said in our first interview was, "I've learned so much, I'm a good subject to pick [for an interview] this year!" From the learning stories that I.J. told, it seems that she was pushed into a learning experience she would not have chosen for herself, but she faced it and grew from it. "I feel healthier," she said. "But you have to go through hell sometimes. Changed my whole life."

I.J. is consciously redirecting her life in directions of her choice. One example of this is that she has taken up reading again. "When I started going back to college for my post bac, and I started teaching, my husband commented on it all the time: 'You don't read any more.' And I'm teaching reading!" She wants to keep learning, and sees this summer as a chance to "rejuvenate, and become healthy," to learn tennis, and to spend time with her children.

I.J. has a broad view of her learning history, extending from her days in elementary school, to her university studies, and hopes to continue her formal learning by going back to graduate school.

Part of her learning history includes an intensive training program in Reading Recovery. I.J. enjoyed the training. "She was the best teacher I've ever had in my whole life. Tough as nails, but she really got you thinking." I.J. sees herself as a stronger learner and more focused teacher as a result of this training.

I.J.'s learning crosses over from school to life and back to school again. What she learns out of school, she brings to her interactions with students. From our two interviews, I have a good sense of I.J. as a learner. She is aware of her own learning, and puts her knowledge into practice. I.J. sees teachers as "prime examples" for children. As such, we must be "living what we're doing or what we're talking about all the time." Since she expects her students to be independent learners, she is one as well.

K.L.

K.L. is a teacher who seems to be aware of her own learning, and who enjoys her own learning. A Math Solutions summer class helped her focus on how learning happens. "It was real interesting to go through that as a learner. And then to see how my own students are doing the same kind of process."

A more immediate learning experience is the multi-age classroom she is in. "Here I was put in a situation where I had to learn all over again, in a different way." She especially enjoys watching learning over time, which she gets to do as her students stay with her for three grades. "What I see is not just what's happened since August, but it's what's happened since two years ago in August. And that's what's really exciting for me."

One of the most important aspects of learning for K.L. is that it happens in community. She finds this community among her colleagues. She is encouraged in her learning by "the support of colleagues, other people who are also interested in learning, and who like challenges and like doing new things and want to keep on growing." She also finds community within her classroom. Although it has been challenging, the enthusiasm she has about learning "just continues to cycle itself with the kids and with me, and it's just a continuous process of rejuvenation. Feels good!"

K.L. did not share any learning stories outside of the school setting besides her Math Solutions class. I commented on this in my summary of our interview. She responded, "I do lots of learning at home, too. My teenagers teach me something new each day! We learn together-- through communication and 'give and take.' There didn't seem to be an opportunity in our interviews to discuss much about my home life." I regret this; since her picture of learning in school was so rich, I expect that it is similar out of school.

K.L. sums up my own beliefs about why teachers must be learners. "If you've felt successful in the past with your own learning then it gives you a much broader base to be able to help other people feel that success." I see K.L. as continuing to strengthen her learning base, and sharing that eagerness to learn with students, colleagues, and myself.

Discussion of Findings

In my second interview with K.L., I made an analogy between hiking in the desert, and learning in life. Some people go hiking to clock the miles-- they walk head down, very fast, do not converse with their hiking partners, and only want to reach their destination. Other people hike slowly, looking around at scenery faraway and nature close up. They notice all kinds of things, and sometimes fall down because they're not paying attention to the trail. They talk with their fellow hikers, wondering aloud about what they see, and learning from each other.

Most of the teachers I interviewed are more like the second hikers than the first. They are interested in what they are seeing, in and out of school. They feel some pressure to reach a destination, but are determined to go slowly and look around, and to resist that pressure. They encourage their students, their fellow hikers, to do the same. Interestingly, I found that outside of school their hiking companions are primarily their families.

Of the stories these teachers told concerning learning outside the school setting, all of them had to do with their families. A.B. told about learning to understand her baby son. C.D. briefly mentioned his son's soccer playing, and that he watches him set high standards for himself. E.F. was learning needlework from her sister, and learning a computer program to teach her husband. G.H. was deeply involved in working through her relationships with her sisters. I.J. was learning that her children are her priority. And K.L. said that she learns daily from and with her teenagers.

This focus on the family is enlightening because it shows that one's family is one's immediate community in life. And every learning theory I presented earlier emphasized the importance of community in learning. The Goodman model of a learning cycle includes presenting, which is done by the learner for herself but also for her community of learners. Short and Burke's Authoring Cycle includes presenting and sharing meaning with others. My own theory includes reflecting with others. And while Smith's model does not explicitly state the need for community, it is from one's learning community that one gets the feedback necessary to accept or reject one's hypotheses. Therefore, each of the six teachers I interviewed is a learner in their own family learning community.

In addition, every teacher I interviewed expressed their need for a learning community in one way or another. A.B. said, "For myself, [the best circumstance for learning to take place] is bouncing ideas back and forth with people." C.D. stressed the importance of a good class climate, built through communication and good rapport. E.F. said, "If you have real cooperative groups of kids that get along and encourage each other. . . I think a lot more learning takes place." G.H. stated, "I believe we learn from each other, we don't learn in a vacuum." For I.J., learning how to critique and to take criticism from fellow learners was important for herself and her students. And K.L. had much to say about the benefits of "talking with people, sharing ideas." Every teacher expressed the need for community in learning, regardless of their view of knowledge or their general learning theories.

These six teachers are indeed learners, both in school and out of school. Their learning out of school is of most interest to me. Eisner (1991) writes that the important effects of schooling are not the performances of children in school, but "are located in the kinds of lives that children lead outside school and the kinds of satisfactions they pursue there" (p. 11). I believe the same is true for teachers. If we are learners, then what we do as teachers is only part of our learning. Some teachers told me more than others about their learning out of the school setting. However, every teacher told about learning with their families, which supports their statements about a learner's need for a community in which to learn.

While I believe that these six teachers are learners in and out of the school setting, what my third question really asks is do they see their learning as being the same wherever they are? Is their learning as teachers different than their learning as family members or as individuals? I believe that four teachers, A.B., G.H., I.J., and K.L. do see their learning comprehensively. The learning they do on their own, unrelated to teaching, is the same kind of learning they do as teachers and that their students do. They each talked about their experiences as students, and how their awareness of their own learning helps them understand their students' learning. Two teachers, C.D. and E.F., seemed to distinguish between their learning as teachers and their learning unrelated to school. C.D. barely mentioned his learning out of school. And before our interview, E.F. had not connected her learning of a computer program, for example, with what she asks her students to do. These two teachers exemplify what I see as a gap between views of learning in school and learning out of school. Awareness of their own learning on the part of teachers can help to close this gap.

Summary

Three questions guided my study, and helped me analyze the interviews and understand my findings: How do these teachers believe learning happens? How clearly do they express these ideas? And who are they as learners themselves? In this chapter, I took each question one at a time, and discussed my findings teacher-by-teacher as well as over all.

In asking my first question, I found that it was helpful to imagine a continuum with the constructivist view of knowledge on one end, and the objectivist view on the other. From the teachers' descriptions of their beliefs about learning and knowing, I found that two were close to the objectivist end, one was near the middle, and three were close to the constructivist end of the continuum.

The teachers' statements fell into three categories: what learners do, what learners need, and what teachers do. I found that the teachers with a constructivist view of knowledge had the most to say about what learners do, since in that view the learner is the active agent. The teacher with the strongest objectivist view of knowledge had much to say about what a teacher does, since in that view the teacher is the active agent. All of the teachers stated in some way that learning requires active involvement on the part of the learner-- "use it or lose it" is another way to say their general idea. And most teachers believe that prior knowledge and experience plays an important part in learning.

My second question addressed the clarity with which these teachers expressed their beliefs, and the authenticity of their beliefs. I recognize that my statements about their authenticity must be held lightly due to the intuitive and often obscure nature of implicit beliefs. However, in my view most teachers I interviewed expressed beliefs which are part of their personal conceptions, and not simply restatements of public or scientific concepts. They supported most of their statements with stories or explanations. For two teachers, talking about their beliefs in this way was a new experience. But four teachers had recently had opportunities to think through their beliefs with colleagues. I found it interesting that these four teachers are the ones I believe to hold constructivist views of knowledge. Perhaps their view of knowledge as constructed by the learner caused them to seek out experiences in which they were not just given information, but in which they were encouraged to explore their own questions and beliefs. And perhaps these opportunities to share with their peers enhanced their understanding of their own learning and shaped their view of knowledge.

My third question is almost the most important, since it extends beyond the school setting to the teachers' lives. I found that three teachers recognized the value of being students themselves, stating that being aware of how they learn helps them understand how their students learn. Although the teachers' learning stories were set mostly in school or in teaching, they all at least mentioned important learning experiences with their families. This was interesting to me, since they also talked about the importance of community in learning. Their families are their learning communities outside of school.

For two teachers, though, there is a visible gap between learning in school, and learning out of school. Lester and Onore (1991) also found this gap in their work with teachers. My original hypothesis for this study was that teachers must be aware of their own learning, and recognize that they are learners themselves if they are to encourage others to learn. In my study, the four teachers who are most aware of their own learning, and who take a constructivist view of knowledge, also see a strong connection between their own learning and their students' learning. Therefore they can demonstrate learning to their students in meaningful ways, as Lindfors (1987) describes. These teachers "know about how people learn; even more important, [they] have had substantial experience doing it [themselves]" (p. 299). They support my hypothesis that teachers who are aware of their own learning bring that awareness to their classrooms and foster authentic learning in their students.

CHAPTER 5

SUMMARY, OBSERVATIONS, AND RECOMMENDATIONS

Summary of the Study

This study originated out of the conviction that teachers, who promote learning daily, must be active learners themselves, curious about the world, and taking a stance toward the universe of "constant engagement and learning" (Graves, 1990, p. 105). We must be people who watch ourselves learn, and who are aware of our own learning. This is my primary hypothesis for the study.

The questions which evolved to guide my study are:

How do teachers believe learning happens?

How clearly do they express these ideas?

Who are they as learners themselves?

These questions allowed me to think not only about what the teachers' stated beliefs are, but to examine their personal constructs and to hear their personal learning stories.

My own construct about learning became more clear as I read the professional literature relating to my study. I realized that I could not separate a theory of learning from a theory of knowledge. Several theorists were helpful in clarifying two views of knowledge. Lester and Onore (1991) describe constructivist and objectivist views. The constructivist view is that knowledge is constructed by each learner through meaningful experience. Facts may be a part of knowledge, "but without a knower, facts have no life" (p. 82). In other words, knowledge is not an entity outside the learner, but is part of the learner. In the objectivist view, "facts are equivalent to knowledge" (p. 82), and knowledge is received by the learner from someone who knows-- a teacher or an expert. Lindfors (1987) also makes this distinction between views of knowledge in describing language acquisition. In the behaviorist view, "learning occurs entirely through the action of the environment shaping the individual's behavior" (p. 97). In the interactionist view, on the other hand, the social nature of learning is stressed. The learner is "in active engagement with his physical and social world" (p. 108) and is making meaning for himself. Harste, Woodward and Burke (1984) describe similar views using the terms behavioral and transactional. Their description of the behavioral view is similar to Lindfors', in which the child is passive, and language is delivered to him. The learner must acquire knowledge. The transactional view they describe is similar to Lindfors' interactionist view. Language is learned through interpretation, and the learner is actively making meaning. I myself take a constructivist/interactivist view of learning. As a learner, I want to be actively seeking meaning and creating knowledge through experience. My hypothesis that teachers must be learners is based on this view of knowledge.

In this study I was interested in teachers' beliefs about learning. However, the view of knowledge that a person takes most likely determines the theory of learning that person has. Therefore in my study it became important for me to find ways to understand each teacher's view of knowledge.

I selected six elementary school teachers to interview from the district I have been working in. Selection was made with the help of the district's reading specialist, and was based on three years of teaching experience, and on general philosophical orientation. In order to have a varied group, the reading specialist selected teachers who would call themselves Whole Language teachers, and teachers who would see themselves as more typical. This distinction was made only during selection; it is irrelevant for the rest of the study.

I borrowed ethnographic techniques to design and carry out my interviews. Each teacher was interviewed twice, once for about 45 minutes, and the second time for about 30 minutes. In the first interview, I asked nearly all my interview questions in an attempt to hear the teachers' general beliefs and to cover the range of aspects of learning. For the second interview, I asked the teachers to read through their key statements from the first one, and to respond to them or add to them.

The interviews took place mostly in their classrooms after school. The advantage of this was primarily convenience, and the formal setting of the classroom kept the interviews on a serious note. The disadvantage was that the location encouraged teachers to see my interest in learning as primarily an interest in school learning, or in their learning as teachers. Most of the learning stories, therefore, were about learning in the school setting.

The interviews were conducted one to three weeks apart, over a period of three months. Each interview was recorded on cassette, and transcribed for analysis.

My analysis included reading through the interviews several times, listening to the tapes again, and reading related literature. I also summarized interviews for two reasons: first, I was able to think about what each teacher was saying. Also, I returned the summaries to the teachers for comment. As additional analysis, I pulled what I determined to be key statements and the examples which supported them from the interview transcripts, and looked at those statements more closely. Using charts, I organized them to find what the teachers were saying about how people learn in general, as opposed to what learners need, and what teachers do.

The three questions I asked at the beginning of the study were useful in analyzing the interviews. I asked each question of each teacher, and discussed my finding accordingly. While the three questions were fairly comprehensive, I realize that as a researcher I made inferences from and interpretations of what the teachers said. In describing their personal constructs, I formed my own personal construct about teachers and their beliefs about learning. And like any personal construct, mine is still open to revision and further questioning.

Observations

Torbe and Medway (1981) write that "establishing a generalization counts as a successful conclusion to a search" (p. 14). After carefully considering my three questions and what I found in asking them, I have three main observations to make about teachers' beliefs about learning.

The first observation has to do with teachers' familiarity with their beliefs. Each of the teachers I interviewed used our interviews as an avenue for exploring their ideas about learning. However, two teachers seemed to be doing this for the first time, while four teachers were doing this as an extension of previous discussions and explorations with others. These four teachers were involved in either the district's Career Ladder program or a Reading Recovery program. I am not advocating these programs as being necessary to teachers' awareness of their beliefs, but I am pointing out that the teachers who were involved in these kinds of programs had more recently had opportunities to reflect on their beliefs and practices with their colleagues. The other two teachers told me that they were not used to discussing their beliefs, but neither were they involved in long-term commitments with their peers in which they would have opportunities to share ideas.

Lester and Onore (1991) emphasize the importance of collaborative exploration of beliefs. In their study they discovered that when teachers shared and discussed their stories, they reached new levels of understanding. "Such collaborative moments launched conversations, which became the basis for building a common vocabulary and ongoing conversations about learning" (p. 102). This kind of collaboration involves a longer commitment of time and energy than most workshops or inservices demand (Short and Burke, 1991). This may be why the Career Ladder program and the Reading Recovery training, both lasting at least one year, helped those four teachers reach new understandings about learning, whereas the occasional workshops that the other teachers mentioned did not foster deep thinking about their beliefs.

It is interesting that the four teachers whom I believe to be constructivists are the four who pursued these extensive and involved learning experiences. The two teachers who seem to hold an objectivist perception of knowledge are the two who were the most unfamiliar with their beliefs about learning.

My second observation has to do with what teachers said about what learners need. I created a chart to help me categorize the teachers' statements about what learners DO, what learners NEED, and what teachers do. In Chapter 4 I discussed some of the interesting similarities and differences which surfaced when the lower left hand squares of the charts were compared. Those squares contain statements about what ALL learners do in general. However, it is also interesting to note that every teacher had a fair amount to say about what learners NEED. More specifically, every teacher commented extensively on the need for a good learning environment.

According to the teachers I interviewed, a good learning environment is one which is safe physically, emotionally, and psychologically (D.A., G.H.. I.J.). It is an environment in which the learner is not punished for making mistakes (E.F.), and in which there is good communication between the teacher and students (C.D., I.J.). The environment is stimulating mentally (G.H.) and involves as many of the learner's senses as possible (A.B., E.F., G.H.). It is an environment of cooperation and collaboration (A.B., E.F., G.H., I.J., K.L.), in which social skills are emphasized in order to build community and encourage interaction (C.D., I.J., K.L.). This emphasis on learning environment leads me to wonder why this is such a strong part of the teachers' beliefs about learning. I believe this is because typically the environment is the only thing that teachers have been able to control or change. In an educational system in which teachers are often controlled by administrators and planners (Doyle, 1990; Shannon, 1983; Darling-Hammond and Wise, 1983), the teachers have had more choice about how to create a classroom environment than they have had about what to teach or how to organize their time. These environmental decisions and ideas, therefore, have become part of our common or public conceptions about learning, and are central to our beliefs about learning.

My third observation has to do with the gap or difference between learning in and out of school. In our interviews, the teachers talked mostly about their learning in the school setting. On the average, they told two stories about learning in school for every one story about learning out of school (for a list of the stories, see

Appendix B). One reason for this is that we were sitting in classrooms during our interviews, and that could have been enough to steer our conversations toward school topics. Another reason, though, could be that as teachers we tend to pay more attention to learning in school, since that is what we are evaluated on and what we work hard to promote. Learning outside of school may seem relatively less important, since we cannot see our students learning outside of school, and we often feel pressed for time in our own learning outside of school. Also, learning may be more noticeable when it occurs in a formal or structured setting, such as school. Teachers may not be aware of the incidental or informal learning that happens continually in their lives.

My three observations stem from my findings in the interviews. First, some teachers are more familiar with their beliefs about learning than others. This is related to the opportunities they take to share and discuss with their peers over time, and also to their view of knowledge. Second, every teacher emphasized the need for a good learning environment in school. I believe this reflects the distribution of responsibility in schools: teachers are often more responsible for creating an environment or climate for learning, than they are for creating curriculum. Third, the interviews show that there is a difference between learning in and out of school. The teachers talked more about learning in school than they did about their own learning over all. This could be because they thought that was what I wanted to hear about. It could also be because they are not as aware of their own learning when it is not in a formal or structured situation, such as school. From these three main observations, I would like to offer some recommendations for change and action in our schools and in our lives as teachers. These recommendations will serve as concluding remarks for this study.

Recommendations

My first recommendation, based on my first observation, is that teachers be given more time and encouragement to discuss beliefs, share experiences, and study professional literature. I found in this study that the teachers who had had such opportunities were more familiar with their beliefs about learning and knowing than those who attended workshops once in a while. The teachers who were not involved in long term programs may have felt that they did not have enough time, or that occasional workshops were sufficient. The question of time was addressed by several of the teachers I interviewed, who expressed frustration that they were required to do so many things besides teach. Teachers interviewed for other studies expressed similar frustrations (Macrorie, 1984; Lester and Onore, 1991). Elbaz (1983) writes, "While teachers may often rehash and compare experiences, they in fact have little experience that is shared, and there are few opportunities for them to reflect on and attempt to articulate their experiences in an organized way" (p. 11). I.J. pointed out that teachers are often asked to join planning committees aimed at involving them in important decision making.

However, these very committees can distract teachers from doing the indepth study and reflection which they must do if they are to be learning themselves.

I recommend, therefore, that time be given to teachers to address their first priority: learning and knowledge. Teacher support groups, literature study groups, and even electronic bulletin boards should be commonplace. I can imagine meeting with a group of teachers from my school, perhaps in a public library or at the university, to discuss a professional book that we had just read. I can imagine leaving my classroom to meet with a support group of a few teachers in the district who are committed to meeting on a regular basis. We become friends and helpful colleagues, and I know that I will have a chance to show them my latest curriculum idea and ask their opinions about it. I know they need me to listen to their ideas and to give them truthful feedback. Short and Burke's (1991) emphasis on long term involvement and collaboration is key. Lester and Onore (1991) worked with teachers for three years, and were just beginning to see change. The occasional workshop is insufficient for indepth examination of beliefs and theories, as my study shows.

The aim of this kind of long term collaboration is not to come away with a common belief about learning and knowing, nor to develop common methods of teaching. Instead, the aim is for teachers to understand other's beliefs, to realize that others see things differently, and to explore and test their own beliefs. The aim is also to enjoy learning together in the same ways that we want our students to learn together.

My second recommendation, based on my second and third observations, relates to my main hypothesis. I suggest that as teachers we develop our theories of learning and knowing to include the ways in which we learn and know for ourselves. My study showed that some teachers do not connect learning in school with learning out of school; the learning environment they describe as necessary for learning in school is not described as necessary for their own learning. I believe, however, that learning follows the same basic processes whether we are in formal settings or informal ones. We are first individuals, persons, and then we are teachers. We learned first as children ourselves before we were ever teachers of children. All of the teachers I interviewed believe that adults and children learn in basically the same way, although there are differences in degree or rate of learning. This should point to a strong connection between their own adult learning and their students' learning, whereas that connection is sporadic: some teachers make it, and some do not. My main hypothesis is that as teachers we must be aware of our own learning if we are to help others learn. In that case, our own learning comes first, and we see others' learning in light of our own. Elbaz (1983) writes that her most important finding in her study with Sarah is that "it is possible for teachers to become aware of and articulate their own practical knowledge, and that this process can lead to greater self-understanding and professional growth"

(p. 170). Similarly, one of my most important findings is that five out of six teachers described clear beliefs about how learning happens, but that only two of them made a direct connection between their awareness of their own learning and their students' learning. My recommendation is that we work towards strengthening this connection and towards an increased awareness of our own learning.

"We" in the last sentence refers to teachers, researchers, and teacher/researchers. My third recommendation has to do with the work ahead of us. The role of teachers' implicit beliefs and theories has been long neglected in research on teachers (Clark and Peterson, 1986). However, I believe that the climate for this kind of research is becoming more favorable, and that we can add to our knowledge about teachers' theories and beliefs through creative and rigorous approaches to research.

In this small study I learned enough about teachers' beliefs about learning to have some additional questions, and to envision some other directions for research. What would I see if I observed each of these teachers in their classrooms? What would I hear if I met with these teachers in an informal setting away from their classrooms? What kinds of discussions would come about in a literature study about learning with children? With teachers? What are administrators' beliefs about learning and knowing? What are the similarities and differences in administrator/teacher and teacher/student relationships? I am reassured by these questions, since the learning theories I studied show that the learning cycle is perpetuated through the creation of new questions.

Conclusion

I began my report by stating my hypothesis that teachers must be learners themselves if they are to help others learn. It is important for everyone, but especially teachers, to be aware of how their own learning happens. At the conclusion of my report, I see that my hypothesis is still very important. Each of the teachers I interviewed reiterated it in some way. A.B. stated that as teachers we must be learning and growing all the time. C.D. and E.F. each made it clear that it was important to them as teachers to keep current in the field of education through workshops and inservices. G.H. and K.L. both stated that an awareness of their own learning helped them understand how their students learn. And I.J. sees learning as central to all of life, and her own learning directly affects what goes on in her classroom. In general, the teachers I interviewed were intrigued by my questions about their beliefs about learning, and they all expressed an interest in pursuing the subject further for themselves. Teachers' constructs about learning and knowing, including my own, are always evolving and changing. I am certain that my study played a part in helping at least six teachers examine their personal constructs about learning.

APPENDIX A
EXAMPLE OF INTERVIEW SUMMARY

G.H. Interview #1

I began by explaining my project to G.H. briefly, and mentioned that a discussion about beliefs seems appropriate after all they had been through at N. in the last few months.

G.H. thinks humans learn by observation, by mimicry, by being in a safe yet challenging environment, and by questioning. People learn when they come up against discrepancies in what they already perceive-- something that doesn't fit into the concept they have in their head (p.1). She believes people learn through active involvement, and that we learn from each other(p.2). In making these statements she had her own learning in mind. She is aware of how she learns and why, especially since that is what she tries to do in her classroom (p.2). What seems right for her as a learner is often right for her students as learners (p.2).

Something G.H. has learned recently involves a group counseling session she participated in with her three sisters last Christmas. They met with a counselor that one sister had been meeting with, and who wanted to talk to all of them together. G.H. looked forward to it, expecting the session to be interesting, enjoyable, fun-- the highlight of the trip (p.3). They talked for three and a half hours. When they first started, G.H., feeling a little frightened, made a couple of jokes to relieve tension, and the counselor's comment on that brought them right into the thick of things (p.3). G.H. said the session was "extremely painful in a lot of ways, lots of crying, lots of coming face to face with things that I really didn't want to look at" (p.3). She learned some perceptions that her sisters had of her, that she hadn't been aware of (p.3). She learned about her coping strategy of keeping things light (p.4). She had been trying to write about her childhood, and encountered some gaps that she couldn't remember or fill, and she was hoping the session would help her with that (p.4).

As an extension of that session, her sisters were going to spend a week at her house in June, to continue the conversation. She sees that as an opportunity and a gift, even though it is frightening (p.5). She described how one sister perceived closeness among the others, and felt like an outsider, even though it was she who had chosen to move away (p.5).

I mentioned that her counseling with her sisters seemed like a good learning situation. We thought together about how learning happens through being thrown off-balance and having to restore balance. I wondered whether learning would happen if everything was always in balance and comfortable. G.H. thinks it would not. I said that disequilibrium pushes you forward, and G.H. agreed that in her relationships with her sisters that has been the case.

We discussed adult and child learning, which G.H. thinks are not necessarily different (p.7). She gave the example of a conversation she had with her husband, who was making the point that while adults can learn through long lectures, kids need more active learning (p.7). She disagreed with him, and said "I just know how much better I understand, I clarify my thinking if there's somebody to talk to about it, if it's cooperative, if there's a social aspect to it..." (p.7). She appreciated the Saturday meetings we used to have because she was able to present her ideas to a group of friends, who would give her feedback (p.7), and "it would make me rethink things again" (p.7).

I gave a similar example of talking with my husband about reading and education. G.H. said her husband also has learned a lot about his own learning by talking with her (p.8). For example, she helped him understand his own learning style. For him, reading is not the best way to learn. G.H. told a story about a time when he was trying to repair the faucet using written directions, and it didn't work out. He would rather have watched someone or talked with someone about it (p.8).

We discussed learning styles for a while. G.H.'s idea of them was that they are almost genetic, that a person's learning style is part of them, like being left-handed (p.9). I told her about a handout given to me by another teacher, about Multi-Intelligence. He was going to use it to assess his students. G.H. knows about kinesthetic, visual, and auditory learning styles. When she talked about how they fit into her teaching, she said, "When I think about the classroom, I've been aware that it's important to have as many of the senses used as possible, so that if they can see it and they can hear it and they can somehow manipulate.... because I guess I tend to believe that even if you know your primary receptor or whatever is one style, that the more you can appeal to, whether it's your sense of smell, or..." (p.9, 10). G.H. and I both came to the idea that learning style seems to be more related to sensory perception than to the actual process of learning (p.10). I wondered if a learner's preference for sensory perception-- hearing, touching, seeing-- was developmental or environmentally conditioned (p.11).

We each gave an example, though, of a situation that was unexplainable to us, where it seemed that the problems the learners were having were not developmental or environmentally caused, but somehow intrinsic. I gave the example of my father's reading, and G.H. gave the example of her son's reading. She didn't understand where his problems with reading originated, because reading had been part of his life from the start, and learning to read had been so easy for her. "I can remember going in my room when I was a little kid and saying I wasn't going to come out until I knew how to tie my shoe and read a book. And laying down on my stomach and reading *Little Black Sambo*, and Cindy, honestly, all of a sudden I just knew what the code was" (p.12). When her son didn't read before he went to school, she thought, "What do I do? How can people not know how to read? It's so easy" (p.12). We didn't really come to any conclusions about these kinds of situations.

Soon after this we ended the interview, because I had to leave. But like good friends, we couldn't stop talking, and the conversation came back around to school and learning and teaching.

I asked G.H. where she thinks her beliefs about learning have come from. Her immediate response was, "From being a teacher. No question about it" (p.14). Also, she tends to do things that work for her as a learner. As she said, "I do tend to create universals from the very specific" (p.15). It has helped to have a student teacher-- she has had to articulate things that otherwise would just be done intuitively (p.15). Career Ladder also helped her learn how to explain everything she did in the classroom. She thinks that it's important to put things into words. She extends that idea to her students, asking them for reasons behind their actions (p.16).

G.H. talks with her students about their strategies for solving problems, helping them think out loud about things (p.16). She tells them, "Not only do I think it helps other people in our class, but I think that it makes you a better thinker when you have to do that. When you have to really pull for those words and try and really get it as clear as you can and make your choice of words" (p.16).

I mentioned that the next time I teach I want to start off by helping the students understand their learning process, to be aware of it. G.H. talked about helping her students understand differences in learning or abilities, and how we compensate or cope with them. For example, while reading is easy for her, initiating conversations with people is very difficult. For some students it's the reverse.

We ended our interview for the second time here, and planned our next meeting time.

G.H. Interview #2

I read through with G.H. what her statements about learning had been; there was one, "by being sure of themselves," that I had deduced from other statements, and she wasn't sure she agreed with it. "It's interesting, because when I look at being off balance and then being sure it's almost like we're talking about two different..." (p.2).

I asked G.H. if there is a sequence to her statements, and she didn't think there was one in particular. When she was saying those ideas, she had babies in mind (p.3), so in a way she was talking about their development.

After our first interview, she thought more about learners having choice, "having that buy-in where they make the choice that they WANT to do this" (p.4). She gave the example of her students doing research. They choose topics and books that she wouldn't necessarily choose, and she thinks the whole idea of ownership and choice is important (p.4).

It could be that students can learn something just by being exposed to it, but "for optimum learning... you want that engagement" (p.4). When she wants to teach something that's a new concept, she asks her class to look at her and keep their hands still, even though she still doesn't know whether they are listening or not (p.4).

Even though she disagrees with the idea that things can just "soak in" to children, she thinks about how quickly they pick up on what's acceptable and what's not, "with social things or procedures in our room, things we just don't do, but I'm sure all their little antennae are out, trying to fit into that environment that's new to them" (p.5). Motivation and interest are closely linked in G.H.'s view. The teacher can motivate a student, "hook them in," (p.5), get them excited about a topic, and use that topic to teach them important skills (p.5). I added a comment to that, saying that if a teacher had an interesting question, I was usually willing to take on that question and learn about that topic, too.

We discussed the importance of posing questions. G.H. enjoys it when her students ask questions she's never thought about, and finds herself "peering over their shoulder and getting into their books" during research (p.6). And as soon as questions are posed and interest is up, then your awareness is raised. Suddenly you notice everything having to do with your question (p.6).

I commented on the "awareness that begins when you start asking questions and setting yourself on a track" (p.6). G.H. gave an example of this: when they were going to get a dog, she read about so many varieties that she could identify dogs she saw on the street (p.7). I told G.H. she had just described "transfer", where "you learn something in one context, and you obviously know it well enough to use it in a different context" (p.7). In connection with this, I asked G.H. what, besides transfer, is evidence that learning has occurred.

The change in questions is one signal. "You learn a certain amount and then you know a better question to ask, which then leads you in the direction of something else, and then you know a better question" (p.7). Another indication of learning is application, and when kids teach someone else (p.8). She gave an example of transfer, when a student learns how to spell a word, then can help another student spell a similar word (p.8). Another example to show learning had occurred involved two students doing research in different subjects, but who could find similar things to discuss about their topics because they knew enough details to make comparisons (p.8).

I commented that it was interesting that she had not added testing or written evidence or grades to her list of evidence that learning had occurred. We discussed portfolios, and G.H. said that another important aspect of learning is self-evaluation, being critical, learning how to see their growth (p.9). She talked about showing a student a pre-rubric score for their presentation, and going over the criterion for a Rubric 4 with them. She sees that her students are developing the ability to determine what constitutes quality work and what can be improved (p.9). It is important as a learner to be able to judge your work by some standard (p.9).

I told G.H. about the idea presented in *Learning Change* of being immersed in learning AND stepping back to look at it from a distance. She said that has been an important change that has come about for her, and for education in general (p.10). For her, cooperative learning was one of the first times she realized that it's important "to stand back and say, 'Okay, how did it go? What would we do differently? What would we work on more next time?' " (p.10).

Knowing that G.H. has taken classes at the University, I asked her to tell me about a teacher she remembers, and how that teacher treated her as a learner. G.H. described two pivotal classes, one when she was first starting back to school, and one later on. In the first one, a Chemistry class, the teacher helped her see that with persistence, she could succeed and learn. He didn't cut her down with a quick grade, but let her keep on trying (p.12). The other teacher impressed her, as did a third (Kathy Short) because they used the same methods to teach their own classes that they were encouraging their students to use. They accorded dignity to people (p.12). She admires the way Kathy Short did things, "that she was so accessible, and that she was so willing to risk, willing to share, and being able to take that right into the classroom and practice those things that she had modeled" (p.13).

I mentioned that what I appreciated about K. Short's class was that she allowed us the time to do what WE valued. G.H. added an example of that idea from a former class of hers. She is "very aware of trying to give blocks of time where you can be doing something of your choice.... I think it is an important message to give, that if this is worth doing, then you need to have time to do it" (p.14). I gave the example of how long it took me to illustrate the book I made for a class project, and she gave a similar example of a boy in her class who has a flair for drawing.

I asked G.H. how she thinks her students view her as a learner. She said they think she likes to read, that she is interested in a lot of things; that they know she is a learner, that she'll take risks and do things that are difficult for her (p.16). She feels she models learning as something you do all your life. She talks to them about things she does outside of school, and about what she would like to learn (p.16).

G.H. asked her students to write what they think <u>she</u> thinks is important about learning in school, since some of them have spent two years with her. She wondered if they wrote what they thought she wanted them to write. But a lot of them wrote "that they knew I wanted them to be self-directed learners who would always learn... and that I thought reading was important" (p.17).

G.H. is doing a lot of reading for herself: a novel, a professional book, news, and magazines.

APPENDIX B

LIST OF TEACHERS' LEARNING STORIES

	LEARNING IN SCHOOL	LEARNING OUT OF SCHOOL
A.B.	Reading in grade school; Planning with colleagues; Students writing Journals; Teacher making mistakes; Teaching reading in 1st grade; Reflecting on outcomes plan and rubrics; Assessing journals; Power of having expectations; Working as a team vs. alone; Breaking away from basal;	Feeding her son; Husband's and her learning styles; Learning through her child;
C.D.	Integrating materials from a workshop; Developing a writing lesson; Seeing growth through test scores; Reading Charlotte's Web; Adapting lessons to fit the students Scoring 100 on the Math Challenge; Techniques for memorization; Memorizing months of the year; Charlotte's Web as experience; Moving towards literature approach; Going to the library with questions; Practicing handwriting on checks; Assess kids using Multi Intelligence index; Teachers not valued enough; Feedback from kids through letters;	Son setting high standards; Learning about what interests him;
E.F.	Having kids explain to each other; Learning in non-threatening envir.; Making mistakes as a teacher; Advancing from easier to harder; Assessment after each lesson, using tests and discussion; Strategic planning; Even EMH kids can learn; Learning through workshops; Learning in a cooperative group; Making multiplication relevant; Using skills in life, or forget them; Memory jogged by smells, events; Mind like a computer; Seeing a good teacher; Involving visuals, writing, etc. to include all learning styles;	Learning counted cross stitch; Learning a computer program; Learning when you're interested;

	LEARNING IN SCHOOL	LEARNING OUT OF SCHOOL
G.H.	Including all the senses in lessons; Good readers bombing the ITBS; Helping students articulate their reasons and strategies; Students solving a problem as a group; Students' strengths and her strengths complement each other; Kids listening-- but are they really Kids fitting into a classroom when they're new; Deciding whether to teach dinosaurs again; Students choosing research questions that she is interested in; Kids researching and comparing findings; Kids evaluating work using rubrics; Used to teach without stopping to evaluate together; Giving enough time to do good work;	Counseling session with sisters; Writing poetry to explore memories; Future visit with sisters; Discussing learning with husband; Remembering support group; Discussing learning styles with husband; story of following directions; Her children learning how to read; Learning how to read and tie her shoe; Questions raise her awareness; learning about dogs with her kids; Two classes at the University;
I.J.	Calm tone in the classroom; Discovering a kid's hearing problem; Teaching kids responsibility; Assuming kids understand what she means; asking them if they do; Reading Recovery training; Having to set academic goals with first graders; First graders asking for play time;	Redirecting priorities and energy; Pulling back, doing less; Deciding to stop smoking; Hearing a conversation in a plane; Being a "watcher" as a kid; Making her kids a goal and priority; Going to school as a kid; Deciding to be a teacher; Starting to read again; Little girl practicing "linking" at home; Experience of learning from Reading Recovery teacher;
K.L.	Kids asking questions at the end of a unit; Watching kids grow over three years; Students writing books and sharing them; Working with kids who have different abilities; Kids teaching each other; Boy learning to write through writing with a friend; Sharing during Author's Chair time; Boy telling his mother he likes challenges;	Going to a summer Math class; Where her beliefs were formed;

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