STUDENT TEACHER THINKING:
THE DEVELOPMENT AND CONTENT OF PRACTICAL THEORIES

DISSERATION

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the Degree Doctor of Philosophy in the Graduate
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By

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*****

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TO MY PARENTS

Margaret Botkin Wright
And
W. O. 'Bill' Wright
For Unceasing Love and Support
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The list of people who have had special participation in my graduate experiences is long. Although I can mention only a few of them specifically, my sincere appreciation goes to each of them.

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CHAPTER I

Introduction

Background

Recently researchers have been accumulating evidence that teachers have and use personal practical theories regarding their classroom decisions (Elbaz, 1983). Decisions are made continuously throughout the day based on these theories and are concerned with curriculum, instruction and the nature of children. Shulman (1984) has characterized the classroom task environment as more complex than that faced by a physician in a diagnostic examination. This highly complex teaching environment, in elementary classrooms for example, includes teacher responsibilities for teaching all subject matter, decisions about what to teach, how long to spend on a topic, how much practice pupils need, and non-teaching decisions (e.g. how to take lunch count, maintain records, collect book and lunch money, supervise pupils during lunchroom or playground duty, maintain discipline on field
trips, etc.). As described in the research on teacher thinking, planning and decision making, this complexity includes hundreds of decisions made by a teacher each day (Elbaz, 1983), many fraught with value conflicts, uncertainty and instability (Schon, 1983).

Decisions are often required immediately, while teaching is actively occurring, putting teachers on the firing line. It is estimated that teachers make about 10 nontrivial decisions per hour, which occur in environments where they have fifteen hundred interactions per day with different children on different issues while simultaneously supervising twenty or thirty students in class work (Berliner, 1984). During the interactive teaching phase alone, Clark & Peterson (1986) estimate that one decision is made every two minutes. In the reality of the classroom, teachers do not have the luxury of time to ponder or reflect on alternative solutions or actions, but often must act instantly to solve problems that scholars debate (Fuller & Bown, 1975). In addition, value conflicts based on multiple commitments in the role of teacher cause further practical dilemmas. For example, the list of stakeholders to whom a teacher owes allegiance
includes not only herself or himself, but the pupils and their parents, colleagues, the school administrators, social agencies, the community, and society at large. Balancing the often delicate political choices between the teacher's own values and beliefs and the demands of the milieu exacerbates teacher decision making. Within the classroom, problems requiring decisions may be as minor as determining what children will do during lunch count or dealing with interruptions by outsiders, or as complicated as deciding whether to abort lesson plans in favor of a "teachable moment," or catering to the specific requirements of a single student who may not be allowed to participate in common celebrations within the class.

In solving these dilemmas teachers build a repertoire of personal practical knowledge about how to get the job done (Clark & Lampert, 1986). These theories-in-action (Schon, 1983) constitute the accumulated experiences of what works for the individual teacher. Shaped by the context, decisions teachers make are concerned with individuals who "bring their whole selves to the learning situation and are constantly changing those selves in interaction with one another" (Clark & Lampert, 1986).
Kelly (1963) suggests the way in which persons operate in the world is dependent on their personally construed views of that world. This constructed personal theory provides a theoretical background against which teachers explain and justify their actions, make decisions and resolve real problems. As McCutcheon (1982) points out, teachers must develop personal theories appropriate to their personalities, beliefs, values and unique situations to guide them in their daily decisions and actions. Anybody engaged in teaching must already possess some 'theory' which guides practice and makes it intelligible (Carr & Kemmis, 1984, p. 111). However, according to Sanders & McCutcheon (1986)

"... inexperienced and untrained persons cannot do the same thing for two primary reasons: (1) they are not able to perceive and interpret the professionally significant features of the situation, and (2) they lack the knowledge that enables a practitioner to choose actions that are appropriate in these circumstances for producing desired consequences."
(p. 54)
Clarification of Terms

Theory

One view of theory is that it exists to be translated into practice (Pinar & Grumet, 1982, p. 50) but many practitioners do not see it as having practical utility. The ancient Greeks regarded theory and practice as two aspects of a unified life (Pinar & Grumet, 1982, p. 51). Theoria, the Greek word for theory, implied "wakefulness of mind" in the contemplation of "pure viewing" of the truth. According to van Manen (1982) theory consists of a sense of community, of conscious acts which bring things into being (p. 44); it is the transforming of lived experiences into language (p. 48). "Theory is not something you smash down on practice; it emerges from and is inseparable from practice" stated Johnson (cited in Clandinin, 1986, p. 171). Others believe that theory is reflected-upon practice (Pring, 1978). According to Sergiovanni and Starrett (1983) theories are beliefs about relationships between and among assumptions, and form the basis for developing both instructional strategies and patterns of classroom organization (p. 304). What should be done in practice has traditionally been the concern of
educational theorists. Sergiovanni and Starrett (1983) identify theory which seeks verification of facts as scientific. Practical theory, on the other hand, seeks understanding of the realities of given unique circumstances of educational settings (p. 177).

Romberg's (1981) definition of theory refers to a set of assumptions, concepts and principles used to describe, to relate and to predict, in this case, phenomena related to schooling. More specifically, McCutcheon (1982) clarifies teachers' theories as an "integrated cluster of understandings, beliefs, and analyses which account for the idiosyncrasies of the teacher's specific situation" (p. 21).

Personal Practical Knowledge

Personal knowledge reflects the accumulated prior experiences of an individual. Practical knowledge is shaped by the contextual nature of the individual's situation (Clandinin, 1987). Elbaz (1983) describes practical knowledge as the decision oriented nature of teacher's knowledge about self and teaching.
Tacit Knowledge

Polanyi (1964) has said of tacit knowledge, "We can know more than we can tell and we can tell nothing without relying on our awareness of things we may not be able to tell" (p. x). Tacit knowledge consists of understandings by the actor (Sanders & McCutcheon, 1986). Similarly, Oberg (1986) noted that tacit knowledge is difficult or impossible to express in words and is evident in actions unmediated by conscious mental deliberation.

Personal Practical Theories

Teachers' theories are both similar to and different from academicians' theories. Teachers' theories are different in that they are personal and developed to solve immediate problems, while academicians' theories are generic and point to alternatives (McCutcheon, 1985).

Personal practical theories have some qualities in common with scientific theories, such as empirical claims to know and falsifiability. However, personal practical theories differ from scientific theories in that they are particularistic (dealing with a particular situation) and individualistic, traits which depress their generalizability (Sanders & McCutcheon, 1986).
Summary of Background

Practical situations contain so many unique features that they cannot be captured within one all-embracing theory (Pring, 1978). As Elbaz (1983) suggests practical knowledge is acquired first hand, and is informed by the teacher's theoretical knowledge of subject matter and areas such as child development, learning and social theory. Each individual teacher's personally constructed view of events and their meanings is in relation to the knowledge already held.

Although this theory of constructed knowledge is not unique to education, what counts in educational settings is what practitioners in schools think is going on. "In sum, teacher beliefs provide the basis for teacher thoughts and actions" as Cornett found (1987, p. 64). To have educational value, findings must enable practitioners to refine understandings of what they are doing and trying to achieve (Carr & Kemmis, 1982, p. 118).

If, as Carr and Kemmis (1984, p. 111) suggest, persons engaged in teaching already have some theories which guide their practices, student teachers must also hold their own theories and beliefs which guide their practices as
novices. Research to date concerning the nature of student teachers' thinking has been scant. Most studies have involved experienced practicing teachers. Interest in the origin of teachers' practical theories is beginning to focus attention on the preservice stage of teacher development.

A task which educational researchers can legitimately pursue is to understand how practitioners develop their theories, and to collaboratively form theories of educational practices that are intrinsically related to practitioners' own accounts of what they are doing. This represents research for education rather than the more traditional pattern of research about education, (Kemmis, 1983) by legitimizing the practitioner's knowledge and leading to improved practice.

Statement of the Inquiry Question

What is the nature of student teacher thinking? How do student teachers begin to develop their practical theories about curriculum, instruction and the nature of children? What is the content of these theories? Which experiences and ideas constitute the ground on which their decisions are made? Out of the many possible choices, why
is one action deemed to be more appropriate than others? Girou (1981) stated that theory can't be reduced to the hand servant of experience or empowered to provide recipes for pedagogical practice. Its real value lies in the possibilities for reflexive thought and practice on the part of those who use it.

Justification for educational research is the extent to which it helps transform educational practices in schools (Carr & Kemmis, cited in Oberg, 1987, p. 55). Improving practice cannot occur without critical reflection on one's own professional actions and beliefs. Reflection requires theoretical frameworks from which to test implications of new situations and translate these abstractions into concrete experiences from which new actions may arise.

The aim of this research was to illuminate the initial development of student teachers' practical theories. Products from this research included a case study and indepth interviews that provided opportunities to challenge, analyze and clarify thinking about the nature of how student teachers begin to develop their practical theories about curriculum, instruction, the nature of
children and how they learn, and the content of those theories. The research has implications for how to help preservice teachers reflect on their processes of constructing their personal practical theories and the content of those theories about teaching and learning. It also provided opportunities for the student teachers to challenge, analyze, and clarify their construction of personal theories of teaching from which to understand and control their teaching decisions. Ultimately this research may advance the work of teacher educators developing teacher preparation programs, by providing an understanding of how student teachers use their experiences for guiding their activities and developing their theories.

Justification for the Study

Teacher thinking literature has focused primarily on experienced teachers while attending, by implication, to the dilemmas of novices and student teachers. Student teachers may have had little if any opportunity to build the practical wisdom of their more experienced colleagues. Britzman's (1986) study implies that the
twelve or more years of vocational models college students have experienced powerfully affect their early teaching behaviors, but do not represent the kind of practical knowledge gained by the insiders' experience of "being the teacher." Though student teachers claim to have learned little or nothing in their education courses, they have studied 'scientifically based' theories concerning curriculum, instruction, and child development. Gage (1977) describes scientifically based theories as "consisting of knowledge of regular, nonchance relationships in the realm of events with which the practice is concerned" (p. 20).

Virtually every teacher preparation institution's program includes the study of human development, teaching methods, and student teaching. The field experiences, student teaching, is designed to provide "real world" experiences for neophytes. Depending on the teaching field, state certifications and university requirements, between twenty-five and sixty percent of the total preservice program is comprised of courses in education. Of these education courses, from seven percent to eleven percent consists of foundations, educational theory, and
subject methods courses (Egbert, 1984), and approximately
ten percent in field experiences (NCATE, 1984). Student
teaching has been universally accepted by all participants
- the community, practicing teachers, university personnel
and the students - as the most important way in which
novices learn about the real world of teaching
(Kindsvatter & Wilen, 1982; Ryan & Mitzel, 1982; Vollmer,
1984; Watts, 1985;). According to Dewey (1933, p. 89) to
cultivate experience alone leaves the person at the mercy
of impulsive and merely routine activity.

Expert-Novice Differences

Student teachers have very different needs with
respect to planning and information about their pupils
than do their more experienced colleagues. Compared to
practicing teachers, student teachers think differently
about pupils, content and instruction. Fogarty, Wang and
Creek (cited in Koehler, 1985) found preservice and
beginning teachers to be less spontaneous and less attuned
to classroom cues than their more experienced
counterparts. The novices' working theories were less
differentiated than those of practicing teachers, and they
focused on issues of management.
Howey and Strom (1987) describe professional action as "a product of (a) the mental system of concepts, memories, motives, reasoning skills with which a teacher perceives the world, (b) the elements of the actual situation, and (c) an interaction of these dispositional and situational factors" (p. 7). Essentially, student teachers possess a fund of meaningful information from past experiences with their surroundings but they are lacking specific information about the context. They have not yet learned what to attend to, how to respond, and they can not yet anticipate the probable responses of their pupils. They do not possess the context specific knowledge which would allow them to choose the most appropriate alternatives. Decision making within the context of the complexity, uncertainty and instability of the classroom represents responses to new encounters with the environment.

Conceptual Frames

Several frames present themselves as alternative possibilities for considering the data collected in this study. For example, Kelly's (1955) theory of personal constructs emphasizes the interaction between individuals
and their environment as an experimental cycle. People are thought to construct their own perspectives about matters. Oberg (1986) suggests that if the manner in which people act is determined by their constructs, then, as McCutcheon (1982) notes by observation of action the "cluster of understandings, beliefs, and analyses which account for the idiosyncrasies of the teacher's specific situation" can be defined. In other words, an individual's personal practical theories, theories of action, may be identified with or without verbal data. Construct boundaries are permeable and individually defined on the basis of personal experience, interpretations of reality, beliefs, and values. Construct theory can explain action on an individualized basis. It does not predict action in generalized situations, but individuals may predict responses on an individual basis despite the fact that contexts within which action occurs vary. Familiar situations evoke responses an individual associates with them; responses that develop over time; i.e., constructs. Each person develops and holds his or her own constructs and uses these to describe events and settings, and predict
actions. Construct theory presents idiosyncratic cases while allowing understanding of both the similarities and uniquenesses of people's actions.

A second possible frame broached in the literature by Sprinthall and Theis-Sprinthall (1983) is cognitive developmental. "This framework provides a way of categorizing individuals according to how they think and what capacities they do or do not have at various career stages" (Ross, 1987). It provides more depth than the teacher concerns theory of Fuller & Bown (1975) by attaching measures of cognitive complexity to the developmental stages.

Yet another possibility for a framework for analyzing the data from this study is teacher socialization. Within this interactive framework it is possible to use psychological concepts to explore changes in the individuals, while attending to ecological conditions of the settings. The earlier functionalist model described by Lacey (1977) (cited in Ross, 1987) of teacher socialization is too deterministic in character for use in this study. However, the recent shift toward a dialectical model makes a more fitting framework because
it attends to the dynamic nature of teaching with its intricate interplay of cognitive and affective dimensions (p. 210).

A condition for any frame used to analyze human actions must be the "back talk" (Schon, 1983) between person and environment, person and person. This transactional quality describes an openness in the individual to what is possible and emerging in the experiencing. It exemplifies the creative capacities, the meaning-making of individuals. Integration is required for a person to create a fitting together of past and present experiences to build a repertoire of understandings for future experiences. Thus the dialogue between and among elements, persons, contexts, materials, is expressed in a dynamic mode. Some matters are attended to or selected for inclusion in the mental system of the individual, some for exclusion, and others merely acknowledged. This conditional frame applies as well for the student teacher developing her theories, for the researcher observing, recording and analyzing actions, and for the readers of this study interpreting and translating information. Dewey's (1938) notion of a "funded
biography" and Mooney's (1964) properties of creative systems support this concept. Dewey (1938) maintains that what a person has learned in the way of knowledge and skill in one situation becomes an instrument of understanding for subsequent situations. Mooney (1964) states the experiencer projects an "as if" position for sensing what it is like to be at the center of what is forming; i.e., understanding, meaning, or learning, but the experience selects to include, exclude or tolerate inputs on the basis of accumulated skills and knowledge.

Therefore, in this view of knowledge, teachers' practical theories constitute professional knowledge. It is individually constructed knowledge, based on both practical experience and tacit understandings. It is evidenced in actions and partially accessible through verbal data. Discovering the constructs underlying tacit knowledge and espoused theory includes accounting for this broad range of factors.

Methodology

The methods associated with qualitative or naturalistic inquiry seem appropriate for studying the phenomenon of student-teacher thinking. The most effective way to study the characteristics of the
participants in and the subtleties of the events of classroom life is through direct, on-site, face-to-face contact with people and the events. In seeking to understand the values, beliefs and underlying assumptions of the student teachers' development of practical theories, it was essential to study the phenomenon in relation to, rather than in isolation from, other influencing factors such as the context of the classroom. The nature of Nicole's (pseudonym for the case study participant) experience in developing her practical theories is shaped by and shapes such other factors as the setting and the participants (eg. pupils, cooperating teachers, school policies, and others). Recent teacher socialization research indicates that student teachers' particular beliefs, social and intellectual skills, and expectations about themselves influence their approaches to experience and their capacities to learn from it (Britzman, 1986; Brown, 1984; Feiman-Nemser & Buchmann, 1987; Goodman, 1985; Zeichner, 1985).

A case study approach was used during the winter quarter of 1988 with one student teacher intern, in her second quarter of student teaching experience. Nicole was observed approximately two hours weekly for six weeks.
field notes were kept. Visits were scheduled to provide opportunities to observe Nicole in as many varied situations as possible, for example teaching her favorite and least favorite subjects, playground duty, and after school planning time. Nicole was interviewed both formally and informally sometimes preceding - sometimes following observations. Interviews were taped and transcribed. Fifteen other student teachers were interviewed using a semi-structured interview guide. (See Appendix A for questions). An interview guide was used to increase comprehensiveness of the data and make data collection more systematic for each respondent, as suggested by Patton (1980, p. 206). Approximately one-third of those students were observed for one teaching period and participated in a follow-up interview. All interviews were taped and transcribed. Field notes were kept during each observation.

Themes emerged during the process of the research and illuminated the question. Analysis occurred throughout the research. The initial design was proposed with the understanding that it might change as data was collected
and new insights revealed. Although the researcher
deigned not to judge, the written description offers the
opportunity to those who read the study to interpret for
themselves and to assess the phenomenon from their
personal perspectives.

In qualitative research the issue of generalizability
requires careful attention (Guba & Lincoln, 1985, p. 19).
It is not possible to generalize from a single case study
to all instances of theory development in student
teachers. It is possible to provide so clear a
description of the nature of one student teacher's
experiences that it illuminates some aspects of how
student teachers generally begin to develop their
theories. It is one possible interpretation. "No single
interpretation of human experience can ever exhaust the
possibility of yet another complementary or even
potentially richer, description", but we may recognize the
description as "a possible human experience, which means
as a possible interpretation of the nature of a certain
human experience" (van Manen, 1984, p. 40).

Paraphrasing Elliot Eisner's (1979) words, the ability
to illuminate, render or disclose what has occurred in an
educational setting is to enable others to experience what
they may have missed. The case study method used permitted a detailed examination of Nicole's developing theories in the particular setting of a third grade classroom in Paul Revere Elementary School.

Limitations of the Study

Research on teachers' thought processes has attempted to make observable what has been hidden (Clark & Peterson, 1986). The methods used to study the unobservable thought processes frequently produce a reaction by the participant (Guba & Lincoln, 1985, p. 184). This reactivity represents evidence of the ways some aspects of the research methods, presence of the researcher, and so forth, change the behavior of the participants. Participants become more aware of their tacit knowledge through the reflection required as part of the research techniques generally used to study thinking. For example, keeping written journals, or the use of stimulated recall, forces the participants to analyze their work; in some cases these processes clearly might affect the ways in which the participants go about the business of teaching and future planning. In addition to the rich data
collected, this type of reactivity occurred in some participants in this study due to the interview-observation-interview process and was carefully documented.

When the presence of an outside observer in the classroom appeared to have an effect on the pupils' behavior, or the interactions in the classroom, reactions were documented, when known to the researcher. Efforts were made to accustom the pupils to the researcher's presence, and reduce distortion of the data by documentation of instances of reactivity and constant awareness of the need to establish the trustworthiness of the data.

In addition, during the data collection, it was noticed that a weakness in the design revolved around the single interview of a number of participants. This weakness was a lack of planned observation of the student teachers who had volunteered for the interviews. Espoused theories were determined using only interview data, but did students act on their espoused theories? A revised design was implemented to allow for both observation and a
follow up interview of five to seven of the volunteers. Detailed discussion of this and other methodological concerns are covered in Chapter III.

Selection of Participant and Site

In order to understand the theory development of the student teacher, it was necessary to choose a participant who was reflective, available, and willing to have yet another watchful eye in her classroom. This participant, Nicole, was identified for the case study based on informal knowledge through the researcher's prior conversations with Nicole's mother, a colleague at the researcher's previous place of employment. The prior knowledge the researcher had about Nicole included information about her academic awards and high grade point (3.98), her interests in dance and classical music and a strong relationship to her church and its philosophy. The researcher had no professional responsibility for this student at any time before or during the study. Preliminary groundwork for rapport, which is such a vital part of the case study method, was easily established.

Nicole was participating in the intern student teaching strand. In this strand the university provided supervision only for the first quarter. For the remaining two quarters the cooperating teacher was fully responsible
for the student teacher's supervision. Nicole described the remaining quarters as "team teaching", though there was little relationship to the researcher's concept of team teaching.

Students in the intern strand are expected to teach four to six weeks full time during their first quarter while under university supervision. Nicole taught solo for one week immediately after the holiday break in January. During the winter quarter of 1988 she taught writing and two reading groups regularly. Math alternated daily with the cooperating teacher, and science was taught by whomever enjoyed the topic to be taught. Nicole met the researcher's definition of a student teacher since she was under the constant guidance of an experienced teacher during the quarter of observation.

The site was dependent on Nicole's placement assignment. Entry to the site was gained by following university guidelines for gaining permission to conduct research in public schools. A copy of the proposal and interview guide were submitted through university channels to the human subject review committee and to the school district. Approval was granted by both the committee and
the school district within three weeks of submitting the materials. Nichole was advised of the details of the study before permissions were requested from the university or the school district. And again the first day of observation.

Data Collection and Analysis

The methods used to collect and analyze data were those associated with field studies (Glaser & Strauss, 1975). This approach allows categories to be generated. Categories, or bins (Miles and Huberman, 1984), are the initial version of a researcher's conceptual map of the territory being investigated. The analytic categories are grounded in recorded data and there is freedom to combine a variety of data gathering methods in developing interpretations and analyses of the phenomena. This freedom also facilitates examination of the existing theoretical notions found in the professional literature related to the phenomena. Data analysis followed the constant comparative methods for multi-data sources. In this design, analysis begins early in the study and is
continuous throughout the data collection. Incidents and bits of information are coded into tentative categories used to guide further investigations. The procedure recommended by Glaser and Strauss (1975) is for constant comparison of new findings, particularly data challenging the original conceptualizations, so that new categories may be developed as warranted. Comparisons are also concurrently made with the existing literature base, followed by modifications of existing or generation of new categories. The product of such intensive scrutiny is, as is the analysis itself, an "ever developing entity" (Glaser and Strauss, 1975) open to modification.

Inquiry as described requires the researcher to deal with the whole pattern of a classroom, to the extent possible. By disclosing and appraising patterns of behavior and interaction it is possible to discern the theories in use. According to Schon (1987) and Yinger (1986) theories in action and theories on action differ, sometimes substantially, due to the situational composition of the experience. The goals, strategies and character of the student teacher's behavior toward pupils, the choice and use of curriculum materials and evaluation
devices are legitimate concerns of this study. Attention to teacher-made materials providing opportunities for learning supplementing the texts and graded course of study as well as attention to the physical setting and its potential impact for constraining or facilitating these activities as envisioned by the student teacher raised important matters. The concern here, however, was only indirectly with these ecological aspects of the classroom. The focus was primarily on the student teachers' development of theories and their contents represented by the actions and activities within the classroom context.

Literature Review

Selected literature in the fields of teacher thinking, student teaching, developmental psychology and teacher socialization was reviewed. Briefly, the literature on teacher thinking revealed how teachers think about the complexities of the classroom and the ways they develop their values, goals, and ideas about the educational good and the resulting actions. Sanders and McCutcheon (1986) suggest that theories of teaching are acquired through numerous sources including the latent culture, on-the-job
experience, colleagues and the influences of school life such as scheduling of classes, other than teaching duties, or committee appointments.

The literature describing student teaching provided insights into the experiences likely to influence prospective teachers in developing their theories. There is no common field experience that all prospective teachers across the United States experience (Ishler & Kay, cited in Zeichner, 1985, p. 100); no agreed upon definition of goals. In short the purpose, content and structure of student teaching has no professionally agreed upon definition (Zeichner, 1985). Further, evidence suggests that the move from campus to the classroom is problematic for the students. The development of education students during field experiences relies on what the students bring to the experience, who they are as people, the initiations of matters they make independent of their supervisors, and the ways in which these traits interact with contextual constraints and opportunities (Clark and Perterson, 1986; Zeichner, 1985, p. 107).
Historically, the relationship between student teacher and cooperating teacher has been credited as having greatest influence on the teacher education student (Zimpher, 1987). Newer findings conflict with these ideas, suggesting that the most potent force in affecting student teachers' development is the school and classroom within which the student teacher works (Zeichner, 1985, p. 108). Zimpher, De voss & Nott (1980) further describe a lack of influence of the university supervisor in effecting inquiry-based reflection on the part of the student teachers.

It is important to know generally how persons use their experiences, which includes classroom learning, to determine their actions, and to know what those actions represent in terms of their personal practical theories. Kelly's (1955) *Psychology of Personal Constructs* and Perry's (1970) study of the ethical and moral development provide a base for understanding this process. The work of Fuller and Bown (1975) related teacher concerns to professional development, and was expanded by the Sprinthalls' (1983) work on the relationship of cognitive development to stages of professional growth.
Outline of Further Chapters

In this first chapter the research problem has been defined and justified via a discussion of background and clarification of terms related to the area of inquiry. Conceptual frames were explored and methodological choices explained.

Chapter II reviews selected literature in two major areas; teacher thinking and student teaching. These areas are further subdivided into reflection, teacher socialization, construct theory and two views of developmental stage theory.

Methodology, the rationale for its use, and issues related to it appear in Chapter III.

Chapters IV and V provide analysis of the data from differing perspectives.

The inquiry is summarized in Chapter VI. Implications of the study and recommendations for further research are discussed.
CHAPTER II

REVIEW OF THE LITERATURE

Introduction

The purpose of this chapter is to present a review of selected literature. Although there are many more perspectives from which one may view student teacher thinking, the following have been selected for their contribution in informing this research effort. Focusing these multiple perspectives like collected light through a lens allows the separate ideas to converge at a single focal point illuminating - student teacher thinking.

Considered first are aspects of the research on teacher thinking. Presented next is research on reflection, a large category implicit in the teacher thinking literature which has become a specialized literature base in its own right. A review of the student teaching literature constitutes the third section of this chapter. Finally literature representing frames for understanding and interpreting behaviors such as thinking, planning, and acting, is included. Topics in this final section include stages of teacher concerns, cognitive
developmental stage theory, construct theory, and adult learning theory.

Teacher Thinking

Research on teacher thinking has steadily increased during this decade. A review of the growth of this literature may be found in Cornett (1987). Research on interactive thinking depicted routines as highly cognitive activity.

Teacher thinking research aims to provide insights into the mental lives of teachers. The terms "teacher thinking" includes teacher planning, interactive decision making, teachers' judgments and implicit theories (Clark & Peterson, 1986) and reflection (Clark, 1988). Many researchers restrict their work to one of these specific areas. Most attention has been paid to the planning phase, less to the interactive phase, and very little to the phase identified as teacher judgments and implicit theories. Reflection, what teachers do after their lessons (Dewey, 1933; Schon, 1983; van Manen, 1977), and the reflective self-questioning, probing, and evaluation occurring before lessons, referred to as cognitive monitoring (Neely, 1986, p. 32) is treated later in this chapter.
Research in teacher thinking has begun to explore and illuminate both what teachers know as well as the complexity of teaching acts. This line of inquiry has increased knowledge about the methods of inquiry as well as reflection on teacher thinking (Clark & Lampert, 1986). Lowyck (1986) found that "reducing the study of teacher thinking to isolated phases as chronological dissections of the teaching activity" was not meaningful to teachers (p. 172). Teachers' thinking is characterized by strong connections related to content rather than chronological order.

Two paradigms guide research in teacher thinking. One suggests that thinking determines action; the other that thought and action are in a dialectical relationship. The stance chosen determines the conceptualizations of the variables in this field of study including planning, interactive cognition, implicit theories, and pedagogical reasoning (Verloop, 1987). The view of the teacher also affects this research field. Teacher-as-decision maker has been replaced by teacher-as-professional. Yinger (1986) is using the teacher-as-designer image. This image holds that a professional is "a person who specializes in
designing practical courses of action to serve the needs of a particular client group” (Yinger, 1986, p. 274). Yet another view of the teacher is expressed by van Manen (1982). The ways of being with children, knowledge of the whole, is understood by teachers - and others who work with children - from the basis of their own biographies (van Manen, 1982).

Research frames for interpretation and analysis of teacher thinking include developmental stage concerns (Fuller & Bown, 1975), cognitive developmental (Leinhardt & Greer, 1986; Sprinthall & Theis-Sprinthall, 1983), teacher socialization as found in studies such as Lacey's (cited in Ross, 1987, p. 266) and a modification of the teacher socialization frame described as teacher perspective (Ross, 1987; Zeichner & Tabachnick, 1985). The use of variations of the repertory grid technique (Kelly, 1955) for establishing teacher-identified rather than researcher-imposed constructs is currently popular in teacher thinking studies, particularly those exploring the interactive phase. Wagner and Sternberg (1986) examined the relationship between tacit knowledge and intelligence using the prototype research design which compares
novices' behaviors to those of experts. Berliner & Carter (cited in Clark, 1988) examined veteran and beginning teachers' perceptions to explore how implicit theories develop over time.

Planning

Planning categories cover both time and content. At least eight different types of planning interact with each other throughout the teaching year. Six types designate time spans, weekly, daily, long range, short range, yearly, and term. The remaining two, unit and lesson, describe planned content (Clark & Peterson, 1986, p. 261) and the relationships among segments.

The linear rational planning model, moving from learning objectives, through generating alternatives, to choosing an optimal alternative, is generally not used by experienced teachers (McCutcheon, 1980), although Neale, Pace, & Case (cited in Clark, 1988) found experienced teachers think students ought to learn it. In a major study on teacher planning, McCutcheon (1980) found that teachers engage in an almost continuous complex mental dialogue about their work. Practical problems associated with getting through the day occupied most of the mental
planning time. Though mental planning is a rich source of professional activity, it has not been recognized by teacher educators, administrators and researchers as an important or legitimate professional activity.

"One important activity of planning then is mental planning, reflecting on the past and envisioning what might occur in current and subsequent lessons. Mental planning occurs frequently at odd moments during the day. This sort of planning has not been legitimated in education courses, in research, or in theory. It is free flowing; ideas occur and are related almost simultaneously" (McCutcheon, 1980, p. 11).

May (1986) suggested that the Tyler (linear, rational) model makes unrealistic demands on the abilities of preservice teachers because they lack a sophisticated knowledge base in content, pedagogy, and of particular pupils in particular classroom environments. Management of the complexity of the classroom differs for expert and novice teachers, as well as among experts. Personality and teaching style are regarded as innate predispositions also effecting planning style (May, 1986, p. 7).
Planning is cyclical, interactive and deals with problem representation, partial solution, and mental trials of alternative solutions (Yinger, 1979). Each successive teaching event feeds into future planning and teaching acts (Clark & Peterson, 1986, p. 86). Planning is generally a solitary action, and is the major determinant of curriculum (Clark & Lampert, 1986).

Planning also has a developmental perspective. Initially, novices' plans are detailed and lesson focused. Beginning teachers' plans emphasize lesson flow of the week and form lesson images rather than details. In a study using journal entries, Borko, Lalik and Tomchin (1987) found weaker and stronger students expressing different views of the importance and use of planning. The subsample of stronger and weaker student teachers, derived on the basis of average ratings of success at the end of student teaching, identified planning as an area of strength for stronger students, in positive terms as an occasion for learning the content of lessons (p. 98), and "as a tool for anticipating and solving instructional problems in advance of the actual teaching episode" (p. 99).
Instructional plans are related to general organization and structure of interactive teaching, but not details of verbal behaviors (Calderhead, 1984; McCutcheon, 1981). Experience seems to be the salient factor in determining the nature of planning (Borko & Niles, 1987 p. 182). McCutcheon (1981) states that "Teachers' planning, then, involves a complex, simultaneous juggling of many questions and information about past practice, subject matter, children and materials." (p. 64).

Clandinin's (1986) review of literature on experience presents a link between experience and image (p. 17). Tacit knowledge expressed in a person's thought and action represents images, seen to be linked to experience in a dynamic constructive way (p. 17). This view of the relationship between experience and action is expressed by Anderson and by Larkin (cited in Yinger, 1987c). They indicate through the use of "large scale holistic thought units" specific action is paired to specific conditions.
Teachers' knowledge

Studies of teachers' knowledge in relation to the teacher thinking literature can be classified into categories for example, subject matter, practical knowledge, and intellectual biography, that is knowledge of self as a learner. The teacher thinking literature has been concerned with subject matter or content knowledge in the ways that it is organized, perceived, interpreted and related, rather than with the substantive details of what and who much of it is held (Calderhead, 1986).

Practical knowledge is seen as both cognition and action (Elbaz, 1988; Sanders & McCutcheon, 1986); Schon, 1983; Scribner, 1986; Sternberg & Wagner, 1986). In other words, practice represents knowledge in action. Much of the professional knowledge teachers possess seems to be tacit and not necessarily consciously attended to (Clandinin, 1985; Elbaz, 1983; Sanders & McCutcheon, 1986; Schon, 1983).

Three principal types of knowledge identified by Clandinin (1985) are (1) contextual, situation specific teacher images, (2) interactive, and (3) speculative, which is necessarily hypothetical and probabilistic due to
the uncertainty of the classroom. Shulman (1986) categorizes the knowledge base of teachers as (1) content knowledge, substantative and systematically structured, (2) curriculum knowledge, (3) pedagogical content knowledge, the professional understanding of content and pedagogy, (4) general pedagogical knowledge, including classroom management and transcending mere subject matter, (5) knowledge of learners and their characteristics, (6) knowledge of educational contexts, and (7) knowledge of educational ends. Bolster (1983) describes teachers' knowledge as particular, context sensitive, validated pragmatically, socially constructed, holistic, flexible, and resistant to change. With respect to the social construction of knowledge, Goodenough (cited in Yinger, 1987c) posits that culture represents the organization of materials, people, behaviors and emotions - the form of things people have in mind, their models for perceiving, relating, and interpreting.

Veteran teachers expend much energy "trying to predict and anticipate potential problems, guess and estimate what students already know and how they might respond, and to forming plans and routines" (Clark, 1988). Borko, Lalik,
and Tomchin (1987) identified recent research which indicates qualitative differences in the thinking and actions of experts and novices (p. 78). Experts and novices used different strategies for solving problems. Experts hold information in chunks which they recall in new situations presenting similar problems (Larkin, et al., 1980) allowing them to manage more complex situations. Leinhardt & Greeno (1986) found experienced teachers differ in their ability to obtain and retain new information in interaction with students while proceeding with their planned activities. Along these same lines, Wagner & Sternberg (1986) using a knowledge-based approach from cognitive psychology, consistently found novices differing from experts in the amount and organization of their knowledge about the task, rather than in underlying cognitive abilities (p. 54). Expert practitioners give skilled performances orchestrating large bodies of knowledge and using specific skills uniquely suitable for the problems at hand (Yinger, 1986, p. 65).
Practical Knowledge

Practical knowledge has several characteristics. It is personal, social and experiential. In every encounter, a person construes meaning and interprets events and behavior from her or his own point of view. In part, teachers' knowledge is socially conditioned (Elbaz, 1983). For instance, lessons may be arranged based on the teacher's knowledge of the ethnic composition of the class. It is also experiential, or speculative (Clark & Lampert, 1986). Because of the uncertainties of their work, the knowledge teachers use is tentative, subject to change, and transient (Clandinin, 1985).

Some researchers see practical knowledge as the embodiment of experience (Clandinin, 1986; Elbaz, 1983), a dialectical relationship between action and thought (McKeon, 1952, as cited in Clandinin, 1986, p. 20). Others, such as Wagner & Sternberg (1986), see practical knowledge as an indicator of a particular kind of intelligence. Bruner (1971) also equated intelligence with the degree to which an individual has internalized
the tools provided by the culture. In his view, mastery of specific forms of knowledge and cognitive operations partially defined intelligence (p. 22). In both views practical knowledge is tentative and subject to change.

"Intelligent performance in natural settings" is a demonstration of practical intelligence which is identified by "responding appropriately in terms of one's own long range and short range goals, given the actual facts of the situation as one discovers them" (Neisser cited in Wagner & Sternberg, 1986, p. 54). Similarly, Charlesworth (cited in Wagner & Sternberg, 1986) stated that practical knowledge is exhibited by "behavior under the control of cognitive processes and employed toward the solution of problems which challenge the well-being, needs, plans, and survival of the individual." Practical knowledge in this case is the representation of practical intelligence.

A practitioner's success depends on the ability to manage complexities and solve the practical problems of his or her profession (Schon, 1983). Practical knowledge is "mind in action" (Scribner, 1986), an attempt to solve the problems and achieve the goals of everyday
activities. It is primarily concerned with practical problems not solvable by the application of a rule, technique or procedure, and is strongly tied to contextual factors (Yinger, 1986, p. 275). Olson (cited in Yinger, 1987, c) states that practical knowledge is acquired in heterogeneous situations and is retrieved only if it is relevant to a particular situation. As noted by McCutcheon (1981), for example, planning is a practical activity requiring consideration of a number of practical aspects including past information about self, practice, subject matter, children, and materials which are applied in a dialectical way to the present situation.

Scribner (1986) argues that practical thinking is a 'kind' of intelligence and has found substantial differences in the functioning of experts and novices in jobs of dairy workers such as order assembling, pricing delivery tickets, and inventorying, all involving practical problem solving. In the formal problem solving model problems are given and the intellectual work primarily constitutes selecting and executing steps to a solution. Practical thinking often depends on formulating or redefining the original problem, on using flexible
modes of solutions, is situation specific and always used a mode of solution which saved steps, intellectual or physical moves (Schriber, 1986). A similar case is argued by Sternberg and Wagner (1986) who suggest that tacit knowledge, the ability to learn and reapply information never explicitly taught, is a key element of practical intelligence.

What teachers know is constantly being tested against the realities of the classroom. Personal practical theories represent knowledge held in relationship to theory (Elbaz, 1983). Practical theories of teaching are conceptual structures that teachers use to justify their choices of action and curriculum materials (Sanders & McCutcheon, 1986).

Mounting evidence suggests that teachers' theories may be emergent, changing with experience, rather than cast in stone (Elbaz, 1983; Oberg, 1986; Sanders & McCutcheon, 1986). Dealing with the conflicts brought forward by multiple commitments, with practical dilemmas, and the "instability and uncertainty" (Schon, 1983) about how to achieve desired goals, can often be sorted out only through experimentation. Teachers build a repertoire of
personal practical knowledge (Clark & Lampert, 1986) which is situation specific. Schon (1983) and Clandinin (1986) both state that practical knowledge may be largely unarticulated but guided by a range of understandings gleaned from experiences. Teachers may tacitly know but not verbally express their practical knowledge or theories.

**Tacit Knowledge**

Tacit knowledge consists of unconscious guides for action unrecognized by the actor (Sanders & McCutcheon, 1986). Tacit knowledge, the psychological context of teachers' thoughts, is composed of a privately held system of beliefs, values and principles (Clark & Peterson, 1986, p. 287) which are often unarticulated ways of knowing. Wagner and Sternberg (1986) suggest that the ability to learn and reapply information never explicitly taught is tacit knowledge. According to Clark and Peterson (1986) the terms used to designate the arena of research on tacit knowledge include implicit theories, "principles of practice (Marland, 1977), constuct system (Bussis, Chittenden, & Amarel, 1976), personal perspective (Janesick, 1977) and practical knowledge (Elbaz, 1983)" (p. 287). In order to do research about tacit knowledge,
the knowledge is generally inferred and reconstructed from observations of actions. The activity of research fosters explication and description of tacit knowledge, thereby bringing it to conscious recognition.

Theories and Beliefs

A line of inquiry into the domain of "teacher theories and beliefs" has developed from studies of teacher actions. Teachers hold multiple theories and explanations about their personal and professional worlds, and they "switch back and forth among them with remarkable success as the situation warrants" (Clark, 1986). This area is further subdivided into teachers' attributions and implicit theories. Implicit theories, as described above consist of privately held systems of beliefs, values and principles. Attributions represent judgments or perceptions of causes for events, and are affected by whether the person is the actor, or the observer in the situation. Clark & Peterson (1986) point out that the links between teachers' attributions and interactive thoughts, planning, and student achievement, are an important but virtually unresearched topic inherent to the understanding of teachers' mental lives and need to be studied in real world classroom settings (p. 285).
Although many terms are used to indicate implicit theories - personal perspective, conceptual system, construct system, and practical knowledge - they generally mean a teacher's cognitive and other behaviors in relationship to personally held systems of beliefs, values, and principles (Clark & Peterson, 1986, p. 287). Role, beliefs about curriculum and teachers' own explanations of their interactive behavior have been the focus of recent research. Beliefs influence the way events are characterized. They bias interpretations and recall of evidence. It is more likely that evidence confirming one's beliefs will be recognized and accepted than disconfirming evidence (Munby, 1982, p. 207). Elbaz (1983) pursued the discovery of the structure and content of practical theories. According to her, a teacher's practical knowledge is learned, tested, and developed through field experience. Practical knowledge, also known as professional knowledge, is composed of the "conceptual structures and visions", the "principles or propositions", the practical theories that guide teachers work (Elbaz, 1983; Schon, 1983; Yinger, 1986).
Clandinin and Connelly (1986) found teacher thoughts composed of action and cognition, not divided in two entities to be studied separately. They perceive a dialectical relationship between thought and action. Knowing something means having moral, aesthetic and emotional states of mind about what is known. Cornett's (1987) study found tensions between two beliefs existing within the practice of the participant in his case study. As in the Elbaz (1981) study, the participant in Cornett's study resolved the tensions differently on separate occasions depending on the contextual situation.

The wisdom of practice studies (Shulman, 1987) are based on the concept that the practices of able teachers include maxims that guide them and yield principles of "good" teaching. Although teaching has had no system of notation and memory like music, ballet or mathematics, Shulman (1986) believes that these maxims can provide potentially codifiable knowledge establishing a case literature for learning to teach. Based on the research in teacher planning which indicates teachers use powerful patterns in the form of routines, Yinger (1987, April) suggests that a "professional pattern language" - the language of practice - may exist for teaching.
In this section, the dominant paradigms guiding research on teacher thinking, the prevalent views of the teacher and research frames generally preferred have been reviewed.

Teacher planning includes how knowledge is transformed, intentions and actions based on those intentions are formed and carried out. Mental planning's important relationship to the cyclical interactive and developmental nature of planning was established within the teacher thinking framework.

Three kinds of knowledge, practical, tacit, and theoretical, were explored. Practical knowledge, also known as professional knowledge, represents embodied experience, and may be tacit. Tacit knowledge is held and used to guide actions though teachers may not be consciously aware of it. Explanations of the relationship between a teacher's implicit theories and beliefs, tacit, and practical knowledge constitutes the major teacher thinking literature.

The next section of this chapter discusses the relevant literature regarding reflection, a sub-area of teacher thinking research which has become an important category in its own right.
Reflection

Reflection is a concentration of mind; a careful consideration of events (American Heritage Dictionary, p. 1039). Several major views about reflection are active in the education community. These may be categorized as (1) retrospective, looking back to an already existent set of actions which provides technical improvement for future choices, (2) critical theory, a socio-political view, and (3) reflection in and on action (Schon, 1983, 1987), essentially experimenting in the situation using one's intuitive processes. From the latter concept, Yinger (1987a) has drawn yet another view in which reflection and experience account for the dynamic action of the classroom. This latest view Yinger (1987) calls improvisation. Each view has embedded within it bits of the others.

Retrospective View

In the early 1900's Dewey proposed reflective thinking as the "essential function of reflective activity" (as cited in Ross & Hannay, 1986).
"Reflective action entails active persistent careful consideration of any belief or supposed form of knowledge in light of the grounds that support it and the further consequences to which it leads" (Dewey, 1933, p. 9).

Dewey's perspective became popularly accepted. "To reflect is to look back over what has been done to extract the net meanings which are the capital stock for dealing with further experience" (Dewey, 1983, p. 87). Dewey called for the integration of attitudes and skills. One was insufficient without the other. A "thoughtful and alert student of education" was preferable to one who had gotten immediate proficiency in skills at the risk of losing the ability to "go on growing" (1904, p. 15).

Levels of Reflectivity

Reflection, in education, broadly speaking, is a way of thinking about educational matters including the ability to make rational choices and assume responsibility for those choices (Goodman, 1984; Parsons, 1983; Zeichner & Liston, 1987). The rational analysis of behavior according to van Manen (1977) is embodied in hierarchal though not developmental "levels of reflectivity". Each
level consists of increasingly problematic concerns representing different criteria for choosing alternative courses of practical action (Zeichner & Teitlebaum, 1982, p. 103). In the first level the dominant concern is for efficient, effective application of technical knowledge. The second level involves clarifying assumptions about the teaching-learning process, since every action is seen as linked to particular values. The third level is a debate of the worthiness of competing goals based on moral and ethical considerations. Tom's (1985) three dimensions on a proposed continuum of arenas correspond closely to van Manen's levels of reflectivity. These dimensions are: (a) the arena of the problematic, which raises doubts about what appears to be effective and wise practice, (b) the model for inquiry, or process by which exploration of the problematic is achieved, and (c) the ontological status of educational phenomena, which considers whether the phenomena are socially constructed or natural.

Conceptually, reflection is caught within a variety of images and definitions. The educational community of scholars generally agrees that reflection is a worthy goal of teacher preparation programs, but it has not yet
reached consensus on the meaning of reflection. Any particular image may be used to refer to diverse intellectual operations; conversely, apparently different images may represent very similar operations (Tom, 1985, p.36). An example is the use of the term 'reflective teaching' by both Cruickshank (in Cuickshank, Holton, Fay, Williams, Kennedy, Myers & Hough, 1981) and Zeichner (1981-82). Cruickshank's approach to reflection focuses on the methods for achieving prespecified goals, essentially a technical perspective which conforms to van Manen's first level of reflectivity.

On the other hand, Zeichner (1981-82) expands the Deweyian notion of reflective teaching to include consideration of the influences of ethical, moral and political principals (p. 17) on the classroom, curriculum, and the teacher and other individuals. Zeichner's approach includes the technical aspects of the first level of reflectivity and identification of problems common to the second level, but emphasizes the need to incorporate a critical perspective. This view is similar to both van Manen's third level, and also Tom's (1985) "reality" criteria. Both Cruickshank and Zeichner use the term
reflective teaching but the quality of the intended reflection differs. It is defined both narrowly as a technical skill (Crickshank et al., 1981), and also more broadly as a pedagogical habit (Zeichner & Lston, 1987). Critical reflection, exemplified by van Manen's third level and Tom's 'reality' question, is another view of reflection in which terms vary.

Critical Reflection

Critical reflection, inquiry-oriented teaching and reflective inquiry are different terms carrying similar meanings. All imply a need to investigate personal belief systems (Britzman, 1986; Zeichner & Tabachnick, 1982). Originating from Dewey's perspectives, the processes of each of these terms involves decision making in a socio-political context, identifying problems, searching for satisfactory answers, and investigating real lived experiences (Ross & Hannay, 1986; Tom, 1985; Zeichner & Teitlebaum, 1986; Britzman, 1986), and the added dimensions of social and political accountability for those decisions (Ross & Hannay, 1986; Tom, 1985). Inquiry skills must foster a critical orientation to both teaching and the contexts that surround it (Zeichner & Teitlebaum,
Like Dewey (1933, p. 17), Tom (1985), Zeichner & Teitlebaum (1986), Britzman (1986) and others, argue for a quality of reflection which emancipates the educator (student teacher) from impulsive routine reactions, enabling them to understand what each is doing when an action is taken. The function of critical theory is to cause a need for understanding the relationships among values, interests and actions (Tom, 1985, p. 40) of the individual, and the roles that schools play in creating and perpetuating social realities (Adler & Goodman, 1986). Reflective educators (student teachers, practicing teachers, teacher educators, supervisors, and others), become aware of the ways in which various kinds of knowledge are linked to specific situations and their own immediate practical actions. Thus the complete act of critical reflection rests on personal definition of a problem to be solved and the responsibility for the solution, therefore vividly drawing attention to the relationship between teachers' personal practical theories and their actions in the classroom.
Reflection-in/on-Action

Donald Schon's view of reflection-in/on-action has intrigued and challenged the education community to review its dominant perspective of "technical rationality" (Schon, 1983, p. 21). Schon's definition of professional knowledge is knowledge constructed by the practitioner to accommodate the puzzling situations in particular units of activity. These units are socially and institutionally patterned and shaped by a community of practitioners (Schon, 1987). They present chunks of familiar types of situations, each calling for certain kinds of implicit knowledge (Schon, 1983, p.32) belonging to that particular unit or practice, knowing-in-practice (Schon, 1987).

Schon presents "an epistemology of practice implicit in artistic, intuitive processes which some practitioners do bring to situations of uncertainty, instability, uniqueness, and value conflict" (Schon, 1987, p. 49).

Three types of experimentation according to Schon include (1) exploratory experimentation characterized by probing and "messing about", (2) move testing, that is assessing intended and unintended consequences of deliberate action, and (3) hypothesis testing using logical deduction (Schon, 1983, p. 145-147).
Reflection-on-action is an action planned on the basis of what was learned in a previous action. Reflection-in-action is thinking about doing something while doing it. It is action generated and tested through "on-the-spot" experimenting (Schon, 1983, p. 141). The individual monitors the effects of his or her actions and modifies or extends her or his appreciation system by attending to the situation rather than predetermined criteria.

The processes of problem setting and problem solving are intimately connected to the practitioner's "repertoire of exemplars" and "fundamental principles" (Schon, 1983, p. 317). What a practitioner sees in a situation depends on both his or her basic appreciative system (values and beliefs) and her or his repertoire of examples as they are experiences within the dynamic action of the reflection. This interplay between situation and practitioner Schon calls a "reflective conversation" in which the situation "talks back" (p. 132). Thought and action intermingle. "The unique and uncertain situation comes to be understood through the attempt to change it, and changed through the attempt to understand it" (Schon, 1983, p. 132). This

The fundamental aspect of reflection-in-action is experimentation, research in the context of practice (Schon, 1983, p. 68). The relationships between practitioner and the situation are transactional. The artistry of a practitioner depends on her or his understanding and use of the tools of practice (language, conventions, constraints, appreciative systems, repertoire of exemplars, systematic knowledge and patterns of knowing-in-action) in situations of "uncertainty, disorder and indeterminacy" (Schon, 1983, pp. 36-37, p. 16). Skill with these tools, knowing-in-action, is a tacit sensation of the quality of the materials and the situation, a spontaneous performance without direct intermediate reasoning (Schon, 1987). In Shulman's (1987) wisdom of practice studies learning is an experiment in
placing one's own ideas against the background of "what is known to work" (1987, p. 152), improvisation. Yinger (1987a) has detailed the improvisational nature of Schon's descriptions of reflection-in/on-action.

Improvisation

Yinger (1987a,b) describes the characteristics of improvisational performance, the on-the-spot actions of classroom teachers. Interactive teaching, is action and thought combined to operate smoothly within the context of the situation. Drawing on Alexander's pattern language and Wiggins's "situational appreciation", and the "holistic similarity recognition" proposed by Dreyfus and Dreyfus (cited in Yinger, 1987a, p. 29-32) Yinger suggests a language of performance different from the deliberate reflective world of Dewey. The requirements of immediate response are met by an intuitive ability to use patterns without decomposing them into components. Patterns store meaning, purpose, and action, not specific behaviors (Yinger, 1987a, p. 35). Practical thought and action, the science of the concrete, is the wisdom of the practitioner. Similar to Schon's "reflective conversation", thinking is in "embodied thought", holistic
patterns which are described as a dialogue of means and ends between the practitioner and the situation. However, Yinger's concept of action differs from Schon's in that there is "often no problem to be solved or decision to be made" (1987a, p. 35). Yinger proposes that improvisation is primarily directed toward establishing and maintaining a relationship between the actor and his tools, or his materials, or other individuals (p. 35) to meet the immediate demands of response and production not met by delivery and reflection (p. 15).

**Practical Aspects of Reflection**

With respect to teaching, reflection is often thought of as a skill to be practiced in specific context to connect content to process. As has been discovered in the review thus far, reflection is both on and in action; narrowly defined as a technical skill and broadly defined as socio-political accountability. It is organized into levels (Tom, 1985; van Manen, 1977), processes (Cruickshank et al., 1981; Korthagan, 1985) and attitudes (Britzman, 1986; Dewey, 1933; Zeichner, 1981-82). For teacher educators the question becomes how do novices acquire the skill and habit of mind to look at issues and
problems from multiple perspectives and consider possible latent and long-range effects of a particular action (Zeichner, 1981-82, p. 12-13)? This notion of reflection is based on the idea that teachers use inquiry to learn about their own teaching. Effort is devoted to careful planning, conscious acting, systematic observation, and thoughtful reflecting about practice and effectiveness (Kemmis and McTaggart, 1982). Researchers are beginning to explore how teachers become reflective, and the relative efficacy of encouraging student teachers to be critically reflective.

Most studies of reflection in student teaching experiences are from a Schonian perspective. Mackinnon's (1987) study found that student teachers can reflect given the proper situations— that is, the occasion to teach, the transcript of the teaching, and a supervisor who can engage in clinical analysis of their teaching with them. Russell (1986), on the other hand, found that over all student teaching seems to restrict reflection-in-action and curtail natural tendencies to be reflective. Korthagan (cited in Mackinnon, 1987) found experiences emphasizing reflection most effective with students who
already exhibited a propensity for reflection. Reflection was used less during periods of stress, especially in the induction year. Tardiff (cited in Russell, 1986) found students while engaged in the practicum accepted definitions imposed by others and "renounced parts of their personal selves." They focused on meeting deficiency needs not on growth possibilities.

Calderhead (1988) reporting on Korthagen's study suggests that certain metacognitive skills (comparison, evaluation and self-direction) are necessary for the detachment required to reflect on their own practices (p. 5). Further he notes that Russell's 1988 study points out that "objective appraisal of one's own work "may require certain knowledge and critical skills, basic practical competence, particular attitudes, and self-confidence" (p. 5).

Many researchers are looking at reflection through a content area lens. Ross & Hannay (1986) describe critical reflection in social studies methods as a goal overtly advocated but not modeled by university instructors. Critical reflection is actually discouraged by the emphasis on student teachers "fitting in" and "getting
along" (Alder & Goodman, 1986; Tabachnick, Popkewitz, & Zeichner, 1979-80). Other difficulties inhibiting the use of critical reflection included the dominant technical assumptions about teaching and learning, the relationship between school practices and sociocultural contexts, and the familiarity of the classroom to student teachers (Felman-Nemser & Buchmann, 1985). Zeichner and Liston (1987) found in their on-going study that the nature of the student teaching experience itself inhibits critical reflection. Structural limitations on the cooperating teachers such as lack of time and multiple responsibilities, limited resources leading to lower quality supervision, and a lack of articulation between the disciplines and methods courses contributed to the less than desired application of critical reflection among student teachers, cooperating teachers, university instructors and supervisors.

**Supervision**

A range of supervision practices exists. The theoretical roots of each are primarily within three major world views which reflect the perspectives of positivism, phenomenology, and critical theory (May & Zimpfer, 1986,
A review of the literature (Zeichner & Liston, 1987) found that little research on supervision had been done. Most existing research documented and described verbal behaviors of the participants. A second type documented the effectiveness of techniques and models in changing behaviors or attitudes. Zimpher & Howey (1987) related supervisory roles and approaches to four domains of teacher competence identified as technical, clinical, personal, and critical. They further differentiated these by levels of complexity and comprehensiveness.

Supervision practices influence students. The goal of supervisory practices of student teachers, according to May and Zimpher (1986), must be congruent with answers to three crucial questions: What is going on? What ought to be happening? and What does it mean? (p. 99). Clinical supervision, a form of instructional supervision, is the current model favored for use with student teachers (Zeichner & Liston, 1987). Multiple views of clinical supervision exist, but have a common focus on procedural goals, face-to-face interaction between supervisors and supervisees, the importance of collegial supervisory relationships, and systematic cycles of planning,
observation, and intensive analysis of actual teaching performances. There is disagreement over the purposes, for example whether to focus on overt behavior or the disparity between espoused intents and actual events. Clinical supervision style is an eclectic variety of individual styles.

In their review of the research literature on clinical supervision, Zeichner and Liston (1987) found that techniques or methods were less important than the assumptions and purposes underlying the overt behaviors of the supervisors. Griffin (cited in Zeichner & Liston, 1987) stated that supervisory conferences between cooperating teachers and student teachers tended to neglect discussion of alternative interpretations and reinforced the teacher's own perspective.

Students' conceptual levels appear to affect the degree of reflective discourse in conferences. That is, the higher the students' conceptual levels, the more often reflective discourse occurred. Koskela (cited in Zeichner
& Liston, 1987) discovered that the degree of reflective communication varies from meeting to meeting, and confirmed that student teachers learned to view the school contexts as problematic as a result of reflective conferences.

**Summary**

Reflection, a specific form of teacher thinking, is subject to the personal value systems of the person reflecting. Critical reflection is a way of thinking about the connections between daily practice in the classroom and the complex issues of schooling. The nature of student teaching, the socio-cultural context of schooling, and the structural limitations on personnel involved with the student teachers combine to constrain attempts to foster critical reflection. Supervision techniques influence student teachers along a value base determined by the theoretical roots of each particular practice. The complexity of conceptual levels of all the participants, student, cooperating teacher, and supervisor affect the students' degrees of reflection.

The literature concerning the nature of student teaching comprises the next section of this chapter. It will describe the participants within the classroom.
Student Teaching

Background

Throughout professional education, there is a general notion that learning-by-doing yields better trained, more competent, well adjusted professionals (Beyer, 1984). For example, requiring practica in preservice teacher education is supported by a long history of use, beginning in the earliest days of normal schools. Teacher education holds practica in particularly high esteem. Student teaching, the culminating field experience for prospective teachers, is universally accepted by all participants as the essential way in which novices learn about the real world of the classroom (Kindsvatter & Wilen, 1982; Ryan & Mitzel, 1982; Vollmer, 1984; Watts, 1985). Evidence of this esteem can be seen in student teaching requirements which average nationally more than 300 clock hours (Egbert, 1985; Herald, 1983; Ishler, et al., 1978), and by the endorsements of the major education associations including the National Education Association, the National Council for Accreditation of Teacher Education, and the
American Association of Colleges for Teacher Education (Watts, 1985). Additionally, all 50 states now require student teaching for teacher certification (NEA, 1983, as cited in Watts, 1987, p. 151). Some states also have requirements for early, or pre-student teaching field experiences.

Though the time allocated for field experiences is approximately ten percent of the students' total preparation and is increasing (Watts, 1987, p. 154), the purpose of the student teaching practicum remains poorly defined. The legal and professional position of student teachers while in a school setting has not been determined. Neither states nor the profession have established roles and requirements for cooperating teachers, while the standards, roles and requirements for college supervisors of student teachers are even less specific (Watts, 1987, p. 153). Koehler (1984) decries the lack of substantial findings despite a plethora of studies as "particularistic and piecemeal" (p. 67). Little advancement has been made in the knowledge base about the professional development of prospective and inservice teachers since 1975, according to Zimpher & Ashburn (1985, p. 17).
Repeated cautions are made that such first-hand experiences as student teaching may actually be 'miseducative', creating cognitive and behavioral traps, closing avenues to conceptual and social change (Bachmann & Schwille, 1983; Dewey, 1904; Salzillo & Van Fleet, 1977; Zeichner, 1980). On the other hand, Koehler (1984) suggests that teachers who inquire, experiment, and improve, change their classroom approach based on context. To know how, when and why to take some action in the classroom would be helpful to student teachers. This knowledge may not be taught or transferred from college pedagogy studies to the school situation. Howey and Strom (1987) suggest that teachers' preparation must include the mental tools "to act in ways that are adaptive, questioning, critical, inventive, creative and self-renewing," partly because the context is vastly different in teaching situations than in the college classroom (p. 7). McNerney and Aylesworth (1983) replicating the 1967 Sorenson study found, like Sorenson, that practice teaching did not appear to provide prospective teachers with theoretical frameworks for use
in planning and evaluating their own instructional activities. Erickson (cited in Koehler, 1985) states that students "may be misled by the acquisition of practical wisdom across many years of teaching". On the other hand, Shulman (1986) and Schubert (1988) believes that the practical wisdom of experienced teachers can offer cases for study and deliberation.

Griffin's proposed constructs for viewing student teaching help capture and frame knowledge about the professional development of student teachers. These constructs include (1) the characteristics of participants, (ST-student teacher, CT-cooperating teacher, US-university supervisor), (2) selection processes, characteristics of role, (3) social/psychological interactions and mutual influences of participants, (4) planned and unplanned activities (supervising practices, evaluation, socialization), (5) contextual features which in varying degrees determine the nature of the student teaching experience (Zimpher, 1987, p. 121). These constructs have been altered to fit the purposes of this review of the literature. Selected reviews and studies
about student teaching will be discussed within the following framework: (a) participants (student teachers, cooperating teachers, and university supervisors) characteristics, roles and interactions, (b) the nature of the activity of student teaching, and (c) contextual influences.

Student Teaching Participants

Student Teachers

Background factors

Prospective teachers share some characteristics which Griffin (1983) maintains have a bearing on their development. Reasons a person considers teaching have much to do with what they perceive as a fit between occupational factors and their individual meaning of 'success'. College students anticipating teaching as a career selected education because: (1) they had interest in dealing with children; (2) education provided them with lifelong learning opportunities; (3) they could exercise individual initiative; and (4) summer vacations were long (Andrew, 1983); Book, Byers & Freeman, 1983; Jantzen, 1981). A synthesis of studies portrays the 'typical' teacher education student as a lower middle class white
female in the lower half of her high school class
Scholastic Aptitude Test ranking, active in
extracurricular activities, and graduated from a public
high school. Her father had at least a high school
education (Book, Byers, & Freeman, 1983; Roberson, Keith,
& Page, 1983; Wagenar, 1984; Lanier and Little, 1986)
state that teaching does not get as many students as might
be hoped for from the highest scoring test takers, but it
does attract and retain many bright people. Over 11% of
the highest scoring high school graduates on the
Scholastic Aptitude Test's verbal and mathematics measures
went into teaching (Vance & Schlechty, 1982). While the
1970's saw an overall decline in test scores such as the
Scholastic Aptitude Test and the American College Test,
the relative rank of prospective teachers did not change
as compared to students interested in other occupations
(Nutter, 1983; Weaver, 1979).

Social/Psychological Factors

Students' perceptions about teaching arise from
interactions with people, courses, and experiences in
schools and are the basis of attitudes and values about
teaching which undergird and guide their decisionmaking
(Applegate, 1986; Jackson, 1986; Zeichner, 1987). Students reported unanticipated kinds of problems following their field experiences suggesting that actual learnings are quite different from those expected. For example, interpersonal relations and the affective nature of the classroom tasks took precedence over concerns of a cognitive nature (Applegate & Lasley, cited in Applegate 1986). Haberman (1983) has proposed a professional development continuum consisting of these steps: (1) ritualistic-imitative, (2) reality centered, (3) learning skills director, (4) self-evaluator, (5) insightful analyst, and (6) professional decision maker. He suggests that student teachers progress backwards through the stages from step 6 to step 1 (p. 112). Attitudes of student teachers become more and more like their cooperating teachers during the practicum (Watts, 1987, p. 155). Some evidence indicates a negative shift occurs in student teachers' attitudes toward pupils, discipline, teaching, and themselves during student teaching (Watts, 1987, p. 155). However, according to Zeichner & Grant (cited in Zeichner & Liston, 1987) student teachers did not alter their beliefs on pupil control by the end of the
field experience even though they were significantly
different from the cooperating teachers' beliefs. Student
teachers tend to articulate their conceptions of teaching
and learning better at the end of the field experience
rather than alter those beliefs. Student teachers'
personalities are powerful determiners of teaching style
(Watts, 1987, p. 158). The personality profile of the
'typical' student in teacher education programs shows an
individual interested in working with children, whose
primary goal is the development of the child's
self-concept, who has a high degree of confidence in her
or his teaching ability at the start of the student
teaching experience. She or he tends to be more
authoritarian, to appear more submissive, communal and
social than students in other fields (Nutter, 1983;
Richardson & Briggs, 1983). Student teachers begin their
practicum experience with a child centered attitude. By
the end of their practicum, many students have become more
custodial and authoritative (McIntyre, 1984). Watts (1987)
found that longer practicum assignments seemed to produce more pronounced negative attitude shifts and lower values. Soar & Soar (cited in Griffin, 1985) found that student teachers' self-concepts related more to the ratings of their university supervisors than the ratings of their cooperating teachers.

Ninety percent of the students in teacher preparation believe that professional studies, as presently taught, have little to offer them in learning to be a teacher (Lanier & Little, 1984). Elbaz (1983) suggests that these course work complaints are justified, in that the courses do not meet the needs for solving the practical problems of the classroom. Indeed, Schon (1983) sees the work of professionals as the artful practice of the unique case, a practice incorporating the process of problem setting, since in the "real world" problems must be construed from the situation.

Cooperating Teachers and University Supervisors

The development of student teachers is also influenced by their cooperating teachers and university supervisors. By implication, what is said about either the cooperating teachers or the university supervisors seems to inform us
about the other. Questions concerning research design raised by reviewers (Zimpher, 1987, p. 124-135) caution against drawing conclusions about the relative influences of any one member of the triad on the student teacher. In Zimpher's view (1987) probably no other category receives as much attention in the research literature as the interactions and mutual influences of these members of the student teaching triad.

University supervisors and cooperating teachers share beliefs about teaching and uses of research and pedagogy (Koehler, 1984). However, university supervisors are more influential mentors of student teachers when what is to be learned relates more to general aspects of teaching. Cooperating teachers are more influential when specific techniques are to be learned (Haberman, 1984, Zimpher, deVoss & Nott, 1980). Cooperating teachers set the affective and intellectual tone of the experience and also shape what student teachers learn by the way they conceive and carry out their role (Feiman-Nemser & Buchmann, 1987). Zimpher et al. (1980) found few cooperating teachers to be interested in observing student teachers, but rather viewed them as aides, did not consider them to
be professional trainees to whom they had a responsibility of providing an appropriate practicum to develop pedagogical knowledge, skills, and attitudes. Without the university supervisor's influence little critical review of the student teacher's progress would have occurred (Zimpher et al., 1980, p. 25). In another study, more satisfactory interactions between the student teachers and the cooperating teachers resulted when cooperating teachers were trained in the same techniques and strategies the school of education was attempting to develop in student teachers (Watts, 1987, p. 155).

Zahorik (1986, p. 23-4) suggests that universal teaching skills cannot be identified, but emerge from an individual's own conception of good teaching. Jackson (1986) comments that every teacher has at least partially answered the question "What do teachers need to know in order to teach?" otherwise they could not begin teaching. According to Jackson (1986) "everyone who undertakes to teach anything comes equipped" with a "built-in encyclopedia of pedagogical information contributed by all the teachers he or she has ever known" (p. 14). Conceptions about good teaching can be categorized in a
hierarchy of skills from concrete to abstract. The most concrete is the science/research conception which attends to ready-made specific solutions. The theory/philosophy conception is associated with interpretation, and ready-made general solutions, while an art/craft conception is comprised of custom-made solutions, is reflective and individualistic and creative (Zahorik, 1986, p. 23-4).

Similarly, Jackson (1986) identifies two historical conceptions of teaching as the mimetic and transformative traditions. Drills, memorization, copying, short answer tests and recitation are the basis of the mimetic tradition. Transformative practices focus on attitudes, are considered liberal and progressive, much like Dewey's philosophy. Although a tension exists between these two traditions, few teachers or schools fall squarely into one or the other. Teachers use one tradition predominantly, while "visiting the other on weekends" (Jackson, 1986, p. 142).
Nature of Student Teaching

The practicum or field experience is defined as "supervised practical experience of a previously studied theory" (The American Heritage Dictionary, 1982, p. ). The only reasonable description of student teaching is "varied" (Haberman, 1983, p. 104). Zeichner's (1985) review of 20 selected studies of practica in teacher education concludes that very little is actually known about the nature of student teaching programs, and that what students actually learn during field-based experiences may be in conflict with the expressed intentions of the university and the schools (Zeichner, 1984). Griffin's comprehensive study of the student teaching experience reported that university and school-based teacher educators did not agree upon and could not articulate the policies and practices that were to guide the student teaching activity (cited in Zeichner, 1984, p. 103).

Certain skills of teaching seem to be generally associated with adapting to institutional life; further these are thought to be learned best by neophytes "in situ". Calderhead (1984) suggests that becoming an
educator involves becoming a functioning member of an institution, which includes learning to identify the constraints that may influence one's practice and how or whether these may be negotiated.

Reviews by Iannaccone (1963), Griffiths and Moore (1967), and Derrick (1971) affirmed the need for student teaching practice to serve as a regular feature of the preservice preparation for classroom instructors. More recent research is typified by Griffin's (1983) assertion that little change occurs in students as a result of field experiences, and Feiman-Nemser's (1983) statement:

However existing research provides little evidence that the supervised practical experience, in itself and as it is encountered in most student teaching situations, is a very effective way to educate teachers" (p. 8).

Knowledge about learning theory and vocational choice are expected outcomes of the student teaching practicum. However, the goals and substance of practica are infrequently examined (Zeichner, 1987). Knowledge about performing the duties of an educator is practical knowledge (Elbaz, 1983; Oberg, 1986). It frequently
represents both cognition and action (Schon, 1983 & 1987; Sternberg & Wagner, 1986) ordered in terms of theory, the materials used, experience and the impact on the environment in which the educator functions (Elbaz, 1983). Emphasis now in teacher education is on creating students of teaching who are more thoughtful and reflective about teaching and learning instead of merely practicing to meet skill performance requirements (Cruickshank & Armaline, 1986; Ross, 1987; Zeichner & Liston, 1987). These reflective students would consider the effects of their teaching in terms of interactions and impact on the environment.

Berliner (1984, & 1987) suggests using laboratories similar to those in the natural sciences, in order to permit teacher education students to build the necessary technological base for a field of practice in education. The components of the educational laboratory suggested are: simulations and gaming, observation exercises, protocols, models and cases, practice exercises in doing what is theorized, and mediated learning experiences to
bolster the instructional system and reinforce learning in protected conditions.

**Contextual Influences of Institutions**

Studies in student teaching often fail to regard it as a learning behavior, or to view it as organizational behavior driven by various conditions, norms, and events in the school setting (Haberman, 1983, p. 98). The focus of recent studies has moved from simply describing the relationship between mentor and student, to a broader concern for the ecology of the whole practicum experience for the individual student. Concerns are not only about who and what influences students' learning, but about how and to what degree influences are experiences by the students (Zeichner, 1987). Zimpher (1987, p. 127) states that peers rank as extremely influential sources of support during student teaching.

Though the practicum experiences are first hand, they are always limited, it is always someone else's classroom, building, or district. Are inferences and generalizations based on these kinds of first-hand experiences really warranted? While a new respect has been gained for the power exerted by the institution, evidence erases the
assumptions that all constraints and opportunities take the same form and have the same meaning for all students in all institutions (Zeichner, 1987, p. 94; Zimpher, 1987).

Socialization and Professional Development

How much influence does student teaching play in the teacher socialization process? Tabachnick and Zeichner (1984) found a view of student teaching that is more negotiated and interactive than previously thought. What prospective educators bring to the experience, their anticipatory socialization set, directs but doesn't determine the outcome of the experiences. Individual intention and institutional constraint played significant roles in the development of student teacher perspectives (Tabachnick & Zeichner, 1984, p. 34).

What is the impact of field experience on the long-term professional development of the student/candidate? What do people learn as a result of spending time in the field? Recent studies in teacher education have uncovered evidence that what is learned in the field may actually be at odds with the stated intentions of the schools and universities. Gehrke's (1981) study indicates that patterns of teacher
interaction with potential reference groups vary over time and depend on the context and the individual's needs and perceptions. Her evidence further suggests that field experiences do little more than assimilate novices into traditional patterns, despite the opposing strong beliefs of the participants.

Early Field Experiences

In a 1981 study of institutions Ishler & Kay found that ninety-nine percent required early field experiences, and only seventy percent of these had stated goals. Though the goals primarily focused on non-instructional tasks, the early field experience participants spent a high proportion of their time teaching. Neither the amount nor frequency of early (pre-student) field experiences seems to result in more successful student teaching (Goodman, 1985; Grossman, 1986). Pre-student teaching field experiences had little impact on prospective teachers' perceptions of their abilities to perform specific teaching tasks. A comparison of students with and without early field experiences (Grossman, 1980), discovered no significant differences in their final evaluations. Further, the major problems experienced
during student teaching were not significantly affected by having had early field experiences (Watts, 1987, p. 158).

Conceptual Basis

Numerous conceptual bases regarding human growth and development may inform educators about students' growth in practica. Developmental and cognitive psychology describe readiness levels and their impact on student teacher learning (Koehler, 1984; Theis-Sprinthall, 1984). Understanding the experience of becoming a teacher, both the context of learning the skills and the students' perceptions of the task, requires investigating what concerns and clusters of concerns are common to prospective teachers (Fuller & Bown, 1974; Sprinthall & Theis-Sprinthall, 1983). The success of student teachers is affected but not determined by a positive view of the self.

"Needs of teachers and developmental stages of teacher growth will dictate the conception of teaching that should be emphasized during preservice and inservice teacher education" (Zahorik, 1986, p. 22).

Renewed interest in Kellys' Theory of Personality
(1963) is adding depth to understanding teacher thinking and decision making, as well as socialization issues. According to Kelly, the bi-polar nature of constructs (e.g. conformity-innovation; formal-informal; authoritative-democratic) coupled with the individual's construct of a given situation create the dilemmas faced by the individual. In other words, people, in whatever setting, tend to take on the characteristics required by the setting (Zeichner, 1980), expressing the reciprocal nature of content, patterns of interaction and influence between and among participants, and the social contexts.

**Psychological Theories**

**Teacher Concerns**

Fuller and Bown (1975) identified clusters of concerns which describe various stages in the processes of learning to teach. Pre-teaching concerns represent idealized concerns about pupils. The second stage is characterized by early concerns about pupils. The second stage is characterized by early concerns about survival. That is, concern about classroom management, evaluations by supervisors, and whether they will ever learn to teach at all. Limitations and frustrations with the teaching
situation comprise the third level. Concerns about methods, materials and content represent this level. The ideal concerns, those about pupils, are expressed by preservice students in the fourth level. Fuller and Bown (1975) suggest that the resolution of these concerns is a significant growth experience for students and is facilitated by changing the student teaching context. However, they state "[B]etter teaching is probably associated with concerns about pupils rather than concerns about self" (p. 40).

Fuller and Bown (1975) suggest that changing the context and providing materials, experiences and information to resolve self concerns would improve teaching. According to Kelly (1955), altering experiences and context would cause students to amend their constructs of the altered issues. Zimpher & Howey (1987) suggest that with "appropriate amounts of challenge and support" individuals can move through the sages toward maturity. Teaching is constant self-confrontation, a weighing of the bi-polar dilemmas. "Personal development is an essential part of the teacher's preparation," (Fuller and Bown, 1975) but it is often unattended to in teacher preparation
programs.

Construct Theory

Kelly's (1955, 1963) view of humans is that they behave as scientists, "... ever seeking to predict and control", observing, forming hypotheses, and experimenting on everyday activities. Kelly's (1955) theory of personal constructs emphasizes the interaction between man and his environment as an experiential cycle, examining thoughts behind actions. Through experiences in interaction with the environment each individual develops a personal construct system.

"Mental constructs, as defined in George Kelly's (1955) personal construct theory, are interpretations placed on persons, events, or things. They are qualities and characteristics attributed to the elements which make up a person's world. The way a people construe their world determines how they act." (Oberg, 1986, p. 6).

The system of constructs is hierarchical, arranged in "ordinal relationships", (Kelly, 1955, p. 56, 78) bounded by an individual's values and interpretations of reality
(Ben-Peretz, 1984). Each construct is a single bi-polar entity, the positive pole representing similarity, and negative pole the basis for contrast (Ben-Peretz, 1984). Differences in people, places or things, and events may be construed along a continuum. Constructs are flexible and permeable, able to be revised in light of new experiences or when a prediction has proven to be wrong. A criticism of the theory suggests that a construct will seldom be found wrong or invalid since events are interpreted by the actor in light of the construct (Oberg, 1987). In Jackson's (1968) study for example, teachers frequently rejected negative cues because they were construed by the teacher as potentially threatening to the psychological health of the teacher. In a reinterpretation of Kelly's original theory, Mischel (1964) says:

"Having discovered the content of a person's constructs from what he says and does, the clinician explains his behavior by showing that the way he in fact acts in various situations is just what would seem the right way to act if one followed the rules he follows." (p. 189)

Construct theory acknowledges the person as creating
his/her own reality, interpreting that reality and valuing
the interpretations through action, making it amenable to
observation of spontaneous activity with or without verbal
inquiry. Even a new outlook "gained from experience must
be construed", and the individual will learn only what her
framework (comprehensive overview) allows her to see
(Kelly, 1963, p. 79). This concept supports Dewey's
(1963) notion of a "funded biography", or individual
perspective.

To understand the experience of becoming a teacher,
both the context of learning to each and the student's
perceptions of the task are important. Through a "rose is
a rose ...," a student teacher is a unique being, unlike
any other student teacher in many ways. Though two people
may share a similar construct, no two persons will have
had the same constellation of experiences, or the same
perceptions of those experiences, cultural heritage, or
biographical history.

Constructs can be identified through observing
spontaneous activity with or without verbal inquiry
(Oberg, 1987). Actions are explained in terms of mental
construct systems used to make sense of the world (Oberg,
1987).
Adult Stages of Cognitive Development

William Perry's (1980) theory about the moral and ethical development of college age students is concerned with individual thinking. According to Perry (1980) individuals filter their actions, feelings, and perceptions about events through a set of assumptions learned as they develop cognitively. Nine different positions, three stages of dualism, three relativism stages, and three stages of commitment, represent different ways of understanding the ambiguity of knowledge.

The stages of dualism assume that knowledge is finite, answers are known or can be discovered. In the second three stages, relativism, uncertainty about the absoluteness of knowledge develops. An understanding of the function of individual meaning and interpretation characterizes the final three stages of commitment.

Implications for teacher thinking studies are multiple. As Zimpher & Howey (1987) suggest "A teacher's level of development or psychological maturity then may well be a precondition for internalizing certain concepts and manifesting certain behaviors in teaching practice" (p. 122). The conceptual development of student teachers
may depend primarily on their stage of development rather than classroom learning. Along these same lines, as Kelly (1955, 1963) has noted, how individuals make sense of the world and the interpretations they give to their experiences determines their actions. The kind of 'sense making', interpretation, an individual does is tied closely to psychological maturity.

**Cognitive-Developmental Theory**

The propositions of cognitive developmental theory incorporate Piagetian stage theory. These propositions include: (1) All humans process experiences through cognitive structures called stages, (2) these structures are hierarchically organized from less to more complex, (3) growth occurs in one stage and may progress to the next stage but may not skip stages, (4) growth is not unilateral or automatic, and occurs only with appropriate interaction between the individual and the environment, and (5) behavior may be predicated by stage development, but the predictions are not exact (Sprinthall & Theis-Sprinthall, 1983, p. 39). The more developmentally complex an individual is the more democratic, empathic, flexible, adaptable, and responsive he or she seems to be.
(Sprinthall & Theis-Sprinthall, 1983). In other words, persons at more complex levels of psychological development behave more humanely, and "perform more adequately in complex human interactions involved in helping situations" (Sprinthall & Theis-Sprinthall, 1983, p. 41). Longitudinal and cross-sectional studies indicate that college students and young adults generally function in either mode A or B of Hunt's (1981) scale or stage 3-4 of Kohlberg's (1975) levels of moral reasoning. Mode A of Hunt's (1981) scale represents a concrete factual basis for viewing learning, there is one right way. In mode B, learning is viewed in abstract terms, the need for differential aspects of instruction is recognized. Stage 3-4 on Kohlberg's (1975) scale represents judgments based on respect for authority and loyalty to others.

According to Knowles (cited in Holly, 1984, p. 16) adults learn from life situations rather than subject areas. For adult learners the prominent method of education should be analysis of experiences. Because individual differences increase with age, it is potentially more beneficial for adult learners to engage in dialogue and share these multiple perspectives. Adult
conceptual levels should provide the basis for professional development experiences (Holly, 1984, p. 16).

In Griffin's view (1955) hierarchical movement through levels of concerns as a function of teaching experiences is not supported by research. The researcher sees that various stage theories point toward emerging commonalities. Most distinctive is a connection between complex behaviors, particularly thinking, and more mature stages of development.

Constructs are individually held interpretations about people, things and events. They are flexible and permeable, and create a framework for an individual's actions.

Similarly, Perry theorizes that certain levels of psychological maturity are required for certain kinds of behaviors. Cognitive developmental theory correlates the level of complexity in thinking with more complex human interactions.

Adult learning theory presumes learning occurs through experiences and analysis of experience, which creates implications for understanding how student teachers may begin to construe their world. Developing and changing
their personal practical theories about the nature of instruction, curriculum, and pedagogy requires flexible constructs. The potent messages are about experience informing the individual, building mental systems, and facilitating growth and maturity.

Summary

The purpose of this chapter has been to review the literature which has contributed to this study. It has come from widely varied fields of teacher thinking, reflection, student teaching, supervision and psychological theory. Teacher thinking research has begun to examine both what teachers know and how they use that knowledge to manage the instability, uncertainty, and complexity of teaching. Studies concerning intellectual biography, individual beliefs, and tacit knowledge, have been explored to identify the relationship between experience and actions. Differences between expert and novice teachers were shown to be pertinent in the ways that knowledge is gained, held, and used.

For expert teachers, planning serves many functions. For example, it may be used to organize content and materials to meet the demands of a specific context, to
anticipate problems, and to meet the needs of specific students. Differences in planning appear to be developmental and strongly tied to experience. The planning of experienced teachers does not follow a linear, rational model and is concerned with longer time frames than those of student teachers. Much of experts' planning is in the form of a complex mental dialogue about the work of teaching. Discrimination can be made between weaker and stronger student teachers on the basis of the kinds and uses of planning. Research implies that the differences are related to the amount and organization of knowledge about the task of teaching rather than in cognitive ability.

Personal practical knowledge constitutes professional knowledge and represents a dialectical relationship between environment and individual. Much of this knowledge may be tacit, that is, learned through experiences, used to guide actions, but unrecognized by the teacher. Whether the embodiment of experience or a particular kind of intelligence, practical knowledge is situation specific and concerned with solving practical problems which do not respond to the application of laws
or rules. Practical knowledge held in the form of practical theories justifies teachers' choices of action, curriculum materials, and pedagogy.

Within the realm of examining what teachers' know, the mental lives of teachers offer rich opportunities to understand how that knowledge is gained, organized, held, and used. The act of research itself often renders tacitly held theories, values, and beliefs, which invisibly guide teachers' actions, visible to the teachers as well as the researchers. Visibility results in reflection on actions and underlying theories.

Three conceptualizations of reflection have been explored; the retrospective view, critical theorists' view, and Schon's more cognitive interpretation of Nohl's vision of pedagogical reflection (cited in van Manen, 1987). This review has emphasized a quality of reflection which commands awareness of the ways knowledge is linked to practical actions. As Smyth (1987) suggests conceptualizing a theory systematically explains the interconnectedness between teachers' actions, beliefs and feelings and the social institutions, contexts and structures in which they occur. The reciprocal nature of
content, patterns of interaction and influences in the social contexts of student teaching on the results of reflection contribute to the less than positive picture. Most current studies of reflection are from a highly cognitive Schonian perspective.

Student teaching itself has been exhaustively studied for more than fifty years, and experts agree that little impact has been made on the nature of the experience as a result of the research. Still, the practicum is highly valued, widely accepted way of gaining the necessary practical experience of learning to teach. The profile of the typical student teacher is of one who enters and leaves the experience with his or her original conceptions in tact though more clearly articulated. These conceptions of teaching have been gathered from a variety of sources including twelve or more years of experience as a student. Although research suggests that student teachers can and do reflect given appropriate situations, the evidence concerning the results is contradictory. Field experiences seem to do little more than assimilate novices into traditional patterns, despite the opposing strong beliefs of the participants.
Finally, via the lens of psychological stage theories, individual uniquenesses in response to the contextual influences were related to the development of personal practical theories. A constructivist's perspective has been projected through Kelly's theory of personality development and Perry's theory of adult development. Psychological maturity and the relationship of experiences and opportunities for building mental systems which facilitate continued growth appear to affect the complexity of thinking. More complex patterns of thinking are associated with more complex human interactions.

Though illuminating how prospective teachers begin to develop their personal practical theories is a goal of this study, it is hoped that opportunities for the students to understand and control their own teaching will remain central. Methodological and ethical concerns are addressed in Chapter III.
CHAPTER III

Methodology

Introduction

In this chapter, the research methods used, the rationale for their use, and related issues are discussed. Background is presented with each section to clarify terms.

Background

Methods of qualitative inquiry are the most appropriate way to study the complexities and subtleties of student teacher thinking because this researcher accepts the assumption that differing human perspectives of a phenomenon result in multiple realities and mutually formed patterns intricately interrelated. In this form of research data is gathered by people engaged in natural (not experimental) behaviors: talking, sharing, explaining, observing, etc., in locations where the events under study naturally occur. Yinger (1986) and others (Clandinin, 1986; Elbaz, 1983; Shulman, 1987) contend that
it is essential to study student and/or teacher thinking in relation to the natural events and setting of the classroom rather than in isolation from the social interactional context. Basic epistemologies underlying inquiry approaches in educational research are positivist, phenomenological, and critical theory; and blendings of these. Each approach is characterized by a unique set of methods, questions asked, issues and assumptions about major issues. This study focuses upon understanding the values, beliefs and underlying assumptions of the student teachers' development of practical theories from an emic (inside's) perspective rather than an etic (outsider's) perspective.

Since a researcher's perspective influences any qualitative study (Guba and Lincoln, 1981; Bogdan and Biklen, 1982) autobiographical information about this researcher must be considered. The researcher was formerly a teacher in both elementary and middle school settings, a reading specialist and coordinator of gifted programs during her years of service in public school education. During part time employment by the university the researcher taught undergraduate general methods
courses, and supervised student teachers. Prior to university employment the researcher had taught post degree students in workshop settings on a variety of topics. Many of these experiences paralleled those of the preservice teachers she taught and supervised during her tenure as a doctoral student. Doctoral studies included courses in curriculum, supervision, teacher education, gifted education, and qualitative research methods.

**Inquiry Perspective**

This investigation emphasized the conceptual world of student teachers in an attempt to understand how and what meanings are constructed around events in their daily lives (Bogdan & Biklen, 1982, p. 31) on which they built a repertoire of practical knowledge. The rich description afforded by qualitative inquiry methods actively engages the audience in seeking to create meanings and evoke particularized understandings of events, thus rendering the case study personally relevant to its readers.

Interpretation, as McCutcheon (1981b) notes, is a process which many, though not all, qualitative researchers choose for making sense of the phenomena and also in building and critiquing theory. "We construct meaning out of events to
provide understanding to people who did not accompany us to the classroom, or to its participants" (p. 5). Along this line Polanyi (1958) has said "... nothing that is said, or printed can ever mean anything in itself for it is only a person who utters something - or who listens to it or reads it - who can mean something by it...".

Interpretations vary according to the inquiry perspective of the researcher (positivism, phenomenology, critical theory), the type (internal-external) of considerations, what is significant educationally to reveal, and the researcher's areas of expertise (McCutcheon, 1981b). Since the researcher is the perceptual lens in qualitative study, interpretation is both objective and subjective. It is critical for readers to know the inquiry perspective of the researcher, and her line of reasoning to permit full thoughtful audience participation. Interpretation is the active construction of meaning, first by the researcher, then the readers. Communication, sharing and growth are inextricably linked (Nias, 1987, p. 2) among all participants, the respondent, researcher and the readers of the study.
**Researcher's Role**

The role of the researcher is to render the context and events that occur within it clearly, permitting readers to reflect on the phenomenon being studied, and determine its pertinence in their own particular contexts. One characteristic trait in any kind of qualitative research is the possibility of readers and participants arriving at different interpretations of the same data though we may live in the same culture and share the same bases of experience. Larsson (1986) regards this as an opportunity to see new dimensions of a phenomenon. Other researchers debate whether some inquiry techniques, such as the use of verbal reports as data, accentuate this characteristic. Verbal data coupled with observed interactions constitute a phenomenon, though some perspectives allow only observable behaviors to constitute legitimately acceptable data (Mehan, 1979, cited in Ericsson & Simon, 1984). Sharp & Green, and Kaplan (cited in Bellack, 1978, p. 70-71) point out that both the observer's and the participant's viewpoints are necessary for interpreting and analyzing events in classrooms.
Descriptions of Methods of Inquiry

Congruence between the researcher's and participants' perspectives is generally arrived at by reporting participants' descriptions and reasons in addition to records of interactions. Clark and Peterson's (1986) review of the research of teacher thinking, planning and decision-making listed five methods of studying teacher thinking including thinking aloud, stimulated recall, policy capturing, journal keeping, and repertory grid techniques. Borko & Niles (1987) list the most commonly used methods as policy capturing, process tracing (thinking aloud), stimulated recall and case study. Each of these methods has individual limitations and merits. Used in combination for the study of teacher thinking, Broko & Niles (1987) maintain these methods provide consistency across studies and, hence, increase generalizability to larger populations of teachers (p. 169).

In the typical policy capturing method printed descriptions of students, curriculum materials, or hypothetical teaching situations, are presented to a teacher. The teacher is asked to make one or more
decisions or judgments about each situation or description using a Likert scale rating. A mathematical model is produced depicting the relative weightings the teacher attaches to objects being judged (Clark & Peterson, 1986). The policy capturing methods does predict decision outcomes, but it does not provide information about thinking used to make those decisions. Further, according to Borko & Niles (1987, p. 168) decision making models are based on limited information and hypothetical tasks which may not reflect the full richness and complexity of teachers' decisions in their actual settings.

The process tracing (thinking aloud) technique has limited value in classroom studies principally because the interactive teaching phase is disrupted by the emphasis on the objectives of thought during the pre-interactive phase. This method consists of audio or video recordings of a teacher's verbalizations while engaged in making judgments or planning (Clark & Peterson, 1986). These are later transcribed creating written protocols which are analyzed using researcher created codes. Descriptions are of the content and sequences of cognitive processes the teacher used.
In stimulated recall, audio or video taped records of classroom action are presented to the subject after a lesson. Either prespecified or open ended questions, may be asked pertaining to the participants' thinking processes during specific actions. In some cases, the respondent may stop the tape to identify remembered mental activity, but most frequently the investigator selects the episodes. The teacher is asked to recall and report her or his thoughts and decisions during the episode. The reports are audiotaped, transcribed and the written protocols analyzed (Clark & Peterson, 1986).

The methods used to collect data on teacher thinking "force" reflectivity which influences the way teachers do their work (Clark & Lampert, 1986). The next section discusses the use of verbal reports as data.

Discussion of Verbal Reports as Data

Process tracing and stimulated recall methods depend on verbal reports. Yinger (1986) has hypothesized that responses obtained through stimulated recall may in fact represent new responses to the video or audio taped interactions, not recall of the original thoughts while acting. Audiotaped material seemed to require more
reliance on memory than video. Lowyck (1986) found that teachers could better word their retrospective responses as examples of concrete illustrations (p. 182). Some researchers, for example Schon (1983, 1987), do not depend on participant's descriptions, explanations or interpretations, but use recorded action to develop models of thinking processes (Yinger, 1986). Both Mehan and Frake (cited in Ericsson & Simon, 1984) caution that the method of testing the reality of researcher perspectives by soliciting information from participants regarding their thinking processes structures the responses. A critique of Elbaz's case study of one teacher's use of practical knowledge asserted that "thinking" became what the participant said when asked (Yates, 1986, p. 125). The participant's responses may be distorted by what is thought the researcher wants to hear.

What people say about their thinking processes may not be identical with what they do. It is difficult to separate the meaning of the words thinking and speaking since their contemporary meanings are derived from the same root "logos" (van Manen, 1984). In turn "logos" retains the meaning of conversation, inquiry and
questioning (van Manen, 1984, p. 41). The attributes of language itself contribute to these difficulties. Due to the linear nature of language, events can only be reported singly, thus giving them the appearance of occurring within a specific order and time sequence. The form of language itself does not allow reporting of multiple concurrent happenings in a way which maintains both dimensions. Thus describing the structural features of a phenomenon such as thinking is in a sense only an icon, an example of the thing itself (van Manen, 1984). It follows then, that reports of thought processes may be construed as examples of examples, not as representations of absolute reality.

Another problem is incurred when attempting to make visible, or known a phenomenon such as thinking involving the act of observing one's self. The act of observing, as analyzed by Beets (cited in van Manen, 1979) describes an increasingly intimate relationship between the observer and the observed. Such observation cannot meet the demands of a non-subjective approach to reporting one's own thinking. In addition thoughts seem to occur simultaneously in varying order and number. Teachers are
subjected to a constant barrage of information on all sensory channels to which they must respond with little or no time for sustained consideration (Nias, 1987, p. 3). They can catch their thoughts only as a reflective act, never as they happen (Clark & Peterson, 1986; van Manen, 1979). Reflection offers opportunity for contamination of the absolute reality by interpretation. Interpretation includes all the contextual variables of the situation resulting in an ordering or hierarchical definition of the experiences, evaluation and often decisions for change.

Bernstein (1976, p. 113) draws attention to yet another difficulty evolving from ways language is embedded in practice. Without understanding the practices, language is meaningless, and practices won't make sense without the language. Citing Taylor,

"There is no simple one way dependence here. We can speak of mutual dependence if we like, but really what this points up is the artificiality of the distinction between social reality and the language of description of the social reality." (Bernstein, 1976, p. 113).
Building the common language coincides with the act of understanding (Gadamer cited in Oberg, 1986, p. 9). According to Henderson (1988), preservice teacher preparation students found the formal language of education alien and pretentious, though typical of academia. Since understanding the nature of student teacher thinking is the essence of this study, attention to communication through shared meanings in a common language was crucial.

Observing behaviors alone is insufficient since the "same behaviors can be governed by the same motives" (Carew & Lightfoot, 1979, p. 12). However, external observations can bring to light the participants' tacit knowledge, their unconscious motives and rules, as in Schon's work. According to the information processing model distorted retrospective accounts occur when, (a) there is a lack of stored information (the information requested was never heeded, hence is not available), (b) mediations are made to fill gaps in recall, and, (c) through generalizing what ought to have occurred in such a situation (Huber & Mandl, 1984). If the respondent corrects and/or restates concerns during the interviews reliability between what is reported and the unobservable
thinking processes is increased (Yates, 1986). The goal, according to Mehan (cited in Ericsson & Simon, 1984) is to "avoid unfounded attributions to the mental states or intentions of the participants, unwarranted psychological reduction, and the reification of unobservable, abstracted sociological notions" (p. 2).

This study used observations and verbal reports as data in the form of interview replies, journal entries, and stimulated recall during interviews, in effect triangulating the date collected. Retrospective accounts were collected as soon as possible following observations. Data representative of construed rather than recalled mental processes provided additional insights into how the student teachers reflected on their practices.

The Case Study Method

The case study method was used because it permits a detailed examination of a subject in a particular setting. A goal of this inquiry was to examine the content of their theories and the ways student teachers constructed and used their theories in the particular setting, elementary classrooms.
One of the values of the case study method is that such close examination can yield insights into subtleties which may be missed in research with a larger number of participants. It allows persons in other settings interested in the possible worth of the phenomena being studied to make decisions about fittingness in their own contexts.

For some, a limitation of the case study method is related to difficulties regarding generalizations from the small number of participants and sites. Eisner (1978, p. 356) suggests universality can be found in particulars, therefore, critical consideration of the particulars can lead to understanding of the universal. Clear description of a particular experience can point to the nature of that phenomena as a human experience (van Manen, 1984).

Generalizability

Identical actions by students and plans and actions of teachers cannot be duplicated for replication of a study. However, Tabachnick (1981, p. 85) suggests that enough clear descriptive information can be produced about a case to enable some form of reproduction or at least "a wider application" by potential users.
Emic/Etic Perspectives

The data collected, including what was followed-up, was chosen by the researcher, the primary goal was to add to knowledge not pass judgment. For that reason, the researcher purposefully took into account her own perspectives and personal practical knowledge. Perspectives used to study teacher thinking may be roughly divided into two classes; those taking a participant's or emic view, and those based on a researcher imposed framework (Clandinin, 1986-87).

This work used an emic or (student) teacher-practitioner perspective because the objectives of the researcher were to study how student teachers began to develop their personal practical theories. The student teachers were viewed as active interpreters and constructors of their respective classroom worlds, whose personal backgrounds as well as the physical, temporal, and organizational contexts of their classrooms influenced the ways in which they defined their situations and thus the opportunities they saw for action.
The Sample

Nicole was chosen as the case study participant as described in Chapter I. The student teachers for the interviews were identified by the director of the Early and Middle Childhood Department of the university. All fifteen students who were invited participated in the interview. Two were males, one student teaching in the third grade, the other in the eighth grade. Of the remaining 13 females, one was a non traditional student in that she already held a degree in art and had returned to acquire the necessary course work for teaching. She and three others were student teaching in the seventh and eight grades. The remaining nine were traditional female student teachers in the primary and intermediate grades. Interviews were conducted at various points during the eleven week quarter of student teaching. Matching the schedules of the student teachers and the researcher posed problems obtaining all interviews during the same week. Some student teachers were interviewed two weeks into the quarter, others during the fifth and sixth weeks, and others during the ninth and tenth weeks. Observations and follow-up interviews of five of the student teachers
occurred during the ninth and tenth weeks of the quarter. These time differences may have created differences in the data obtained.

Some data collected at the beginning of the quarter is unlike that collected at the end of the quarter in several ways. First, some students interviewed early in their practicum experience gave answers without much detail, whereas those interviewed nearer the end of their experience responded with extended descriptions and contextually rich examples. For example, Violet (I-7) was interviewed one and one half weeks after beginning her practicum experience. When asked, "How do you meet individual needs in your class?" she responded "good question". The interviewer probed, "what do you do? what activities do you use?" Violet replied, "as much as possible I try to do the lesson with the whole class. Those that don't understand it, I bring them up and do some more problems."

Katie (I-16), interviewed during the last week of her practicum experience, responded to the question "how do you meet individual needs in your class?" in this manner.
"I think that what I mean by that is listening to
the children with a curious ear, not just
listening because they're talking, but because
you really want to learn something about the
child. Teachers being learners too. [sic] If you
can do that then you can lay out for the child,
or help a child lay out, what is right for that
child at that time, rather than saying it's 9:30,
we're going to study health so get your your books
and turn to page 103." (p. 8)

The differences may be the result of more complex mature
thinking instead of the timing within the quarter. Sue,
interviewed during the second week of the quarter,
responded to the questions "how do you know if a lesson
has been successful?" with

"I think you need to look into what the class is
saying and what they're talking about. If they
are all excited about it, and they want to know
more, and they have lots of questions about it,
not questions as of, well 'why did you tell us
about this? ', but more questions that maybe you
want included in your lesson plan that are not
questions that they really need to know about, but questions kind of outside ... and they seem to understand it, I think then that you know that the lesson has been successful. If you feel confident with what you have done, if you feel like you could have made it a little better or there was [sic] lots of problems arose, it still could be a lesson that just needs to be changed." (I-16, p. 7)

Sarah (I-12) was interviewed during the last week of the practicum experience. She responded to the question "how do you know if a lesson has been successful?" by saying

"When students respond on the spot and they want to keep going with the topic. That's immediate. Or you ask them. Sometimes you have to be blunt and say 'did you like what we just did? Would you like to do it again?' Or there weeks down the road they ask you about what you did that day." (p.6)

The richness of the data may have been influenced by such other variables as the location of the interview, relationship to the interviewer, students' ease in
verbalizing thoughts, or student's concerns about the interview situation. Most of the interviews occurred at the end of the school day, either in the university office of the interviewer or in the respondent's school. One occurred on a Saturday morning in the interviewer's home. Sample answers were compared for student's known and unknown to the interviewer. No differences were found which could be attributed to the students having prior knowledge of the interviewer. That differences exist among the students interviewed is an interesting but not unexpected phenomenon. Purposeful sampling was pursued to maximize the scope of variation among respondents (Glaser & Strauss, 1967). However, the primary interpretative device for this investigation is the case study. Interviews were conducted to provide a rich textural ground for understanding student teachers' practical theories.

The relationship of the researcher to the investigative act is critically enmeshed in her or his belief about humanity, knowledge and science. For example, as an objective or disinterested observer, the
researcher exhibits an instrumental or absolutist view of knowledge, asks questions of means, and looks for casual explanations. A teacher is seen as a technician. Conversely, a researcher who subscribes to 'disciplined subjectivity' (Manheim in Carr & Kemmis, 1986, p. 151) views knowledge as practical, the teacher as a partner in the creation of knowledge, seeks understanding through participation in the social or political lives of the respondents to describe and inform. A third possibility, like the second, involves a view of the relativity of knowledge. However, the researcher and respondent (teacher) collaboratively form new knowledge by commingling both perspectives.

The Original Design

The original design for the investigation provided for a double case study and an unspecified number of independent interviews to be conducted while the case studies were in progress. The number of interviews would be determined by the number required to reach data saturation, that is the point at which no new data was being found. Diversity among the interviewees was sought as described in Glaser & Strauss for purposeful sampling
(1967, p. 49) and explained previously. The interviews were based on a semi-structured interview guide. The case study was a non-participant observation (Oberg, 1986), with participation restricted to interaction with the student teacher for interview purposes. Guided indepth interviews were planned with the cooperating teacher and building principal. Interviews were tape recorded and transcribed. Other data was collected, including journal entries, curriculum materials in use, and field notes.

**Improved Design**

As data collection began it was noticed that the original design for the study would be strengthened if interviewees were also observed and reinterviewed. A revised design was implemented dropping the second case study, adding observations and follow-up interviews of five of the interviewees. The number of interviews was increased to fifteen, though 18 were actually made. The first three were experimental to provide clarification of questions and data collection methods. The observations and follow-up interviews offered the opportunity for discovering categories and interrelationships.
Some of the students in the interview, observation, interview sequence were student teachers for whom the researcher had responsibility as a supervisor. This presented a dilemma since the researcher had supervised the practicum of some of the students during the quarter. In what ways did the researcher's own personal perspective influence the students' response? In other words, what had the students learned about the researcher's expectations and theories, and in what ways would that knowledge affect their theories, thinking, or responses? Evidence suggesting the researcher's influence was documented and coded in field notes and transcripts. During analysis, responses of students with whom the researcher had had contact were compared to those of students who were not known to the researcher as one means for maintaining the integrity of the data. Additionally, each interviewee was given a copy of her or his transcript and asked to review it for errors or statements that needed clarification. Those who participated in the observation-follow-up interview cycle were given the opportunity to examine and react to the interpretations made by the researcher.
Viewing learning to teach through the eyes of the students necessarily entailed building trust between students and researcher. As Nias (1987) suggests, perception is not a passive process (p. 13). Perception is more than a simple mirroring of experiences. It is an active process, responsive to the surrounding world, which orders experiences and helps each individual make sense of them. If the researcher influenced the students, it was equally evident that the students influenced the researcher. Intense examining of the students' experience created heightened awareness of the meanings of the experiences for the individuals and increased the researcher's reflection on events and experiences within that frame. Wanting the student to be a beneficiary of this study, the researcher attempted to keep the student central.

On occasion students asked interesting and direct questions such as "How would you do that?" or "Is there another possibility for a field trip?" or "Can you suggest another classroom to observe in?" It was essential to maintaining trust to answer the questions.
Another form in which reactivity was evident amount these students and frequently observed in Nicole, was an expectation that there was something to be learned by participating in the interviews (Fn. 2-10, 2-20). Evidence was documentated for instance in the interview comments of Violet (I-7), who said that her friend suggested she offer to take the questionnaire because it was fun and she could talk about her pupils.

Andrea provided an insight into her perceptions of the interview itself.

A: This is a self-evaluation.
I: Oh, it wasn't meant to be that, but ...
A: (interrupting) I think it is though. They're definitely questions about where you are and where you should be going and what you have been doing.
I: Actually, it was meant to be 'what do you think about these issues? What are your theories about these issues?' Hopefully that's what I'm going to hear when I play the tape back. Is that what you think you said?
A: Yes, at the same time when I am telling you my theories it makes me evaluate myself. (I-17, p. 30)
Some of the students shared, after the tape recorder was turned off, that they thought the transcript of the interview would be helpful preparing job applications in which they were often asked to state their educational platform or philosophy of education (I-2, I-6; fn/II-6). These indications of "forced" reflectivity, and influences on the students' thinking were not unexpected, nor considered by the researcher as negative outcomes because of the researcher's commitment to keeping the student central. The letters and numerals in parentheses indicated interview numbers and related field notes. The names of all participants, locations, and other identifying information have been changed to assure anonymity.

**Reactivity**

Nicole and several of the interviewees reported questioning their own practices, seeking a deeper understanding of themselves in the teaching role. This researcher does not view reactivity of this sort to be an altogether negative consequence. Research which like the knave of hearts steals the data and runs is merely about education, unlikely to create changes. Research for education necessarily has embedded within it the sort of
reflection and potential for change suggested by the statements of the interviewees and Nicole.

The Interviewee's Settings

The fifteen student teachers described above were placed in sites including urban inner city and suburban kindergarten-sixth or kindergarten-eighth grade settings. The sites were determined by their university coordinators. All names and identifying characteristics have been altered slightly to provide anonymity.

Nicole's Setting

Paul Revere elementary school is one of 40 kindergarten through fifth grade elementaries in this large mid-western urban inner city school system. Thirty middle schools and 20 high schools are scattered around this city of 500,000. Their activities are orchestrated by a central office staff that includes administrators and content area specialists.

Paul Revere is located in a neighborhood of predominately Appalachian culture residents. Most dwellings are single family buildings in the range of from twenty to thirty thousand dollars. In the winter bareness many of the houses appeared "run down", many had peeling
paint, some had broken porch rails or steps, one or two places had broken windows patched with a strip of board or in one case plastic. Several apartment buildings were within walking distance of the school. Though the four block long one-way street passing in front of the school was narrowed by cars parked along the curbs on both sides, the school buses arrived and departed daily with students from other parts of the city, the school districts's attempt to equalize racial and ethnic balance.

Most students in Nicole's classroom were from the neighborhood and walked rather than rode a bus (I/l-26, p.6). Twenty of the twenty-one students were on the free lunch program. Mrs. Mandel, the principal, stated that about one percent of the students in the school pay for their lunches, the rest were on the free or reduced price lunch program. The school houses three fifth grades, two fourth grades, two third grades, and two each of second and first grades, one all day kindergarten and one regular kindergarten.

The principal of Paul Revere is a black female who had been a long time elementary school teacher in the city system. This was Mrs. Mandel's third year as principal. Paul Revere was her first assignment. Though the overt
neighborhood tension regarding her principalship has subsided, she recalled for the researcher the day she "made the news" trying to calm the parents protesting her appointment. She views her job as important, and puts the children first. (P/I-1).

The building and the grounds attached to it are noticeably litter free and orderly. During the winter snow, walks were shoveled the full width of the cement, and a path was cleared through the parking lot to the nearest sidewalk. (fn-2/8/88)

The secretary, Mrs. Bates, and her husband occasionally "go out socially" with Mrs. Mandel and her husband. The secretary informed the researcher that some parents still make racist remarks to her about the principal. Her reply to them is that Mrs. Mandel is her boss, then she asks a diverting question such as "What did you need today?" Mrs. Bates believes that the principal has been "good for Paul Revere" and she likes the working conditions and her relationship with the principal. 'She never makes me feel like she's a boss, which she is you know.' (informal conversation, field notes, 2/8/88). The atmosphere in the office is pleasant and welcoming. Mrs. Bates greets everyone warmly.
Nicole's assignment was a third grade on the second floor of the building next to the music room. Twenty-two pupils, 10 males and 12 females, inhabited the large old high ceilinged room. A large piece of carpet had been placed over a section of the polished wooden floor in a rear corner of the room. Children sat on the carpet for story time and the Glasser circle (fn/9-20). Nicole's reading groups met at the table on this carpet.

Children's work was hung from every available space. The only chalkboard useful as a writing surface was in the front of the room between the two entries. A third entrance, invisible from the main room, provides access to the coat room from the hallway. The coat room was set apart from the main area by a floor to ceiling wall which contained a doorless opening. Nicole watched the coat room carefully since it is frequently the site of student fighting (J/2-10; I-3/22; p. 8, FN/3-22, p. 5).

Space was used creatively. Some corners and niches were labeled "conference". The "conference" area beneath the window in the back of the coat room had a small piece of carpeting, several big pillows and two stuffed bears.
Book jackets were hung on the wall. Half pulled window shades on the seven large windows along the back of the room served as places to hang instructions for the learning centers on desks beneath them. An old benchless upright piano, a television on a high wheeled cart, and a computer were clustered near the coat room opening.

Student desks formed a large square facing the useable chalkboard. Several breaks allowed access to the middle of the square. As the observation days passed the arrangement of the desks changed due largely to students wishing to move them (H-I-1, FN-3/25). The teacher's desk, shared by Nicole and Mrs. Husted, stands in the back of the room near the coat room opening.

**Teacher-Student Teacher Interaction**

The relationship between Nicole and Mrs. Husted was described by them as "team teaching" although it did not exhibit characteristics of traditional team teaching. They each taught two of the four reading groups, and alternated days teaching mathematics. Nicole had strict province over "her baby", the writing program (I/2-23, p. 9). They tried unsuccessfully to teach science
cooperatively, each brought ideas to a planning session. The difficulty was resolved by alternating responsibility for lesson topics.

Mrs. Husted infrequently left the room for extended periods when the researcher was present. On several occasions the researcher observed that Mrs. Husted 'helped out' during Nicole's teaching, seating herself among the children pointing out things to supplement what Nicole was saying. She assisted with discipline, or after Nicole made an assignment would walk around the room helping children with their work.

Mrs. Husted and Nicole both thought of themselves as unlike in teaching styles. Nicole wanted schedules framed and adhered to, while Mrs. Husted was not as concerned by time schedules within the classroom (Fn-4/19). Mrs. Husted tolerated more movement and talking in her room during and after instruction than Nicole was comfortable with (Fn/3-22, p. 4). Both were aware of some of their differences. Nicole believed that she usually defers to Mrs. Husted's opinions, and placed a high value on the things that Mrs. Husted valued. (I/2-23, p. 4, 9, 10).
Design of the Study

General Research Question

The general question under study here was the student teacher's personal practical theories of pedagogy, instruction and curriculum. What are the contents of those theories? Is there congruence between the theory and the practice of the student teacher?

Data Collection Techniques

A case study was conducted with Nicole, a student teacher in the intern strand at the Ohio State University. A strand is defined as a cohort - a group of students who begin and progress together. Each strand has an identified theme such as reading and literature or computer technology around which to build methods courses, though all students receive basic methods instruction as determined by the State of Ohio's certification standards. Generally student teaching is one quarter, eleven weeks, in duration, except for the intern strand. Students in the intern strand student teach for one full school year.
Fifteen other student teachers were interviewed in depth to determine the origin and content of their personal practical theories. Seven of these were observed once for one class period each, averaging between forty-five and sixty minutes. The entire sample consisted of elementary level student teachers with varying cultural, social, and economic backgrounds, abilities, ages, gender, teaching levels and strand difference. The diversity of the sample was intentionally selected following guidelines for purposeful sampling (Glaser & Strauss, 1967). The assumption was that differences among participants would facilitate the discovery of questions, categories and interrelationships while allowing discovery of strategic similarities.

Data was collected through observation, field notes, structured and unstructured interviews, and texts in use, materials in the room, journal entries of the participant, and interviews of personnel with whom Nicole worked. Additional data was collected in the form of semi-structured interviews, observation, and follow up interviews with other student teachers. Interviews were edited and transcribed for readability. (See Appendix A for interview question guide.)
Interviews depend on asking respondents to provide information. Patton's (1982) variations of interviews include informal conversational, guided, open-ended, and closed quantitative types. Interviews allowed the collection of descriptive data in the participant's own words to gain access to insights on how subjects interpreted their world and used their interpretations as a basis for actions.

Preliminary interviews with Nicole did not have specific predetermined questions. The interviews followed observations. The researcher believed that Nicole's actions could best be understood in terms of their meaning to her in a specific situation. Questions were drawn from Nicole's actions and were structured around areas of concern such as the people interacted with, the activities used, and the purposes for actions. More specific questions were developed from the immediate context or during reviews of the field notes and interview transcripts.

Guided interviews are defined as purposeful conversation between two or more persons, directed by one person to obtain information, and focused on a particular topic. The interview guide provides a plan or design for
systematic collection of data, increasing data comprehensiveness. Topics and issues which emerged from the informal interviews and classroom observations were developed into interview questions. These were used for follow-up discussions after initial classroom observation and preliminary interviews to clarify or trace leads. Guided interviews represented the method of data collection from the fifteen other student teachers. The basic interactive format of the interviews allowed the researcher to shape, revise and frame better questions in pursuit of leads offered by the respondents, yielding useful and unexpected information.

Data was collected for a nine week period during the 1988 winter quarter. Observation visits were made twice weekly for approximately an hour each. Interviews followed observations immediately when possible, on several occasions interviews with Nicole were by telephone after the school day had ended. Field notes were taken by hand during observation and occasionally supplemented with tape recordings of whole class instruction as a spot check on the researcher's technique. These tapes were not
transcribed, but were listened to and used to stimulate recall of exact verbal data when field notes were being read. Field notes were written across the page with approximately two inch margins left all around. After reviewing field notes, additional comments or coded signals were placed in the margins. A series of pictographs was used to signal such items as direct quotes, reactivity, questions to ask, and emotional reactions of the observer.

During the first interview with Nicole, the researcher noticed that writing field notes distracted her. Thereafter, the tape recorder was used exclusively during interviews. Notes were made after leaving the interview site, and added to the transcripts.

During observation in Nicole's class, the investigator sat in the far back corner near her reading instruction area. Since time schedules were not closely followed in Nicole's class and timing entry to the classroom with any particular event such as recess was not feasible, the researcher entered the room in the least obtrusive manner and went directly to a seat in the far back near Nicole's reading instruction area. Nicole and Mrs. Husted always
acknowledge the researcher's entry with a smile or a nod, though the acknowledgements came as late as twenty minutes after arrival on occasion. Interviews were conducted mainly in the school building in whatever room on the second floor was vacant at the moment.

A researcher's participation can range from total immersion in the on-going activities to observation of events with little or no interaction between the inquirer and the participants. The researcher's principal role in this case was an observer and recorder of actions, rather than working regularly with students or assisting with planning. This action was taken to minimize disruption in the classroom. There were already two teachers present, Mrs. Husted and Nicole. Mrs. Husted was officially responsible for Nicole's planning and teaching. One objective of field experience is for preservice students to experience the "real world" activities of practicing teachers. Intervening or helping with planning or teaching could have detracted from the experience for Nicole.

Interaction with students occurred only when refusing would have been more intrusive than complying, and was not initiated by the researcher. Initially when Nicole
had explained to the children that the researcher would be visiting in the room, she added that the children could come up and talk with her. That particular statement had not been expected. A few children started conversations during the first week of observation. Later they used the researcher as an alternate source of assistance when both Nicole and Mrs. Husted were occupied. In this room adults appeared to have been perceived as resources. Adopting the role of minimal participation permitted the researcher to focus on Nicole and her actions.

Nicole knew that the researcher was a university supervisor of field experiences. Occasionally she would ask for information, book titles, names and locations of certain types of classrooms, or an opinion concerning something she had just read. When she would ask directly, the researcher would answer directly. Questions requiring opinions were generally turned to rhetorical questions for Nicole's reflection. The researcher believed that purpose of the investigation was to trace the development and content of the student teachers' personal practical theories, not to judge or change their practices.
Throughout data collection both Mrs. Husted and Nicole were readily available for interviewing. As Oberg (1986) described, the interviews were conversational couched in the everyday language of teaching and thinking about teaching. Nicole avidly read teaching trade books and often referred to her actions by author and book title, (e.g., Glasser's circle, Gordon's TET, or Writing Across the Curriculum). Nicole frequently addressed the researcher with "Do you want to talk now?" or "I can leave the room now, she's on, if you want to talk" or "I have fifteen minutes to talk now". (for example J/2-18, p. 29; Fn-3/25). Establishing and maintaining access so basic to the research process was unproblematic.

Data Analysis

As all researchers come to realize, since data do not speak for themselves, the researcher must explain the data. In this study data was analyzed inductively using the actual statements and behaviors of the participant(s) as one method of substantiating the researcher's interpretation. Interpretations were shared with Nicole to insure that reporting of the data and meanings of
actions represented her perspective. Data analysis categories because the major elements for Chapters IV and V.

It was also the researcher's responsibility to protect the participant(s) in the study through preserving anonymity. Moral and ethical issues in some cases required sacrificing data for the good of the participants. Trustworthiness

Trustworthiness of the data was guarded by attention to the steps suggested by Guba and Lincoln (1985, p. 103-104). These steps include prolonged engagement, persistent observation, triangulation, peer debriefing, negative case analysis, referential adequacy, member checks during and after study, thick description, dependability and confirmability through audit trails, and a reflexive journal.

The first two steps, prolonged engagement and persistent observation, were evidenced in the number of visits and the time spent both in the classroom and in discussions with Nicole and Mrs. Husted, as well as other members of the staff.
Triangulation of the data was achieved through using multiple sources such as field notes, journal entries, observation, and member checks.

The major advisor of this investigator, and several colleagues who were also doctoral candidates using qualitative methodology read and discussed this study with the researcher meeting the suggested step of peer debriefing.

Interviewing a number of other student teachers and observing and reinterviewing a smaller number of them was intended to bring to light any instances of differences.

All interview tapes were transcribed but classroom tapes were not transcribed nor in some cases reviewed or subjected to analysis. These tapes have been archived to accommodate the need for referential adequacy.

Member checks were continuous with Nicole. During interviews it was the habit of the researcher to finish the interview with a recap of what she had interpreted and encouraged Nicole to react to it.
The possibility of audit exists, though an audit was not performed. Materials, tapes, transcripts, and other data collected have been archived, providing a trail for audit.

This researcher did not keep a reflexive journal, though personal reactions were written into the field notes and coded as personal reactions.

Data and interpretations are discussed in Chapter IV and V.
CHAPTER IV

A STUDENT TEACHER'S PRACTICAL THEORIES

Introduction

This chapter reveals the account of the beginning development of the personal practical theories of one student teacher, Nicole. The perspective is on understanding her constructions of classroom reality, biographically and experientially, through the shared discovery of her personal practical knowledge. The resulting narrative illuminates the content of those theories regarding curriculum, instruction and pedagogy within the specific context of an inner city third grade classroom.

Reconstruction of the classroom meaning, in this case in terms of Nicole's experiences, is the main feature of a narrative method. It involves the use of multiple data sources. The focus of this narrative was on the cluster of understandings, beliefs and underlying assumptions which make up personal practical theories. Through
inductive analysis of data from field notes, interview transcripts, journal entries and materials in use, the warp and woof underlying a rich tapestry emerged.

Statements identified as personal practical theories contained theoretical knowledge elements (understandings of Maslow's hierarchy, for example), contextual knowledge (particular and unique to Nicole's third grade classroom in Paul Revere Elementary), and personal knowledge (values and beliefs). Because personal knowledge is often tacit and not easily articulated, classroom events and interactions were used to provide insights on these often unconscious beliefs and values. "The conception of personal practical knowledge embodies a dialectical view" (Clandinin, 1985, p. 364). That is, practice is seen as theory in action, dynamic and modulating according to situational demands.

The works of Elbaz (1983), Clandinin (1985), and Oberg (1986) describe how the context of practice continually shapes the teacher's knowledge while the teacher uses her knowledge to shape the practical context. The task of the dialectical view, according to Clandinin (1985, p. 364) is to resolve tensions between theory and practice. Nicole's
response to the final account of her theories, "Yes, that's fair. That sounds like me - a month ago. I keep changing, you know cycling through things." (T-4-26) This statement presented a clear picture of the dialectical and her intuitive awareness of it. Maintaining the dialectical in the research methods then was an imperative.

The student teacher, Nicole, is an autonomous being who constructs her own reality. She is aware of the need to respond to the situation at hand. "My biggest qualm with teaching is that there are no blacks and whites. It's all a massive grey, some quagmire of quicksand which has no 'beware' signs." (J/10-19;1) Although she did not consciously acknowledge changes in her thinking as responses to the exigencies of the classroom, Nicole actively sought knowledge with which to structure those experiences. Excerpts from Nicole's journal are quoted exactly including punctuation and spelling. Initials preceding quotes in parenthesis indicate the inquirer (I) and Nicole (N). The letters and numerals in parenthesis following quotes from journal or interview transcripts designate type, date and page number in that order. For
example, type is designated by FN - field notes, I - interview, T - telephone conversation, M - materials, text books, etc., and J - journal entry.

Journal entries between October 1987 and February 1988 were peppered with the titles of at least ten different books on education. These ranged in content from how-to techniques in subject areas, particularly reading and writing, to classroom management and discipline models favoring improving self-esteem. As a beginning student teacher Nicole was required to keep a journal. She developed her own style and determined what constituted entry material. As time elapsed, the journal entries became like heart-to-heart talks with a good friend.

A pattern developed and remained consistent throughout the journal. Nicole introduced a problem related to classroom interaction and discussed it. She explored a reading concerning that topic and compared the theory she read, her own beliefs and what actually happened from her perspective in the classroom. In her journal, she reflected on the readings, evaluated their usefulness in her particular context or on the basis of her self-knowledge. In some instances, reflective passages
were followed by plans in outline form for changing the immediate classroom situations according to the new information gleaned in reading. For example on September 30, 1987, she wrote:

"I am quite frustrated. The children do not listen. They aren't belligerent or outwardly rebellious; they simply ignore my voice. (J/9-30;1).

Hello! I have a problem. I have been reading Dare to Discipline and I feel Dobson's theories are viable and definitely workable. Moreover, I am seeing a great discrepancy between his theories and our classroom; i.e., our kids need more discipline! They do not listen, instead wait for the instructor to stop nagging. I believe that through neglect, we have taught them that we don't really mean what we say ... They think we're a couple of Alzheimer's patients who forget our demands and requests. My proposed solution: BE consistent & follow through on our
Figure 2. Room Arrangement Showing the Location of the Researcher (R) from March to May
requests ... they must be aware of our expectations and they must be sure we will enforce all we propound. (J/10-20; 1-2)

Wow! It was a great morning. I feel really good about being stricter on discipline ... I think structure is very necessary and valuable. My children have so little in life that they can count on. School should give structure and comforting routine. (J/1/4-1)

Nicole's practice of problem framing, exploring alternatives, and suggesting actions to herself in her journal was continued during the observation period. Often, after the deliberation sequence in her journal, she would present her ideas verbally to the researcher, usually as a conversation opener. She might say as she did in February, for example, "I'm deviating in reading today." Inducing the predictable response from the researcher, "tell me about it." "Well, I had this idea for a big book from Byrd Baylor's book Guess Who My Favorite Person Is ..." (Fn/2-9;2).

View of Knowledge

An individual's actions explicitly or implicitly
embody the values and commitments to ways of being in the world. When a puzzle was encountered, or discrepancy noted, Nicole turned to texts almost automatically. By virtue of her experience and beliefs about herself as a learner, about learners in general, and about the meaning of education, Nicole sought the authorities who possessed certain kinds of knowledge. Her particular gift of ideational fluency becomes apparent in the following passage. Habitually she responded to a question with a rapid flow of related answers as in the example below. They are cited exactly as Nicole spoke them during a discussion about books.

(I) Why do you use so much of your time to read books about teaching?
(N) Because they "know". (emphasis in the original)
(I) How do you use them?
(N) They give credence to my ideas. Affirm or reject what I know. So I don't stagnate. You don't keep growing without ideas. You forget why something was important enough to use.
(I) How do you pick them?
(N) They give me a guaranty; from a recommendation of my supervisor, or the author's favorite of mine. (Fn/3-22)

During an interview in April, the same question was asked concerning the persistent use of written texts. The original answer was augmented, but not changed significantly.

(I) You read an incredible number of books. I asked you one time why you read like that. Do you remember what you said?

(N) No.

(I) Good. Tell me why you read like that.

(N) To know ... I read so I can sound intelligent when people ask me questions. So I can explain what I do, why I do things. Just to be exposed to more things. Because it's interesting, it's fun, it's better than T.V.

(I) You had one other thing in there (before) that was kind of interesting. You said that you read to legitimate what you thought you knew.
Yeah. Well, it's like reasons Huck gives for children, why children should read fiction.

"Hey, there's someone else like me, I'm not alone and other people have problems."

So is that what you are finding out from your experience, that's kind of what I heard you saying and I thought ...

[N] [interrupting] Reading experience or teaching experience?

[I] Both.

Yeah. Like I think I would have trouble in my mind setting aside so many blocks of time for teaching self esteem or asking reflective questions about the Tribes program, ... Then I say, hey, you know they are right, which is what I kind of thought all along but somehow never felt legitimated in doing.

So here's an 'authority' who's written a book. So what happens when you pick up another book that says the exact opposite way?

Put it down before you start reading it..

[said teasingly, laughter following comment]
Well, how do you know which one to believe?

Whatever feels right. Reading is a thinking process and I mean I don't finish a book if I don't like the ending. Sometimes I'll be reading a book and I'll get all the way to the end of it and I'll think, 'Get real, you'll never do this.' (I/4-19;8-9)

Books represented valued access to knowledge. Knowledge was viewed as experience passed down from authority to novice. Nicole held the view that knowledge must be accumulated, thought about, sorted for usefulness and restructured by the individual, an integrated whole from all the facts. Knowledge passed along through books was not a final authority; Nicole's sense of its practicality was.

"I went through a discipline (book reading) period a few years ago when I read a series of books. I'm not actually drawing on that but I'm sure it is a factor somewhere. So now it is more practical experience." (I/2-18;2)

"Last week I was in love with Gordon. Now I've divorced him" (I/302;2). Her reasons for the 'divorce' centered on
the amount of time applying his method required in an already crowded schedule, its feeling of unnaturalness in the flow of the daily activities.

Nicole also saw individuals as sources of knowledge, although less accessible than books. Nicole eked out time to talk with her mentor during a crisis in the fall and again at the holiday break. Nicole used the term "mentor" was an honorary title meaning wise and trusted teacher, identifying a relationship which had grown and developed of its own accord. Her mentor was an experienced teacher with whom Nicole had worked as a volunteer. Six pages of Nicole's journal were filled with ideas, plans, changes, and to-do lists some gleaned from her talk with her mentor, others from reading during the school holiday break. Many of these suggestions were put into action during January.

Other practicing teachers were subject to Nicole's persistent search. She asked her university supervisor and the researcher for recommendations of classrooms to visit in which she would see different management styles. What did she learn from the observations?
(I) Did you go to the foreign language immersion school today?
(N) It's overwhelming. I think not so much the (foreign language) is overwhelming, just different styles of teaching. I'm fascinated by the discipline and the classroom management and how different teachers approach it.
(I) Is that because that is a special issue for you, that you are fascinated by it?
(N) It's because I want to develop my own style and like right now I'm kind of Silly Putty, whatever I am next to is what I become. Because of being in someone else's classroom, I adopt her styles and then I'm in other rooms and then I become her. Is that right? When do I develop my own? So that is kind of what I'm going through.
(I) What do you think about it (developing your own style)?
(N) I think you take whatever you experience. You take a little bit from that or whatever you spend the most time with I guess. That's why I'm into observing. I want to go to a lot of
different schools. I asked Connie to recommend them, she is my coordinator, recommend different places that teachers are really good in discipline and who teach self-discipline, because that's my big thing that I want to be. And so I want to see how it works.

Nicole accurately described the collecting and choosing of pieces of information from which she constructed her view. She held this view as tentative, open to changes as new ways of being were discovered. Nicole's expressions of concern for developing her own style suggested a learning orientation that was internal. According to Korthagen's study (cited in Calderhead, 1988) student teachers with internal orientations "viewed learning to teach as a process of self-guided discovery" (p. 5). They possessed the metacognitive skills of comparison, evaluation, and self-direction which enabled them to set their own criteria and objectively evaluate their own practices. Nicole looked at her own teaching by observing others teach. This is an example of a dialectical - a conversation between her own teaching and the practices of the teachers she observes. This sort of metacognitive
view of her own teaching represents a reflective discourse, in Schonian terms both in and on action, valuable to the developing student teacher. It exemplifies the concept of suspended disbelief required of students to learn through practical experience. That is, like the paradox of Plato's Meno, the student must begin to act when it is not altogether clear how she should act. The promise held for teacher educators and teacher education by this reflective practice will be further explored in the final chapter.

View of Learning

Nicole held learning to be the creation of knowledge, an independent activity, different from imitation but facilitated by models. In other words, she drew both on knowledge already held to guide her practice, and on the generation of knowledge from observation and analysis of the practice of others. A letter recorded (but never sent) in her journal to her cooperating teacher asked for the opportunity to be an independent learner, to test out what she knows against the models she has collected from observation and analysis. "Let me try ... And 'spoz I fail? Let me suffer the consequences. I'll survive" (J/11-17;2).
Phrases like, "I'm still feeling things out" and "whatever feels right" or "I'm pleased with it, but I'm thinking ..." (e.g., I/3-12;1) are scattered repeatedly throughout the interview transcripts and journal entries. There is an intuitive quality to these terms and a reluctance implied by their use to be held captive by any one premise, indicating a tacit understanding that what is most fitting in the immediate context may change in future ones. Nicole was in a state of exploration, trying new ways of being. She was involved in a mental and physical dialogue with the context of learning to teach in an inner city third grade classroom. This section illustrated how Nicole constructed her own view of how she learns, reiterating the notion referred to in the earlier section about reflectivity as a critical component for a dialectical framework for teacher education.

**Nicole's View: How Do Children Learn?**

"Children learn by asking questions. If you can make your questions their questions, you're one jump ahead." (I/2-3,19) Children can create their own knowledge, but they must ask appropriate questions. Children learn by doing what they are trying to learn. For example,
"Children learn to read by reading. The more they read the better they read" (Fn/2-9). In practice Nicole provided many opportunities for children to read. She diagnosed one student in particular as needing to read more to solve her reading problems. "We'll lick this yet ..." (I/2-3,1). The discovery was the impetus for the book sharing program for her reading groups. Every day, every child chose a book to take home and read. Every day, every child shared one special thing about his book in reading group before the books were collected and redistributed.

Nicole borrowed most of the books from local libraries. Some of the children also brought books from home to add to the collection, indicating a shared value. In March when the reading group began using multiple copies of literature books (instead of basal readers) the children continued to ask for the book exchange. Nicole discontinued the book exchange program temporarily but described how difficult the decision had been "because the children asked for them" (I/3-12,3).
Nicole introduced literature-based reading using multiple copies of a library book (not a text book) with her reading groups, abandoning the basal texts she felt so strongly negative about (J/9-9; I/2-3;20). Though the "chapter book" they were reading was judged to be difficult for some of the children, they were reading it and enjoying the challenge. Nicole stated that as long as they kept reading she would not let them know how excited she was about their successes. "It's really long and really hard for them, but I don't tell them and they seem to do okay" (I/3-12,4).

(I) What would you do if you discovered it was way too hard for them?

(N) I wouldn't say a thing and just see how they react to it. If they can do it then it's not hard.

(I) What if they really aren't getting much out of it?

(N) I know a few kids in that group are and will and the other ones won't admit it if they won't. I think they'll keep reading. I know they will. (I/3-12-4)

Nicole took risks in her own learning to "pass through zones of uncertainty" (Schon, 1971, p. 12) and encouraged
the children to follow suit. She provided safe opportunities for exploring reading. There were no limits set on the difficulty of the reading level of the books the children chose for themselves. There were no penalties for risking reading aloud, no requirements to finish a book. **Soup** was their first 'chapter book'. Its difficulty level was appropriate for two or three of the five children in the reading group. For the others it was a challenge. Nicole measured their unexpected accomplishments, what was happening, against a theory of instruction about the relationship between difficulty of reading material and learning gains, what predictably could happen. The instructional theory implicit in her statements was that material which is too difficult will result in children not reading. Her decision to continue reading the book although it was difficult for some was based on evidence that in this particular instance the effort expended by the students was achieving the goal of reading. A teacher's attributions of student effort with regard to student achievement has been found to influence teacher feedback to students, the number and type of rewards and punishments, the goals set by the teacher, and
the behavior management employed in the classroom (Clark & Peterson, 986, p. 282). Nicole used her knowledge of the actual situation in planning and teaching from the book Soup. Students received positive feedback and encouragement to read as they were involved in the process of reading.

In the fall when she first began her internship, Nicole had suggested to Mrs. Mandell, the principal, foregoing the basal readers for the literature approach to reading. Mrs. Mandell had commented to the researcher that Nicole was an excellent student teacher but she "had ideas", and related the conversation about "throwing out the basals" (I/1-14;1). She did not give permission for Nicole's suggestion. Nicole, Mrs. Mandell and Mrs. Husted all reported the event to the researcher in a similar fashion (I/10-14H; I/2-10; I/10-14M).

Mrs. Mandell maintained control of the reading program, reviewing skill tests and conferences with teachers about scores and children's progress. Teachers were requested to keep every reading test so that both Mrs. Mandell and the parents could see it. Nicole
continued to use the basal text's vocabulary and the skill packages on which the evaluations were made. She did not use all of the reading selections in the texts, but supplemented these with literature selections.

Nicole held the same view of learning for the children in her class as she did for herself. "My big thing is the self discipline. I think the kids should be independent learners and be self-disciplined." (I/1-26;1) There was tension between Nicole's theory and her practice in the classroom. For example, she viewed the established learning centers in the classroom as causing confusion rather than independence and learning. Children interrupted group work to ask directions, were out of their seats moving around talking to each other, and no records were maintained of who used the centers or how well an individual child completed the activities (I/22-23,17). Resolving the tension meant changing her practice.

Although she did not articulate the intuitive sense of tension, Nicole was aware of an internal feeling and obvious external signals that her implicit theories about learners and learning were not enacted. Nicole restructured the morning changing the order of subjects,
the amount and kind of seat work, and the allowed free
time activities. She listed a morning work schedule on the
board as an additional tool for independent learning.
Later, she commented in her journal that the amount of
seat work seemed too much. "Things I'm still
uncomfortable with: (1) seat work - so much" (J/1-3.4)
and once again she planned ways to restructure the morning
activities lessening the seat work and including options
such as computer or tape recorder time. This pattern
continued throughout the quarter (e.g., J/1-21).

Nicole's attention to the details of management
included the day's closing. The same processes applied,
identifying a problem or uncomfortable situation,
suggesting alternatives, deliberating about each one, then
choosing the most viable based on her knowledge of theory
and the particular context of her classroom.

"As it is now, coming and going are HECTIC times
where kids are running all over the place,
scuffling in the coat room, and loudness and
confusion reign. Yuck!
I have an idea for closing procedure ... have them in their seats listening quietly to someone sharing (w/classical music in background) ... Then they can line up, leave a clean desk, and leave in unison." (e.g. J/12-10).

Learning in the content areas was focused on activity and expected in small increments. In writing for example "any other mistakes, other than the one thing I am going to teach them I just correct unless they are already supposed to know it" (I/2-18;7). The writing process curriculum Nicole implemented required much independent work of the students. They wrote, edited and peer edited, conferenced, rewrote and published. Nicole found that she needed to remind the students frequently of the steps (where to put finished work, what constituted publishable work, how to peer edit and use the conference corners). After reflecting on the writing program in March, Nicole reduced the class time from 45 to 30 minutes because "they weren't doing what they were supposed to be doing" (I/3-12,11). When the researcher asked if she would reread the writing process theory to find out why the children weren't responding, she replied "Oh no. [I'll
find out by thinking about it and seeing how it goes from now on, seeing if time is not an issue but specific children are an issue" (I/3-12,11). Late in April, Nicole explained that she had re instituted the full 45 minute writing program (T/4-19). She was trying to build shared meanings and shared expectations (I/13-2,3) which she believed constituted the basis for a smoothly running classroom, a managed classroom (J/1-27).

Nicole was engaged in a conversation with her own beliefs and a particular classroom situation with particular students. She measured the situation "back talk" against her own practical knowledge, what she had learned from experienced teachers, and theoretical knowledge in the writing process. Novices, like Nicole, create a personal practical meaning for theoretical knowledge through risking in practice (Schon, 1983, 1987). Classroom Management

Classroom management, particularly discipline was an overriding concern permeating Nicole's thinking about curriculum, instruction and pedagogy. "A managed classroom runs by itself (I/2-18;2). The teacher's job is
to provide structure which gives predictability and consistency and allows children to act independently" (T/4-19).

"My goal in teaching is to make them independent of me ... so it is not me that makes them do it, it is them that makes them do it. As an authority, I want to make myself useless. If I always have to be there, then what's the point?" (I/2-3;7).

With that goal in mind, throughout her journal, in her conversations with the researcher, and in her actions in the classroom Nicole asked what constitutes good management? Is it straight lines and quiet children? Is it getting morning work done (J/12-8)? How does 'good management' feel (J/11-2 & 3)? Do the children exhibit a different kind of behavior if the classroom is well managed? She used readings and observations to collect patterns and ideas about well managed classrooms, noting especially the 'feel' it created in her and the behaviors of the children. She clearly identified that each individual teacher construed the meaning of routines and behaviors differently, an assumption also supported by
Yinger's (1987b) work. Her tacit definition of a managed classroom pictured children learning by being independently engaged in meaningful work. The teacher explicated the structure and established routines that gave children the tools for self-management. This image was challenged by some examples, reinforced by others.

The holiday conversation with her mentor concerning discipline suggested that some children come to school more oriented toward school behavior than others. Nicole's students were younger and had very different backgrounds from her mentor's students (J/12-2). The impact of contextual situations became clearer.

In the classroom she observed at the foreign language immersion school the children "knew what to do and they did it", a criterion Nicole held for a managed classroom (I/2-18;2), but she sensed that the 'feel' was incongruent with her own style. There was a military air about the walk to the bathrooms, and lessons seemed 'canned' (directly out of the texts) devoid of personality (I/2-18;12). Across the hall in the immersion school quite a different climate existed. Children behaved in a similar fashion, but the teacher smiled and children's
work hung on the walls. However, that teacher called Nicole's 'positive reinforcement' of student behavior patronizing, though he said he understood what she was trying to do (I/3-13;14). Since 'positive reinforcement' works for her students, Nicole accepted his comment in the light of the different context in which he taught concluding that she would continue to use that technique in her present classroom.

After a particularly trying experience with one of her own students, Nicole sought advice about discipline from an experienced teacher at Paul Revere. The student had refused to comply with the classroom rules and had spoken rudely to Nicole. She had taken the student to the principal who administered punishment and contacted the parents. Nicole was frustrated by her inability to elicit cooperation from this student. The teacher she asked advice of at Paul Revere had a 'reputation with the children' as a disciplinarian. She told Nicole that because children feared her she had control. Nicole analyzed the fit of this suggestion with her personality and beliefs, and decided that she wanted children to comply with the rules based on respect and choice rather
than fear of her "red face or angry voice" (I/2-3;5).
Ttalking to the teachers she observed was an important way
of learning the theoretical and practical knowledge which
in part guided their actions. Nicole's intuitive
awareness that the situation "talks back" prompted her to
seek below the surface.

"Just seeing someone, just creates more
questions. It doesn't leave you with 'I can do
this now' because what you see is the tip of the
iceberg. You don't know what went into that ..." (I/2-23; 1-2).

Through questioning a number of practicing teachers,
Nicole found some spent the first week(s) of school
establishing the ground rules for behavior, developing
routines. The teacher at the foreign language immersion
school confided that it had taken 'two months of yelling
at the kids' (I/2-23,2) to get the crisp quiet lines to
tavel unattended to the bathroom and back to the room
without incident. She no longer yelled, but Nicole
noticed that she did not smile either (I/2-23;4). Mrs.
Husted responded to Nicole's question about routines
explaining that on those first days she wanted to get
right to the content (I/3-23;1). Nicole questioned "How much control does the teacher need? Is it more important to learn self-discipline or to learn to count in thousands" (J/12-b)?

In her practice, Nicole was faced with the tension of resolving what she believed to be 'good management' with what she had found herself doing. "My goal in teaching is to make the children independent of me" (I/2-3,7), yet she maintained control with her physical presence, remaining near children who were presenting at the front of the class, or verbally punctuating reading group sessions with public directives (Shawn, get in your seat) and positive reinforcement statements (Good job, Sara) to students not in the reading group. (Fn/2-3; I/2-23,2; Fn/3-22). The researcher made marginal comments in the field notes that were followed up during a conversation. Is she aware that she's directive? How does this promote independence? (Fn/2-3). Nicole replied,

"It doesn't. I would rather not be (up front), but I feel I have to - to point fingers and tell the kids they have to talk louder" (I/2-23,2).
"I've become more behavioral (since the fall) because it works with these kids" (I/1-26,2). Later in the quarter, Nicole commented on that statement saying, "I labeled it as a problem. I have not trained them to listen to me, and so they don't. That's how I see it" (I/3-25). She stated this decisively, a practical expression of the tension between what she believes (ideal) and what she found to be viable within constraints of the context (reality) and her knowledge and abilities.

When asked if she had decided that being directive had to be part of her management plan, she responded "No. But, it shows you where I've been wrong. It shows the gap from what I want it to be and what it isn't" (I/3-25).

Not training the students to listen to her was interpreted as a teacher's problem. In her view, students had not been given one of the tools for working independently. What measures did Nicole use to reconcile the tension between what she believed and what she found herself doing?

(I) How are you dealing with the problem of lack of shared expectation?
(N) In small ways. I've felt for a long time that it's my problem. Do I have a tolerance problem? Why do I need all their attention? Am I on a power trip? Heck no! I deserve it" (I/3-2,4).

She continued by explaining that she had said to the pupils what she expected as listening and working activities, and how they were to act to achieve those behaviors. "I really felt good about it. I felt like it worked" (I/3-2,4).

Four rules on computer-made banners were displayed above the chalk board at the front of the room. Do not talk when someone else is talking. No fighting. No put downs. Respect other people and their property. Writing these rules was a frequent consequence for misbehavior during class. Though she had selected this particular punishment, Nicole felt a tension between what she believed and what she actually found herself doing. Her valuing of writing as fundamental to the entire curriculum, as basic to everything practical in the lives of the children, was challenged by the need to "find something punishing" as a measure of discipline
(I/2-23,2). In March Nicole believed that there were fewer instances of children actually having to write the rules; however, within one hour during an observation date in April, three students were directed to write the rules (Fn/4-19).

Classroom management was an issue central to the first stage in Fuller and Bown's (1975) teacher concerns study. Nicole exhibited a concern for management. Her concern for management was couched not solely in concerns for her own 'survival', but also in terms of children's learning.

(I) You talked about teachers directing classrooms and I jotted down a question - how should that be?

(N) In one of my later journals I wrote about that a little. Teachers directing the classroom. I think the teacher is responsible for creating the structure, creating a solid foundation of structure, ... I guess it is teacher directed and she sets the limits and makes it easy for students to predict what will happen (I/12-23,12).
Nicole frequently expressed a need for structure. It appeared in discussions about classroom management and curriculum.

"Structure was a nasty word that limited children and what they can do. But structure, I guess to me it means consistency, predictability for the children. (I/2-23,13)

For example, her insistence on quiet for work time elicited a student comment "It's easier to work when it's quiet in here" (J/10-28), and insistence on writing time three days a week promptly at eleven. Nicole's belief that consistency provided a tool for independent student actions was reiterated many times in statements such as,

"I feel like we should have a list of things and they should know that whenever you finish something you automatically do something else, but they don't". 'Variety may be the spice of life, but it can cause disruptiveness' (I/3-25,4).

She actively sought a number of models with which to compare what was happening in her own experiences. She accepted and rejected the various methods she read or
observed based on both her knowledge of theory, her intuitive sense of what is "right and good", and what she observed in her particular classroom. When she deliberated the use of any of these methods, she used phrases such as "for my children" and "in my classroom", linking her understanding of the context, actions and beliefs.

Throughout this section, Nicole's deliberation with the context of her classroom, her tacit knowledge and theoretical knowledge of a managed classroom has been described. Finding her practice was not congruent with her beliefs caused a tension. The description of Nicole's search for resolution of this tension depicted how she construed classroom situations. When students were not independent and self-disciplined, Nicole construed it as a problem of inadequate structure - a teacher's problem.

Teacher educators may enhance the resolution of tensions between a student teacher's theories and practice by encouraging and sustaining a dialectical view. Learning-by-doing, that is learning by experience in a practicum takes on new meaning.
Curriculum

Nicole represented the curriculum as a collection of subject areas required to be taught by the "curriculum thing" (I/2-23,16), the graded course of study. It was also approved by her cooperating teacher, the principal, the parents, and structured by the text books used in the classroom. Her own and children's interests were important in deciding the finite pieces to be studied, but the general expectations of the school board determined the broader concepts. "I am amazed at the power a teacher has to decide what's important." (I/2-23,6)

There were few restraints imposed on the specific topics she taught other than her own interests. "My cooperating teacher lets me have a lot of leeway, something I didn't appreciate till I came to this school [referring to the foreign language immersion school]" (I/2-18,14-15).

She explored integrating subject areas, particularly reading, writing, and social studies through the frameworks of two different curriculum plans she had encountered in course work. The writing process concept emerged as dominant in how she construed the overall importance of particular disciplines. She merged a
writing-across-the-curriculum model with a literature-base curriculum model and gradually integrated reading and writing. Mathematics remained as an independent unit of study. "How do you teach literature-based math?" (I/2-23)

She stated a belief that students should help develop their curriculum, but she acknowledged it did not occur in her practice.

"There is a lot of tension in me from that need (to have children involved in developing the curriculum) and the need for me to know exactly what's going to happen and when it's going to happen." (I/2-18,26).

Discussing how to plan an integrated unit, Nicole stated "But then how do you allow for where the child comes in? Beats me because you have got the whole thing planned out before you ever step in the door" (I/2-18,23). Students participated in planning indirectly by showing interest in or success with the material once Nicole had the initial draft of times, places and material (I/2-23,8). Their interest and success with the materials and activities signaled Nicole to continue as planned. When there was not congruence, when students were not experiencing success, Nicole relied on a problem solving technique
which forced deliberation. Some reflection occurred after interactive teaching, some occurred during it. Nicole frequently used reflection on action, that is after the activity was completed.

In the writing process curriculum the children's participation in planning was limited to choosing their own topics. In other subject areas it was not observable how children participated in curriculum development. Nicole used the discussions with the researcher on lesson plan and curriculum decisions to "think out loud", weighing aspects of how to build an integrated unit in social studies. She created long-range plans mentally and in her journal, but they were not written on the daily plan book.

(N) [Are you asking] Why teach certain subjects? Why teach certain things?
(I) Uhhuh. Or why not.
(N) Because I like them and they interest me, they should interest them. It's important to me (laughing).
(I) There's another why there. Why is it important?
(N) Meaningful. They like it. They need to
know it. It would help them deal with their world better. It would help them think.

(I) So you go through all of that when you're deciding what to teach?

(N) No. It usually happens in the lesson. It comes to me when I'm presenting a lesson, or some kid makes a comment that strikes me and 'Yes! That's a good reason for doing this. I didn't realize this would happen. Yes! I'm justified in teaching this.' Not that I worry about being justified that much. (I/3-12,8).

The term 'meaningful' encompassed concepts of relevancy to the everyday lives of the children. It carried a sense of immediate usefulness.

A discussion about *Soup*, the literature selection for the reading group, exposed a hidden curriculum about what's important to teach, that is what should be included in the curriculum. The researcher asked whether an anti-smoking discussion was planned, and whether Nicole thought it was part of her role to initiate discussions about moral and ethical issues. Nicole's reply indicated that she hadn't articulated the tension she felt about the chapter in *Soup*. She had previously expressed concerns
that a parent might complain about the use of a book that described two boys smoking, but she had not consciously considered how or whether to act on that supposition. "Someone should (talk to kids about things like smoking). Should teachers? Yeah. But then, teachers should do everything." (1/3-12,7)

Those observed moments of reflection in action - that is reflection during interactive teaching - produced changes that seemed less smooth, less coherent in terms of the established flow than the changes noted resulting from reflection on action. The researcher believed that reflection in action required a moderately large repertoire of moves in order to produce a smooth curricular flow. The repertoire is acquired through experiences in actual situations that have been reflected about. It may also be that reflection in action is such a new experience that as Hanna Arendt (cited in Schon, 1983, p. 280) suggested, it is paralyzing.

Planning

Nicole created broad organizing plans, unit plans, and daily lesson plans. Her journal was filled with plans, predominantly long range sketches in outline form of management and activity routines. In her journal plans
were preceded by identification and discussion of a problem. Unit and lesson plans were not included. The plans in her journal met immediate personal needs by reducing uncertainty and giving her a sense of direction and control.

"I write the plans in my journal because I feel I have to ... It gives me something I can look back to ... kind of a reference for me" (I/2-23, 15).

Unit plans were thematic, for example "bears" were the topic during January when the researcher first visited the classroom. Once interactive teaching started, the plans became a base from which changes were made to meet the demands of the situation. "I've got to write the directions down (for the bear unit) I've altered it as I went along" (J/1-6).

Unit plans and lesson plans were flexible. Cues were taken from the interest and achievement of the students. She wrote lesson plans which looked like those of her cooperating teacher. They consisted of subject names and page numbers next to group names, with cryptic notes such as "write messages with mystery ink" or "sp 55 cause/effect" or "Kelly + J.R./goat story". (Sample lesson
plans are in Appendix C.) The plans were written in two by two and one half inch boxes on a standard plan sheet. They were organized in horizontal rows by days of the week and vertical columns by subject area. Both Nicole and Mrs. Husted kept their plans in the same three ring binder on the teacher's desk.

"I don't think the lesson plans show much because it varies according to the medium through which it is presented. Someone looking at what I had down there wouldn't look anything like the way I would do it in the future I don't think, but it should. My lesson plans are okay. I guess. They work for me." (I/3-2,4)

The term 'it works' was explored. Nicole explained that 'it works' means objectives were being met. 'It works' included feelings of satisfaction and meaningfulness.

The researcher asked Nicole how she planned. Her approach varied depending on the subject, her prior knowledge of the content or topic, constraints determined by the principal or central administration (such as mandatory use of workbooks or skill pacs), and her
personal interest. She was aware of the power and responsibility, and the limitations teachers have in planning.

"Some subjects it's the book, math and reading. Other subjects ... I try and find an intersection between what I find interesting and what is in either the curriculum thing, basic curriculum, or the book. Sometimes I go from materials to objectives instead of from objectives to materials. It's just amazing what power a teacher has to decide what is valuable. (I/2-23,6-7).

I guess I have a system for planning ... the more I write out the more I understand it. Things that I like, that are mine, then I write the why's out first. Things that I should do that I'm not real clear on, I find out more of the what and the how" (I/11-12,8).

The plans in the three-ring binder on the teacher's desk showed what was to be done and only occasionally in very abbreviated notes how something was to be done and when.
These plans always indicated who should participate. Plans in the journal generally presented why's and alternative uses.

The need for a grade to be entered for the students often determined the need to teach a specific subject, usually the 'squeezable' subjects such as social studies, music, art, science, and occasionally math (I/2-18,19). 'Squeezable' subjects could be pushed aside, but reading and writing were taught regularly even when unexpected occurrences forced changes in the classroom curriculum.

Once the subject area was identified, Nicole was given freedom to plan the topic or unit she thought was valuable. After the topic was known, Nicole frequently researched to find out as much as she could about it, compared what she learned with the text when there was a text, and finally "[I] start planning, and then I have a whole bunch of ideas and then I start assigning days and times" (I/2-23,7).

Nicole's written plans did not begin to approximate the amount of effort and thought underlying any particular activity. They were used to jog memory and increase control and direction, and time allocations. Nicole rarely checked the plan book during observations.
She did not use a linear planning model. Much of what she had planned was not written down. Plans were flexible enough to be altered during interactive teaching requiring directions to be written down after the activity was concluded. The most developed written plans occurred in her journal.

Textbooks

On one hand Nicole saw texts as organizers of the content required in a subject for a grade level (J/2-18,12). On the other hand texts represented a constraint on the opportunities the children had to learn. Although she had not used basal readers she stated in her journal that,

"The basal reading texts are guaranteed to produce frustrated teachers and students who feign interest in discerning glottal differences in the z g sounds." (J/9-9).

Nicole's mentor and her cooperating teacher used texts as guides of scope and sequencing of material, or to meet requirements for skill tests. For example, the reading skill tests in Nicole's school were part of the reading text package. The teacher she observed at the foreign
language immersion school, part of the same school system as Paul Revere Elementary, used texts exclusively, following them sequentially. Nicole described opportunities to learn (in her view) that were missed. She explained how she taught a history lesson by introducing two literature selections to supplement the text. When she discussed her ideas and the program she became more animated and excited (I/2-18,3). By April she had developed a literature-based reading program for her two reading groups (Fn,4-19) bringing resolution to the tension between the ideal she believed and the reality of her actions.

In part, Nicole ascribed her attitude about reading texts in particular to being "indoctrinated" through a summer class about the "dangers and evils of basals" (I/2-3,20). Integrating subject areas using literature selections was seen as possible in almost all the subject areas but "messy" to organize (I/2-18,22). For example, "[H]ow can you call this a social studies grade when you kind of mesh it all together (I/2-18,19)?
"It just makes so much sense to have them within the group, they can begin to share the whole literary community ... they can begin to compare authors ... have a discussion and let it flow into writing (I/2-18,14).

Nicole and Mrs. Husted used the mathematics text for all the mathematics lessons. Many discipline problems seemed to erupt during mathematics lessons. Nicole complained of having difficulty holding pupil attention and keeping them all on task. She did not exhibit the same interest or excitement about teaching mathematics as writing or reading. Referring to the text book publishers she said, "Addison Wesley does math, I do writing. I never questioned it. I don't know. We have it (the text book) and I use it. We just do math. Maybe they (the pupils) have the same attitude because I do ((I/2-3,18). I know my children, but they (Addison Wesley) know their math. You can't go off on tangents in math" (I/2-18,19).

Mathematics lessons followed the textbook pattern with little variation. Nicole expressed interest in finding a teacher who taught math without a text.
Nicole found textbooks offered both structure and control. Structure gave scope and sequence to the content and made the task of a new teacher more manageable. Control on the other hand represented a subordination of the teacher's authority to choose aspects of the curriculum.

**Instruction**

Nicole posed a problem with instruction in her journal (J/10-19,2), "I'm confused about such things as how do I decide what to teach. How do I do it [teach once I decide what to teach] (J/10-19,2)?

(I) How did you decide to teach about clouds?
(N) Well someday they'll look out a window and say that's a cirrus cloud. I can go out to play now. That won't really happen but maybe they'll learn how it all relates" (Fn/2-3,2).

Deciding what to teach depended on the value Nicole placed on the topic; its relevancy to her interests and the children's, "what's broken and needs fixing" (I/2-3,9), the requirement in the graded course of study, and the textbook. She reordered the researcher's list of criteria for deciding what to teach, placing value first.
"I think I'm saying that I need to choose things that I believe in and be able to justify them and then just do them without being concerned over whether it's universally valued by teachers" (I/2-23,5).

Nicole was influenced in valuing things in curriculum, people and activities by her own strong beliefs in what was "right and good" (I think they'll be more independent, more aware.), by her cooperating teacher's opinions and actions (She wrote it down and that made it so much more valuable.), and by the theories she read (I took classes last summer that got me all fired up about writing.) (I/2-23).

Valuing was interpreted by Nicole's actions. When something was valued it had its own time; for example, writing occurred regularly every Monday, Wednesday and Friday at 11:00 A.M. (M/time schedule; e.g., Fn/2-10). In another example, she laminated the goal cards for each child's desk saying that she liked plastic. The researcher commented on the field note margins that
"liking plastic seemed out of character". When the researcher questioned her, Nicole replied that the plastic kept the cards shiny, clean and pretty "showing that she valued them" (Fn/48,11).

Nicole acknowledged that values could be artificial. In a dialogue about oral reading, she suggested that the values usually ascribed to the process were "made up." She based her assertion on experiences with oral reading as a student and as a teacher (I/2-18,24).

Deciding how to teach content once it had been chosen presented another problem. Entries in her journal posed questions about instructional methods. "How do you teach spelling" (J/12-17) was resolved by February. She used personal spelling dictionaries as part of the writing process but was required to continue using the spelling texts.

Nicole mixed and matched suggestions of instructional techniques from the many books and observations. For example, she adapted Atwell's writing program to include spelling "because it's (spelling) really hard (for my children) and I know how to deal with it." (I/12-18).
Acquiring instructional techniques required practice and risking, much as Plato's student in the Meno. Like Schon's architectural students Nicole brought together her observations of other teachers, formal knowledge learned in course work, and the techniques she read about. She experimented with them in the class, evaluating them in terms of their applicability to her own situation.

**Positive Regard**

One value Nicole held was so strong that it permeated all her actions. Positive regard for people in general, and her students in particular, colored all her interactions. In the teacher's lunch room she listened but did not participate in negative talk concerning several children (Fn/3-22). Her concepts of bad and good anchored her beliefs.

(N) They were bad during the test.
(I) What's 'bad'?
(N) Talking out, not keeping their eyes on me. You didn't ask me why they were bad, but I'll tell you. They didn't have any breaks. (Fn/1-14).

Characteristically Nicole assigned "goodness" as the normal state of children. Good work was identified on an individual scale of exceptional quality, effort, or improvement, based on each person's past record. Another
way Nicole expressed positive regard was observed during conversations with children. Nicole attended only to the speaker using active listening techniques including eye contact, bending to be on the child's level, touching a hand or shoulder, and refusing to allow others to interrupt (Fn/3-18).

Severe reprimands were given in private (Fn/4-19). Whole class behavior reminders were announced in the brisk business like way Nicole used to teach ["Eyes on me. Close your books. Eyes on your own paper."] Individual reprimands during interactive teaching were handled in the least public manner. Nicole walked to a student's desk and removed the offending article (Fn/3-18), or placed her hand on the offender's shoulder leaned down and whispered, effectively stopping the misbehavior often without interrupting the lesson she was teaching. Infrequently individual misbehaviors were called to the attention of the class by Nicole sharply calling a child's name.

Positive reinforcement techniques were the mainstay of Nicole's discipline methods. She would announce publicly "Good job" or "I like the way Brian is working", or to a usually impolite student "You're so polite today, I like
that." She handled public errors students made, for example when they attempted to work a problem on the board, by first pointing out what was right about the work. Children were encouraged to share a 'positive' they had earned (good grade, improved work, special learning, excellent behavior, etc.) with another teacher or the principal. Nicole extended this to publicly 'giving positives' to themselves and other students in the form of notes pinned to a bulletin board. Her concern about pupils fighting, in the coat room and on the playground, and their lack of respect for themselves and others prompted having offenders write positives as a form of apology.

Nicole struggled with one particular problem, a student whose behavior did not improve regardless of the methods she tried. The challenge this problem presented to her belief initiated her search for classroom management techniques as discussed earlier. She made a home visit and returned with more understanding although the problem was not resolved.
Positive regard was such a strong value that it was the base on which Nicole built her teaching. She created situations and activities within the classroom which provided children the opportunity to develop high esteem for themselves and others. From the class rules to the attentiveness to a child's conversation, Nicole demonstrated this value.

A model (figure 3) was presented by Clark and Peterson (1986, p. 257) depicting the relationship between thought and actions as they are effected by constraints and opportunities. Their primary representation of the interactions was supported by the evidence in this study. However, two alterations to the model may be inferred from the data in this study. Cornett (1987, p. 235) altered the model to show a two-way relationship between actions and external influences (constraints and opportunities). This researcher has proposed including both thoughts and actions in a reciprocal relationship with constraints and opportunities (Figure 4). How Nicole viewed the required reading testing program and her perception of what was possible indicated an effect on her thoughts as well as her actions. Instituting the literature based reading program ameliorated the tension between belief and action for Nicole, indicating the effect her thoughts had on both
Figure 3: A Model of Teacher Thoughts and Actions
Clark & Peterson, 1986, p. 257

Figure 4: An Adapted Model of Teacher Thoughts and Actions
Papp, 1998
Figure 5: Model of Biographical Influences on Teacher Thoughts and Actions

McCutcheon, 1988
actions and the constraint imposed by the school authorized reading program. The effect on the constraint will be even greater if other teachers in the building, or her cooperating teacher moves toward a more literature based reading program as a result of Nicole's work.

Further there was a need to explain the relationship between Nicole's background or biography as the researcher learned of it and its relationship to the whole model. Figure 5 represents the conceptualization of biography as an arena within which the individual construes his world and acts on his or her beliefs (McCutcheon, in press). In Nicole's case for example, throughout the period of observation she would indicate how something particular in her background or past experience seemed to her to affect her choices or thinking. In an early journal entry she wrote

She encouraged me to use my basic principles of love and outflowing concern tempered with a firm stance on certain issues like honesty and theft. She helped me to see that I shouldn't be so eclectic, running from Glasser to Cantor to Wayson, instead, I must stick with basic Biblical principles that I believe in (J/9-9).
So strong was this notion that it permeated her classroom management, lesson planning and the way she spoke to and about children. For example researcher comments in the margins of field notes taken during the lunch room (Pn/3-22) discussion of teachers at Nicole's table indicate that she was a non-participant in the discussion illuminating negative qualities about several children.

Nicole's academic excellence might also point to the importance of understanding biography as an arena out of which thoughts and actions are devised. One interpretation of her habitual reading was that she had a need to reaffirm her own thoughts and beliefs about, for example, classroom management. Another interpretation may be that she had developed this sort of search pattern from her past academic activities and was behaving in ways congruent with her beliefs about what learners do when faced with a puzzling situation. A third interpretation might be that having a mother who was a teacher influenced her respect for the authority represented by authors in published texts or that she had learned her mother's attitude toward the nature of knowledge, or a love of books in general, and so forth. Implicit in all these
possible interpretations is the influence of past experiences, biography.

**SUMMARY**

This chapter presented a narrative of the beginning development and content of some personal practical theories of one student teacher. Through multiple sources of information the dialectical nature of Nicole's personal practical theory development was explored. The content of some of Nicole's theories about curriculum, instruction and pedagogy was explicated.

A definite pattern emerged when Nicole's tacit knowledge or theoretical knowledge was not congruent with the contextual situation. The tension that developed between her theory and practice caused her to seek additional information from books or experienced practitioners. She read about, talked to or observed multiple examples and compared them to the context within which she taught. This conversation with "the experts" was transformed into iterations and variations in her practice. Reflecting on her own inquiry allowed tacit understandings, values and beliefs to surface creating the recursive cycle.
"I feel like I am really a part of the classroom, learning to touch my feelers to discern the pulse of the classroom as I begin to be aware of each student's strengths and weaknesses ... while predicting the audience's reaction. I learn ... and I think. (J/9-4)

Nicole's uncertainties were a source of learning for her. She understood that others in the same or similar situations held relevant knowledge. She was interested in and actively sought alternative ways of seeing the phenomena assuming it was both normal and legitimate to compare approaches. She was not threatened by models that did not fit hers. She questioned, explored others' claims, and enjoyed the discovery of creating her own knowledge about the phenomena of her own practice.

(N) I have a new discipline practice.
(I) What's this one called?
(N) My own!
(I) That's probably the one that'll work.
(N) It's a composite ...(I/4-19,1).

In developing her theories she recognized that the knowledge she held was one way of looking at something
which could be reconstructed. Theories were relevant in so far as they could be applied in practice.

In the context of learning to teach, Nicole asked herself to make changes which required temporary suspension of belief in her own personal theories and application of others' theories to her practice. Student teaching represented a low risk context for practicing where the temporary loss of spontaneity and fluency was acceptable. This attitude carried over to her expectations for the children. She attempted to make the context of learning for her pupils a low risk situation. What accounted for Nicole's beginning to feel "like a real teacher" (I/4-19,7) was seeing other teachers' styles, observing different places. "Then I see that I don't have to do things the way she does, Mrs. Husted does. There are other ways, and for me, there might be better ways" (I/4-19,7).

Nicole countered the isolation typical of teachers by observing, questioning, listening and actively seeking interaction with others. In her role as a student teacher it was accepted as appropriate. The role of the researcher became for Nicole not so very different from
that of a good clinical supervisor. She used the questions and interview sessions as opportunities to weigh yet another perspective. Further discussion of this phenomenon is contained in the final chapter, Chapter VI.

Finally, throughout the account of Nicole as a student teacher, the effects of her past experiences weighed heavily in her decisions and actions. Understanding her underlying assumptions and beliefs was clarified by learning some of her unique biography.

The next chapter outlines and discusses a summary of the eighteen interviews with other student teachers. It suggests both how Nicole's theories are alike and different from a number of her contemporaries.
CHAPTER V

EIGHTEEN STUDENT TEACHERS'
PERSONAL PRACTICAL THEORIES OF CURRICULUM,
INSTRUCTION AND PEDAGOGY
AND A COMPARISON TO A CASE STUDY

Introduction

This chapter presents the findings of a semi-structured interview with eighteen student teachers concerning their personal practical theories regarding curriculum, instruction, and pedagogy. The term pedagogy here is used to encompass the understanding of the whole existence of the child, the psychology of children as it is related to teaching. Relationships among the eighteen student teachers' responses will be examined and synthesized, and findings related to an interview-observation-interview sequence with five of those student teachers incorporated. Findings concerning
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* Number of Weeks Completed in Student Teaching.
Nicole's personal practical theories will be reviewed in light of this synthesis of responses. Throughout this chapter the term pupils refers to school age children.

The interview questions were developed around the general topics of curriculum, instruction, and pedagogy, and were asked in several different ways. The interview questions appear in Appendix A. Appendix B displays questions regrouped into intended general topic areas. The topic areas were overlapping, hence questions in one category elicited responses on other topic areas. For example, the curriculum topic question, 'What's important to teach?' generated responses about curriculum, instructional method, and pedagogical content knowledge. Additionally, inductive analysis of responses to that particular question illuminated student teachers' views of the nature of knowledge and of pupils. The semi-structured nature of the interview guide allowed the interviewer to probe for more detail and follow leads to other topics. A topic of interest to the student teachers emerged as Teachers' Roles. All interviews were taped and
transcribed. The transcripts were edited for readability during transcription. The following section of this chapter will present the findings of the eighteen interviews organized by topic areas.

**Pedagogy**

In response to the question 'How do children learn?' student teachers overwhelmingly stated a belief that pupils need concrete physical involvement. Some simply said "by doing," others explicated specific modes such as reading or writing, manipulating materials, and playing. This response expanded into discussions of theories of learning styles such as right and left brain dominance. One student teacher's reply, "by experiencing", implied not only immediate physical involvement but tacit restructuring of knowledge. Several student teachers pointed out that through concrete experiences pupils "make connections" between what they already know and new information.

A second category of responses identified psychological and physical safety needs as crucial to learning. In general the respondents stated that pupils could learn in negative or adverse conditions, but that such learning would not be as "much or as easily accomplished" as that done under positive circumstances.
Psychological safety included feelings of trust in the teacher and others, and positive self-esteem. Some student teachers were concerned that violence at home or on the playground in the forms of severe physical punishment or abuse, and verbal and physical altercations with peers interfered with both the pupil's capacity for learning and the teacher's opportunity to instruct.

The nature of the information to be learned formed the third category. Pupil interest in what was to be learned affected their motivation and hence the learning. Interest was also seen as affecting internalization of knowledge or "making connections". Relevance of what was learned to the pupils' everyday lives was deemed important to stimulate and sustain interest and motivation. Student teachers viewed learning as an individual event, different in style, amount and content for each pupil.

Another view of pedagogical knowledge emerged through responses to the question 'How do you know if children have learned?' Student teachers used a combination of concrete and subjective evidence to determine whether learning had occurred. Paper and pencil tests and quizzes were the least favored means of gathering evidence of
learning, and were used primarily as supplemental indicators that pupils had learned.

Student teachers' views on standardized tests, elaborated during the interviews, pointed out concerns for the validity of such measures. Reasons, when given, for distrust stemmed in many cases from personal experiences. "I could always do better on essay exams." (I/10)

"True/false questions encouraged guessing (for me)" (I/12). In some cases student teachers recognized that difference, for example, in learning style or a particular disability, might be reflected in low test scores.

Evaluation in itself was difficult for student teachers to administer. They had no difficulty distinguishing excellent work, but were reluctant to tell any pupil that his work was better or worse, more or less creative than another pupil's work. Pupils who flunked or did not do well on tests might be given a second chance on version B of the test.

The participants voiced no reluctance giving grades on papers, but most could not eliminate average and below average papers from display boards. They believed that pupils would be harmed in some way if they did not receive
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<td>I would put everything up—everybody's work.</td>
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<td>They should all have their work up all the time, or if you can't do that then it should be evenly distributed. If somebody is trying. One way to recognize kids work of course is hanging it up. At different times I'll have kids come up and share it with the class. Or share it in another class. Another way is little notes on it. A lot of times they can't read it, they'll have somebody in their family read it.</td>
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<td>While it may not seem like a big deal to us some of them are really hurt if they don't get the same kind of or similar acknowledgement.</td>
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<td>I post it up. I posted up a whole bunch of things up this time when we did stuff on the solar system. I think everyone needs their work up as much as possible because you are going to have a lot of kids that just are not as advanced, as well off with writing habits or with math as other kids.</td>
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<td>You have to gear at least something towards these kids that you are going to have once a week that they are going to get 100 on. You are just going to do that. You have to.</td>
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<td>All type of papers not just graded papers, birthdays, awards that they win from school if they want to share them with the class.</td>
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<td>I said I'm going to choose one child every week going down the alphabet that I'll have lunch with, and so I tried it with Wanda last week. I'll do it] one day a week. There are limits to this benevolence. We don't eat in the cafeteria, we aren't allowed to talk there.</td>
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I try to write notes on people's papers but it sounds like you write the same things every time because this is [sic] the good kids that always turn in the good work. I try to put a sticker or a stamp on it.

I don't just put up a papers on the board. I put creative things on the board when every one has a chance to put down art work that is their own ideas.

Art work is always put up. As far as their papers, poems always get put up without grades. I don't put dittos on the board.

I don't think that a sticker on a 6th, 7th or 8th grade paper is a problem.

Sharing good answers from a test. Let them share it, let them feel good about themselves. [I'd put up] children's art work, children's papers, spelling tests, or you know whatever they've done a good job at.

Everybody's work goes up. I'll put a comment on it - nice work or good job.

I recognize work that I feel a student has put a lot of effort in. It might not be up to par but I always write I really appreciate your putting the time in on this." Just attitude generally [gets recognized].

I often commented: "I really liked your thinking today and that was really nice you could let us in on it."

Participation.

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recognition. One student teacher however, used (anonymous) samples of poor work as negative examples of good work by reading them aloud to the class or posting them on display boards.

Whose work gets recognized? How does it get recognized? From responses to these two questions it was discovered that student teachers in this sample arranged successful experiences for their pupils, ranging from consciously teaching at a lower level once or twice during the week to setting separate requirements for different ability levels. This insured, according to them, that every pupil would experience the joy of success. One student teacher's class was entirely individualized, thus reducing the problems of choosing and evaluating.

Work could win recognition if it evidenced effort, individual improvement, thoughtfulness, was creative, or maintained a high level of excellence. All art work, poetry and creative writing were generally acknowledged.

Recognition was provided publicly and privately. Public recognition included verbal approval, stickers, candy or certificates, highlighted displays, and status or privileges (e.g. class expert, buy out a homework
assignment, play a game). Private awards included notes, stickers, and advancement through a curriculum. Some pupils were permitted to share their work with another teacher, the principal or school secretary, or a friend in another class. Student teachers stated that disapproval was always privately expressed.

Discussion, talking about or explaining a topic, was considered time consuming, but more reliable than paper and pencil tests. However, if written evaluations were required, essay questions were more acceptable than other forms of test questions. Observation of pupils working, of applications of knowledge, for example in 'creative projects', and systematic recording of progress over time using tape recordings or portfolios of written work samples was suggested as acceptable alternatives for the student teachers themselves, but they cautioned that administrators and parents wanted "the tests" to prove learning had occurred.

For on-the-spot recognition of learning the participants relied heavily on an intuitive sense, that is, tacit knowledge, about their particular pupils. Subjective physical cues, especially facial expressions
and eye contact, were coupled with more concrete expressions such as raised hands, attention, enthusiasm, interest, and pupils' questions as signals to the teacher. Student teachers could not give detailed descriptions of facial expressions that indicated learning. The response to this question was most frequently a demonstration accompanied by "you know - like this". Effort, independence, interaction (classroom participation) and attitude (toward what was being learned, the teacher, and schooling in general) were mentioned as additional cues, but the respondents could not explicate how these indicated learning. Responses indicated that the student teachers had difficulty articulating "how they knew what they knew", not a surprising difficulty since tacit knowledge is often not expected to be articulated.

Inductive analysis of responses to all questions extended the researcher's view of the pedagogical knowledge of these student teachers. That pupils want to learn was a belief held by seventeen of the eighteen interviewees. In contrast, one student teacher's choice of language indicated that she believed pupils did not learn of their own volition. She used phrases such as
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<td>A lot of times I think that is not [clear] but I think that is just being paranoid. I ask them to make sure they understand it. If it is a fact and he has to ask me then I know that he is just not paying attention.</td>
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<td>I: Who's responsibility is it for kids learning? It's everybody's responsibility. Theirs. Mine. I've got to make sure I'm clear and I know that some people cannot handle the way I think, therefore I'm not going to come across clearly, but I can explain things in several different ways. One of them is bound to fit.</td>
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Sometimes it's easy to tell, especially if you throw out a question and they all stare at you with those blank looks like "I'm sorry, we didn't read about that," when we just got done reading two pages on the exact subject.

[If] they take a wild stab at it [an answer] and some of the other kids look at them like "I can't believe you just gave that answer," it kind of tests more on the other kids around them. If they look at him in disbelief I know that at least the other kids are paying attention. Also by the questions they ask, especially in subjects like math.

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<td>If someone comes up with a good question - then I know I haven't clearly expressed my idea of what I want them to do.</td>
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If I'm giving a long set of directions to the kids that day I usually ask someone else to read them to make sure they're clear.

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| Their performance on a test and also if they're talking to each other, and if they're giving each other funny looks. "OK," they say to their buddy, "she's not making any sense." Verbally and expressions on their face.

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<td>You can tell by looking at their faces. You can learn, I mean you can just tell by looking at them. How they respond to you.</td>
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'make them learn', 'push them to learn', 'they learn by force' and described her role as an 'entertainer, on stage eight hours a day' (I/13). She described the act of teaching as "90 people take from me every day" (I/13, 15).

A belief related to wanting to learn was that all pupils can learn, if conditions are right. Valuing and positive regard for pupils was exhibited in this theory. Two student teachers explained that because of their own experiences as gifted pupils, they were more at ease working with gifted or quick learning pupils. One stated that she did not have the "tools (understanding of the problems, knowledge of remedial instructional methods) to work with the slower pupils" (I/3,10). Student teachers draw on their own experiences as pupils (Fuller & Bown, 1975) - their personal practical knowledge - to act in ways they do not yet know how to do. Jackson (1986) states that when teachers are working with pupils who are very like themselves, there is relatively little to learn about teaching techniques. When they are working with pupils who are unlike themselves, they need much pedagogic and content knowledge (p. 26).
A tension existed between the novices' need for control and their belief that the pupil should participate actively in decisions about his own education. Who was responsible for learning? How much responsibility was the teachers' and how much the pupil's? Teachers provided appropriate structure, modeling, opportunities for practice, and materials; pupils supplied the interest, effort and compliance with the tasks set out. One of the male student teachers expressed the most representative view, "I'm not responsible 100% for this child learning" (I/9a), he and several others indicated support for parental involvement in the parent-teacher-child triad.

Another student teacher viewed 'getting children to do their part' as a competition. "Sometimes the kids beat you. They win. I'm not saying that you have to win or lose, but you have to tie the game" (I/13,5). Another identified her feelings of responsibility saying, "If kids fail in here, I take it personally" but explained that her cooperating teacher cautioned against that view (I/8b,10). A fourth student teacher listed several possibilities for pupils not learning, for example, teacher clarity, pupil emotional or cognitive blocks, or
insufficient time (I/16a,12). Research has not yet made clear the link between teachers' attributions and pupils' achievement, but Clark and Peterson (1986, p. 282) report that teachers who accept responsibility for pupils' successes and failures are more likely to work to improve pupil performance in the classroom.

Student teachers held that pupils need immediate corrective feedback for behavioral and cognitive learning. They compiled mental lists of pupil abilities and past performance. This practical knowledge allowed them to provide immediate responses to perceived pupil needs. They amended the lists as conditions changed, that is for example, when a pupil mastered a skill or missed a lesson, the information was added.

The participants responded to the questions 'What kind of pupil information do you need? How do you use it?' with concrete examples about physical health, special needs, achievement particularly reading level (but not teachers' grades), learning styles, and interests. Two desired information on aberrant or severe behaviors. One stated that she wanted to know other teachers' opinions about work habits and potential 'to catch the quiet
teacher pleaser who needed encouragement to experiment" (I/ll). They expressed a general aversion to reading the cumulative records predicated on a belief that information contained in the records would prejudice their attitudes and expectations of specific pupils. Information they did not want before meeting their classes included IQ scores, and subjective comments about pupil behaviors (e.g. effort, attitudes, grades). The researcher believed an inconsistency existed in the student teachers' wish for achievement records but not for grades or test scores indicating a lack of understanding of evaluation procedures. It would be interesting to note whether changes in responses to this question occurred during the induction year.

Interviewees were asked how they maximized opportunities to learn, and they were asked to describe how they accounted for individual difference. The responses indicated an awareness on a practical level of cognitive styles (learning styles), intelligence (ability), and cultural (socio-economic status) differences. Watching and listening were the means used to identify differences, while special problems they thought ought to be referred to an assessment team.
Learning centers, presenting lessons in more than one way, individualized assignments and varied group sizes from whole class to individual tutoring were ways of meeting needs student teachers offered. One suggested physical arrangements in the room might have to be made for some pupils.

Who talks to whom, when and about what? Talk described by the student teachers included instructional talk, preventative or disciplinary talk, and social talk. Student teachers initiated conversations with reluctant or withdrawn pupils, almost all instructional talk (except pupil clarification questions) and routine or management talk. Pupils initiated social talk, and questions to clarify assignments. Most of the student teachers stated that there was nothing that they would not talk about with pupils. One student teacher stated that sexual issues were a taboo topic, and one male implied being wary not only of such talk but gestures. The student teachers in this sample sustained the typical idealistic service oriented view of students in a teacher preparation program (Heck & Williams, 1984, p. x) throughout the interviews.
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<td>A lot of kids come up to me and have things they want to say. I suppose in a lesson I start by asking things generally. Basically when I'm talking it revolves around curriculum type of things - you know subject matter. When they talk it could be anything.</td>
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<td>I usually start the conversations with kids but it depends on what it's about. Kids come up to tell me things that happened at home.</td>
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<td>If somebody comes out and asks me things I will handle it the best I can. There's no specific subject that I'm afraid to talk about or deal with. If I don't feel I can do it adequately, I'd refer them.</td>
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<td>I'm usually the first person to speak. I usually start with a question so that they're the next person to speak fairly quickly. There's discipline talk and subject matter talk. There's &quot;preventative talk&quot; - there are some things [kids want to talk about] that get kind of iffy. [gave example of sexual reproduction]</td>
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<td>3rd</td>
<td>Probably there's 10 kids - 3 each day that talk to me. It usually depends on them. I don't know [if I talk to all the kids during a week]. Writing helps with that too because they write about their personal experience unless something is really bad and gives a point for discussion.</td>
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<td>10</td>
<td>17</td>
<td>3rd</td>
<td>I talk about so many things with kids. I talk about sports and school.</td>
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<td>4-5</td>
<td>I ask too many questions. This is the stuff I learned in theory don't ask questions that require a single answer rather than questions that require an essay.</td>
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<td>21</td>
<td>4-5</td>
<td>I initiate with the ones who usually do not initiate first. I've been able to pull him out of his shell.</td>
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<td>Table 4. (continued)</td>
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I do most of the talking which is not good because in order for them to learn my ideal picture - I would need more input from them which means they should be asking more questions. I think I give too many directions. I guide them through it, but I want them to come into it. I want them to say more. I ask a question and I get a yes or a no or one sentence. They are not saying enough. They give me the very basics.

6 10 4-5

[Talk] is important as long as it stays on the topic. When it becomes social, then I know they're not doing what they should be, they basically have no time in class. I guess what I don't want is talking about anything other than the work they are working on plus a little bit of social.

7 6 5

It isn't always what they should be talking about especially at 5th grade. The girls are starting to like boys but the boys don't like the girls so that kind of talk goes on and the little picky talk like this family is better than that family, this kid is better than that kid, or you've got cool shoes on and your shoes suck, those kinds of things - kid-to-kid and kid-to-teacher. They'll be the first - my little brother did this last night, or my parents took me to a movie or we did that.

7 7 5

Some kids are more apt to come up to me "Oh Miss H., guess what I did." Some days they'll come up to me, other days I have to go to them.

7 5 5

A lot of it [talking] is the teacher. But yes, the teacher probably does too much talking. Some teachers seem to feed knowledge to the kids. This is what you need to know, write this down. You need this. Then they expect the kids to re-quistrate it on tests without ever having to discuss it or really show you that they understand it...

5 6th

Kids who are really excited about things and they want to come and share things with me and that makes me feel important. That means I'm not just someone up there sputtering information at them, that they genuinely care about me. They think that I care about them.
Table 4. (continued)

11  13  8th  [Talking to kids outside the room]. Oh yes, I can't help it. They hunt me down in the hallways. ... sometimes all I have to do is say hello and I get the "low-down."

11  14  8th  I don't want to get in trouble.

12  9  8th  When the superbowl was on they were real interested in who I would be rooting for because it makes you seem like a real person to them. I want them to see that I can make mistakes and that I can be trusted too. Because just like a teacher, they're penned into the building too and there might not be other places for them to go.

10  16  8th  I think sometimes the kids do start it. I like to feel that they can come to me as a mature friend with any type of question, any conversation that we have they could come to me and start the conversation. I would say after the first week that happens.

13  9  8th  (During lunch) I don't initiate. That's their time and I don't do a whole lot of disciplining in the lunch room when I have duty.

13  9  8th  I talk about what they like. What is going on at home. Sometimes in class we lose it. We just absolutely go bonkers and I think that's so much fun. I like to have them laugh. I like to get oof task.
With regard to content "the basics", or the three R's (reading, writing and mathematics), predominated in replies. The frequent response detailing literature based language arts, a whole language approach integrating reading and writing, was indicative of the university influences. Two student teachers talked at length about topics within their specialty areas of mathematics. One student teacher, and a practicing artist, described her ideal curriculum as "kind of a Leonardo da Vinci approach, integrating a little of everything - art, music and literature - into mathematics" (I/11,2). "Basic tools" was a response implying more than "the basics." It intended life skills and processes to be included.

Values represented the most saturated bin in the category life skills. Student teachers explained values as knowledge of right and wrong or moral and ethical issues. One student teacher detailed the hidden curriculum of values inherent in the structure of schools (e.g. loyalty to country, belief in God, worth of education), "those aren't the things we talk about, though they're sort of there" (I/16,6). This same student
teacher was the only student teacher to identify that "there's no such thing as value-free education", though she believed that teachers' biases could be reduced enough to allow pupils to make their own choices.

Whose values should be taught? These student teachers declared that it was inappropriate to teach their own values, but mandatory to teach concepts representative of societal values. Inductive analysis of responses and actions indicated overall that student teachers believed that the values they personally held portrayed the basic standards of the communities where they were practicing. They did not discount individual differences among families, particularly in their views about religion and sexual behaviors. Responsibility and respect were individually mentioned, while the phrase "right from wrong" stood for the remaining values conceived to be important by the student teachers.

Life skills included socialization skills, how to get along with people and work in a group; also etiquette or manners, appropriate language, and health habits; in short how to become a functional member of society.
ought to be referred to an assessment team. Learning centers, presenting lessons in more than one way, individualized assignments and varied group sizes from whole class to individual tutoring were ways of meeting needs student teachers offered. One suggested physical arrangements in the room might have to be made for some pupils.

Who talks to whom, when and about what? Talk described by the student teachers included instructional talk, preventative or disciplinary talk, and social talk. Student teachers initiated conversations with reluctant or withdrawn pupils, almost all instructional talk (except pupil clarification questions) and routine or management talk. Pupils initiated social talk, and questions to clarify assignments. Most of the student teachers stated that there was nothing that they would not talk about with pupils. One student teacher stated that sexual issues were a taboo topic, and one male implied being wary not only of such talk but gestures. The student teachers in this sample sustained the typical idealistic service oriented view of students in a teacher preparation program (Heck & Williams, 1984, p. x) throughout the interviews.
They talked to pupils because it "made them feel important when pupils wanted to share with [them]," and they felt that pupils viewed them as more human, "more like [a] real person."

Student teachers believed that their pupils were a product of their environments. Personal and social information about their pupils was included in their mental lists representing "knowing" their pupils. Much of the knowing was held tacitly, that is unarticulated, in two forms. All information about all pupils formed an ecological view of the particular context, but could be separated to illuminate individuals.

Not only was this knowledge used to provide immediate responses during interactive teaching, but was also used during planning. The interviewees declared that they would use their accumulated pupil information to change their teaching to meet pupil's needs, to increase their understanding of their pupils, and to give them a "clean slate" without stereotyping.

Interpretation of the pupil information held in their mental lists as they expressed it in the interviews developed from their own experiences as students and
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<td>There's all kinds of differences - intellectial or cognitive differences, like I said, I might try to have them help the other students.</td>
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<td>That helps the ones that already know it the most. There's an assessment team in the school for students with special problems. I usually make my own observations whether I'm supposed to or not. [example: how assessment teams don't get around quickly enough to be helpful to the teachers].</td>
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<td>If you're planning a lesson, say &quot;How can I do this another way?&quot;</td>
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<td>3.7,7</td>
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<td>I'd like to give them a survey on the first day. Things like are you a reader or are you a writer? What do you do when you read? What do you do when you write? I don't think I would want to know on my first day who is a good kid or something like that.</td>
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<td>3-2.8</td>
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<td>If I have a problem with a kid - yeah so I can go find out who that last year teacher was and say what did you do and how did you help.</td>
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<td>S</td>
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<td>You have to work with each individual kid - how they learn best rather than &quot;this is the way I do it and if you can't learn that way that's too bad. You won't learn in my class. You have to adapt it to the individual.</td>
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| S  | 2    | 5th   | What I try to do is do the lesson with the whole class. Those that understand it, after they do the assignment, whatever it happens to be. give them more work that will challenge them more
I'll call two or three of them to the front table and we'll sit there and discuss it while the others do something else.

I've had a couple of kids that were really interested in a couple of things that we really weren't going to get into. I had them do a mini-report to the whole class and the whole class really got into it because it was one of their peers giving this and they weren't going to be tested next Tuesday.

Identify differences] like learning styles or personalities — by watching, by listening to what they're saying is a lot of it. What they're talking about not always exactly the words they're saying. Just basically by paying attention to them, listening to what they're saying, what they like, what they don't like. Different things that they attend to, what kinds of lessons they get involved with.

The kids that I have are basically upper to middle class kids. That makes a difference in the way that I teach them than if I would be teaching lower class kids. They have a different set of values and background, knowledge and experiences. I think that is important knowing that kind of stuff.

[I try to] make math fun. I try to bring in the concrete so they can play with it and work with it to show fractions.

I speak and write, repeat, underline, use arrows.

"And then we started just bringing little extra fun things that i[sic] math related, like they're doing a map of the U.S. ... they have story problems but they get to use their brains."
Table 5 (continued)

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<td>Individual differences are very acute to me. People like to lump - well these are the trouble makers and these are the good kids and here are the mediocre kids and these need to be pushed. They gave me five trouble makers and each one of them had a different problem and I knew that. I could see it. ...They were all looking for a different thing and I had to respond to the differences.</td>
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<td>I do pay attention to those [emotional and psychological difference] and then there is the intellectual differences. I work at the emotional level to correct the problems that the foundation is from ... I know what it's like to get so far below so far down ....</td>
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<td>You have to take into account physical and developmental differences.</td>
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<td>I take advantage of everything that comes up. I think you need to take advantage of everything that's pertinent to that class at the time.</td>
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<td>11</td>
<td>The learning centers help me [maximize opportunities], encouraging them to pursue if they're interested in something. Also being open to how they want to do it.</td>
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personal values and beliefs. Theoretical knowledge was infrequently cited as a basis for interpreting information.

The student teachers did not ascribe any of the pupil information they had gathered to information given them by their cooperating teachers. Yet research states that typically the cooperating teacher has significant influences on the practical knowledge student teachers learn (Crimmett & Ratzlaff, 1986). University course work builds theoretical knowledge, but the student teachers in this sample, with the exception of Nicole, seemed not to rely on it. References to theories were scattered infrequently throughout the interview responses. Some theoretical knowledge was specifically identified, particularly Maslow's hierarchy of needs. Other theoretical knowledge, particularly that identified with certain subject matter programs, such as literature-based reading programs, was identified by the student teachers' specific uses of terms associated with that program. However, the researcher found no evidence other than that cited above that student teachers consciously drew on and used theoretical knowledge during interactive teaching, nor used it to illuminate problems during reflection on classroom events.
Curriculum

What's important to teach? Student teachers in this sample listed content, life skills, and attitudes. Practical knowledge of school systems prompted student teachers to include "what's in the curriculum thing [graded course of study]." "They obviously have to have a curriculum, that is what you have to teach" (I/7,2). "What I end up teaching has gone along with the curriculum - what I walked into" (I/3/6). "The graded course of study is my Bible, so to speak" (I/13a,1). Student teachers accepted that a common set of guidelines, the graded course of study, should organize content through and across grade levels, but their experience with such documents was minimal. Primarily they "just follow[ed] the [textbook]" (I/3,6) because it contained "the curriculum." However, one student explained how he used textbooks to his advantage.

Textbooks can help you pace. They can help you take large amounts of information and break it into segments. I don't like the content. They're not written for their learners (I/8a-9).
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<td>I would love to teach kids how to learn. I learn by experiencing and by dealing. [sic]</td>
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<td>I'll use what's in the graded course of study as my basis for what was important to learn. I would include a lot of activities along with the guided course of study to help them work together.</td>
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<td>What I end up teaching has gone along with the curriculum - what I walked into. Basically the whole curriculum follows those objectives. We just follow the book, the curriculum.</td>
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<td>I think the basics are very important. I know a lot of people probably don't think that way but I think reading and writing and arithmetic are the most important because the kids now are going to be the future for tomorrow, the future leaders of tomorrow and I think they need to have that knowledge of those things. I think there is [sic] tons of things you can teach that are important, but I think the main 3 are those.</td>
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<td>Maybe even more important than that when I think about it are values. [The teacher] has to teach them what is right and what is wrong. I think there is [sic] basic right and wrong that children need to know. As far as subject matter is concerned, I think that is important and I think if you get a child to learn what is right and what is wrong, to become a better person and a better member of society, I think that's more important really than reading and writing and arithmetic.</td>
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<td>I see no value teaching something to a whole class of kids that has no interest whatsoever to them.</td>
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First by what I'm interested in is how I choose my first priority, depending on the subject - some subjects it's the textbook for one subject, math. And reading, other subjects, other things I try to find intersection between what I find interesting and what is in either the curriculum, basic curriculum or the book.

I kind of - this is terrible - choose a topic I like. Like a resource - I say this sounds interesting and yeah it is on that subject.

...is to teach them to have a love for learning itself inherently all by itself regardless of the content area, regardless of many topics or subjects or math, social studies, science. Before all of that.

If you present a poor image or low respect for yourself or other peers they are going to pick up on that and apply it to the way they are going to treat their mistakes, etc. Then that is how they are going to trust each other.

You mean subjects? The basics - math, English, reading, those kinds of things, but I don't think everything has to be structured. You can also incorporate a lot of things. I don't think it should be that standard, but I also think you need to teach the kids a lot of social interactions. Teach them how to get along with other kids. The best way to do that is give them group projects on different situations where they have to learn how to get along with others.

They obviously have to have a curriculum, that is what you have to teach and then they have to have mastered by the time they get to 6th grade.
Table 6. (continued)

14 1 7th

Sometimes content is good, but I feel sometimes content is not enough.

They need to grow not only mentally, but they need to grow socially as well because this is the time when everything is happening to them and you have to.

13 2 7th

[It's important to teach] where the children have weaknesses. I care about teaching responsibility at this age [7th grade]. That is my #1 concern. That they start to become responsible for themselves. I also think it's important for weaknesses, to remove any hinderence so to speak, so that more learning can take place.

I want basics...let's make sure we have the basics and then the very elaborate things. We can't do much with the elaborate things until you have some basics.

11 2 8th

Content? Reading, writing, arithmetic. I believe you should teach a little of everything. I have no qualms dragging art into any subject matter you can possibly stuff it into or music for that matter. Or dragging literature into math. I don't believe in isolating one subject and keeping it clean and sure and pristine because nothing like that and beside the brain doesn't work that way. [Long explanation then says ...]

11 2 8th

My approach to teaching is that I believe that you should teach somebody how to learn. I believe that you should teach them how to learn that subject, how to experience it and then they do the teaching themselves, figure it out or they see it. The actual learning process is when the kid makes the connection and takes it into their own brain and locks it away and files it.
Skills they can use throughout their life and doesn't mean just reading and writing. They need to be knowledgeable about what makes things work and what doesn't make things work. They need to know history so they can have a basis for decisions that they make. They need to know about our music because that's what makes people tick. They need to learn how to live with other people that have different interests than them and those are the types of things I think are important for people to learn.

Or if what a teacher thinks is really valuable for children to learn and she's doing it because she thinks it's going to have some great impact on them when they go out in the world. She might lose the perspective that it's real important because she's done it over and over and then you have a business person come in and say you really haven't been doing that for the past 3 years. Maybe you need to reevaluate ....
With regard to content "the basics", or the three R's (reading, writing and mathematics), predominated in replies. The frequent response detailing literature based language arts, a whole language approach integrating reading and writing, was indicative of the university influences. Two student teachers talked at length about topics within their speciality areas of mathematics. One student teacher, and a practicing artist, described her ideal curriculum as "kind of a Leonardo da Vinci approach, integrating a little of everything - art, music and literature - into mathematics" (I/11,2). "Basic tools" was a response implying more than "the basics." It intended life skills and processes to be included.

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Life skills included socialization skills, how to get along with people and work in a group; also etiquette or manners, appropriate language, and health habits; in short how to become a functional member of society.
Socialization skills were the most often mentioned. "If they (pupils) can't get along in the world then reading, writing and arithmetic won't do them much good" (I/10).

A subset of the life skills category emerged as relevance. Student teachers believed strongly that what is taught to pupils must be applicable to their everyday lives, now and in the future. "If knowledge doesn't link to anything, why teach it?" (I/9,6) Relevance was best achieved they thought, by using real world applications of the content in the curriculum or textbooks.

Yet another subset, processes, was integrated with both life skills and content knowledge. Process was articulated as knowing how to organize oneself and one's time, communicate, make decisions, and think. Student teachers frequently mentioned teaching pupils how to learn, especially how to learn in a subject, as the ultimate process, although they were not able to describe precisely how it would be identified by an observer in their classrooms.

Attitudes emerged as another subset of both content and life skills categories. Mentioned or described in responses to many questions was an emphasis on pupil self-esteem. Student teachers stated that pupils who had
low self-esteem did not learn as well. They devised multiple methods for building positive feelings of self ranging from simply modeling in their relationships with pupils to highlighting a pupil of the week on bulletin boards to initiating direct training in esteem building activities such as writing 'what I like about me'. Positive regard for others as a necessary part of getting along in the world and of positive self-esteem. Classroom rules supported this claim, for example, "Respect others and their property" and "No fighting."

Observation of student teacher's behaviors, particularly the language and manner of response to pupils provided some insights. Some student teachers experienced difficulty early in their practicum differentiating their behaviors with peers from those appropriate with their pupils, particularly middle school pupils. They faced a conflict between their beliefs and practices. The use of sarcasm and caustic retorts, so much a part of the present collegiate peer culture, were not immediately identified as problematic nor as violations of their belief in positive regard. The researcher believed that they were unaware of these behaviors. Questions in the interview
stimulated reflection for one middle school algebra student teacher resulting in a conscious effort to become more aware of his practice. Desirable attitudes included "love of learning" or wanting to learn or wanting to have knowledge, and was closely related in student teachers' minds to teaching how to learn. Implied by the language used to describe this attitude was a quality entailing motivation and individual pupil effort. Student teachers' perceived that pupils must be motivated internally, as one indicated. "At middle school age they like to think that they learn by getting it [knowledge] sprayed on them and it absorbs through the skin" (I/11,1).

Motivation techniques student teachers used included recognition of work, special privileges, increased status, and various extrinsic rewards such as stickers, candy, and pencils. As a group they valued intrinsic rewards as producing stronger commitments but used extrinsic rewards profusely in their practices.

Inquiring "Who decides what's important to teach?" generated a long diverse list: the community, parents, The National Council on Education, state, district, school board and other government people, a curriculum committee
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| 8a | 3 | 6th | The teacher is going to have to ultimately decide what needs to be taught or how she/he choses to teach it. 

[Explains how students have input in curriculum.] |
| 8a | 4 | 6th | Picking things the kids are interested in can help me tremendously – from an educational standpoint and from a discipline standpoint. |
| 14 | 1 | 7th | I suppose partially the teacher, her or himself – and also I know being in different school districts that that will also dictate what you will do. |
| 14 | 2 | 7th | Parents put pressure on the school board and district or the school itself. Basically I feel they [the parents] have a major hold on it [the curriculum]. [Parents] ... major input not necessarily in what is taught but the pace that you should go. |
| 14 | 5 | 7th | The kids yeah! They'll tell you if they like it or not. |
| 13 | 2 | 7th | Here in this district there are four: the parents, the curriculum guide, the teacher and the student. The curriculum guide is my Bible so to speak, it outlines what is necessary for this age level and I interpret it as just that – an outline, not written in stone, but something that needs to be covered so that they can again move on without any distractions to deal with the next year. |
Table 7. (continued)

The parents come into play, especially here because they are very involved with the school, which is wonderful. ... but here it becomes a hinderance because teachers are not teaching what they feel is best for the student.

13  3  7th  The biggest decision comes from the teacher-student interaction.

11  3  8th  Well, I say we both decide. The school will tell me what they want taught. They're my employer. They are telling me what has to be covered. My point is I will cover what has to be covered and then some.

15  10  8th  There's a long line of red tape of who decides, but I think eventually the classroom teacher is standing up and he/she presents the information the way that he/she personally values what should be taught. The community decides. Parents have a lot of influence. I think the National Council on Education decides what is taught, in a classroom and then the states and districts down the line and also the individual community. However, the classroom teacher has the final say on whether she will present this information or idea to the class. There are a lot of times I think parents dictate that and the curriculum committee - it usually tells you this is what you do, and if you are in a real good school, these are the ideas you should get across and then leave it up to you on how you want to do it.

12  3  8th  ... they're (the parents) are kind of dictating what they want their kids to learn whether it is good or bad because they haven't scientifically tested if or observed what's going on
and the school. Textbook authors were not specifically cited. Teachers were mentioned infrequently. The school district was most frequently acknowledged as the author of the graded course of study.

Explanations of the curriculum development process distinguished between who decides 'what to teach' and who decides 'how to teach it'. Teachers clearly were believed to control 'how' the curriculum was taught. Though teachers were not mentioned as developers of curriculum, they were acknowledged as having ultimate power to decide the content of particular learning opportunities offered to pupils. Teacher collaboration deciding what to teach at grade level or team meetings influenced beliefs of student teachers at the middle school level.

The notion of curriculum control was not fully developed for most of the student teachers.

"The school will tell me what they want to be taught ... what has to be covered. My point is, I will cover that and more. If you want to be employed you have a game to play" (I/11,3).
Still another student teacher saw an ethical responsibility to alert a school district to her values, including the fact that she would not teach reading using basal readers. 'I won't sign a contract if they tell me I have to use basals' (I/16).

The schism between who decides and who delivers the curriculum was seen as problematic by several student teachers. In their view, persons not immersed in the daily context of the classroom could not clearly know the needs of the pupils (e.g. I/10). This notion was tied to the belief that pupils were interested in and needed to learn about what was relevant in their own real worlds outside of school.

Though the pedagogical view of student teachers elaborated earlier placed an emphasis on pupils' independence and self-governance, and on using pupil interests in planning, pupils were not considered as curriculum developers. Some student teachers volunteered that their ideal curriculum development process would involve pupils deciding the details within a conceptual framework, for example, specific topics in language arts (I/6; I/16).
Attitudes about parental involvement were diverse. Some saw parents as having legal or ethical rights to participate in curriculum development. Others saw parental involvement as problematic. One student teacher emphatically stated, "I never want to be to the point where a parent tells me what I should teach", but this student teacher agreed that parents could contribute essential background information on pupil interests and out of school activities (I/13a, 2).

The line of authority in determining curriculum was least clearly understood. Student teachers held vague images of how curriculum development was controlled by state requirements, though confusion existed over whether there was a national curriculum upheld by the federal government. The student teachers in this sample seemed not to have an understanding of how authority was granted and held or passed from state to local governing agencies to individual teachers, or that those agencies and processes were not standard nationally. More to the point, the student teachers had little understanding of how the graded courses of study actually came into being or their intended use.
INSTRUCTION

A successful lesson was identified by the same criteria used to describe learning, although the participants did not make that connection consciously. Written work, on task behaviors, knowledge gained or accomplished objectives were concrete signs of success.

A successful lesson generated excitement, interest and interaction between the teacher and class. Pupils were involved and attentive. They raised their hands, asked and answered questions, and discussed the substance of the lesson outside of the classroom. Student teachers described an intuitive sense they had that 'it worked', they felt good about it. "I count on my instincts" (I/13,14). Non-verbal cues such as facial expressions and how pupils sat during instruction were also considered signals.

Student teachers depended on pupils' responses, and their content, or lack of responses to determine whether their teaching was clear. Non-verbal cues, for example facial expression, eye contact or lack of it, attention and interest, ranked high on the list of signals used to check clarity during interactive teaching.
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You can hear it just listening to their conversations - after.

I used to write down on the lesson plan form if they were enthusiastic about it, or if they enjoyed what they were doing. My cooperating teacher said that that's not enough.

By how well they perform and answer questions, how long they remember it.

I think my writing program is starting to be an example of that. Those were writing conferences. I still have some problems with them but it is working for me now and I guess they are short and sweet.

What I want is, I want interaction taking place. I want a relationship going between the teacher and the student.

I evaluate myself by myself, not written down. Even today I did it on a lesson with a reading group. I sat down after that one and said now what can I do - I really did - what can I do to make this better.

Like I told you - that last lesson - I went back and I read it. I looked at what I could do better and I made it better the next time I went out and taught it. I changed the order and it went a lot smoother. I changed the examples that I had and it made more sense. They could understand better.
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<td>I think watching - because you also evaluate kids by how - they behave doing it [a lesson]. Like the kids - if they are really into it if they ask a lot of questions and if they get involved with it. If they get excited about it. Talking about the kind of lesson where the kids are paying attention - the hands go up from everyone and it is really neat to watch because they want to give you what they think. They are learning and enjoying what they are doing. So many times you see kids learning but they're not enjoying. Big deal if you learn it and not enjoy it.</td>
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<td>10</td>
<td>11</td>
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<td>I don't know if it can be a successful lesson without learning.</td>
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<td>10</td>
<td>11</td>
<td>3rd</td>
<td>Why do the lesson if there is no learning, no joy or excitement?</td>
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<td>2</td>
<td>3rd</td>
<td>I judge a lot of my lessons just by the looks on their faces. How their work turns out, by their asking a lot of questions when they normally wouldn't ask any questions. Then there are kids that normally ask questions that don't.</td>
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<td>6</td>
<td>5</td>
<td>4-5</td>
<td>A successful lesson includes to me several ways of judging whether the children have learned, if they understand their written work, extra activities, whether they participated fully.</td>
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<tr>
<td>16a</td>
<td>9</td>
<td>4-5</td>
<td>So. I don't know how deep you need to go into things. Tension, things they say you need to study. I don't know how it is best to draw all that into a course of study. I think by letting one thing lead to another and knowing as a teacher I want to guide these kids toward this area and set it up so they can discover it on their own. I think that is the best way to handle it. I've got to study the curriculum guide so that can know before I can really say</td>
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<tr>
<td>16a 23 4-5</td>
<td>That kids have responded; if I accomplished the objective that I needed to accomplish.</td>
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<td>16a 17 18 4-5</td>
<td>I don't know how many lessons are lessons in and of themselves, something led into something and take it somewhere else. Something with the kids might happen as a very indirect result of a lesson you taught and if you're into it, you might be privileged enough to see that.</td>
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<td>16 5 4-5</td>
<td>I saw it. Work there and I felt good about it. That was very intuitive on my part. That wasn't something my strand told me - try this. It was just something that I felt like we needed a little push and so I threw in my input and we went from there. Keeping the interest of the kids. Making them interested not only in the lesson but wanting further knowledge.</td>
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<td>7 4 5th</td>
<td>If they know the knowledge I want them to know but more than that I want them to be excited about it. I want them to be asking questions. I want them to ask me &quot;When are we going to do history again?&quot; When are we going to do more math?&quot; I want them to be into it so that they want to do it - not that they dread doing it.</td>
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<tr>
<td>7 10 5th</td>
<td>[A lesson is successful] When there is a lot of interaction - on task interaction, a lot of participation, a lot of asking more questions.</td>
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<td>14 4 7th</td>
<td>Look at their faces. If they're looking at me with big blank faces then you know you have to back track and say, &quot;Did you get this?&quot;</td>
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<tr>
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<td>7th</td>
<td>That means it was successful. That means I got something from them and they got something from me. Ninety people take from me everyday.</td>
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<tr>
<td>13</td>
<td>14</td>
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<td>I count on my instincts. I count on the things I've learned as an individual. I don't so much count on the book work I've done in school.</td>
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<td>There is always some sort of evaluation and that is going to help you constitute whether your lesson is successful.</td>
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<tr>
<td>12</td>
<td>6</td>
<td>8th</td>
<td>When the students respond on the spot and they want to keep going with the topic. Sometimes you have to be blunt and say, &quot;Did you like what we just did?&quot; Or three weeks down the road they ask you about what you did that day.</td>
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<td>8th</td>
<td>If students catch on, there's always a lot of activity. You can usually tell the excitement — talking in individual conversations about it. You have to look at what you wanted them to learn.</td>
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Lesson planning, as described to this researcher, entailed breaking a topic into smaller units and then into objectives, surveying materials at hand, and choosing an attention getting introduction. If the topic was unfamiliar, student teachers researched it and developed activities in relation to the materials available. In addition, several (but not all) student teachers discussed using pupils' interests and abilities to guide planning. A mental 'plan B' was created by some of the student teachers after plan A had been written. The objectives were not written down but the introductions and procedures were written, often in detail (I/5-9) (I/8,2-9, 10).

Some of the interviewees stated that plans were used to anticipate problems. Recent research indicates that student teachers who viewed planning in this way were more successful (Borko, Lalik & Tomchin, 1987). Plans also served as a possible evaluation of self, lesson, and pupils. Only one student teacher explained how this was accomplished (I/5-9). It was the view of the researcher that what was written may have served to remind student teachers of the objectives of the lesson, and that evaluation was concerned with having reached objectives,
an informal example of stimulated recall. Finally plans helped the novices "stay on track", that is the student teachers checked the plans before and during lessons for prompts.

Ideas for lessons, bulletin boards, and classroom management came principally from other experienced teachers, books and professional periodicals, such as Learning, The Instructor or Nature Scope, but the student teachers did not name research journals. Student teachers interviewed were not yet able to determine accurately if an idea would 'work' in their own classrooms until they tried it. They reasoned that they did not know their pupils well enough to make such judgments. The criterion initially used was the fit with teaching style and personality. If pupils seemed to like the activity student teachers planned to continue using it.

Introductions for lessons ranged from theatrical (complete with costumes) to getting children quiet, but the objective was always to gain their attention. Handling materials to rouse curiosity, sharing the lesson objectives, and reviewing related known material before introducing new material were nearly universal steps. In
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<td>I always try to tie it into something that they could relate to.</td>
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<td>I start off by using a few questions to see where they’re at as a group.</td>
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<td>It depends on the content. I want to be able to use something that gets their attention everytime.</td>
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<td>I think I introduce most lessons by — the ones that I find are most successful — by letting them — like with the science — that’s what we did with a couple of magnets. Give them a manget and let them play with them. Give them bundling sticks, give them something. Tell them what your objectives are.</td>
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<td>I would probably show them what excites me about reading this book, then see if I can draw them into this excitement. I know that I am a very positive person. I look at things very optimistically and I also know that that is very contagious. I may not affect every child like that but I think by me being excited about something and showing them something concrete that they can touch, taste, smell, that that is going to draw them into it more and bring them to an understanding.</td>
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<td>Oh, I probably will [come in theatrically dressed up]. I have my bag of costumes and I have done it. I introduced Johnny Appleseed like that. I came in as Johnny Appleseed. I will do a lot of that. That’s different and it’s something new and drama will have its place in my class.</td>
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<td>I would start with something concrete. Almost something theatrical that I could catch their attention with and make them curious.</td>
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Table 9. (continued)

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It changes. I change with the class with the students.

Mostly I do brainstorming with the kids. I do a lot of lists on the board. I like to introduce things by just coming up with lists of things that - it's real similar to weebing but - I've never taught them to weeb. I kind of do it for them. I try to vary some of them. [Example spelling] A couple of times I varied it and the kids said, "what are you doing?" We started a unit on the brain and I went to a butcher shop and got an actual cow's brain and brought it in and we discussed the brain and what it does. Then we get into the book. After a while I get bored with them [introductions] and I know if I'm bored with them, the kids have to be bored with them.

First you have to quiet them down and they like it – I don't know if they like it, but they giggle and I'll "say okay, it's math time now ...".

I start a lesson by giving them an overall picture of what we want to accomplish today and that gives them some judge of time then I start with the first one and go through it.

You explain the concept first. I have to verbally explain things before I write anything down.

We'll talk about it, ask them a few questions, if they know what I'm talking about or if this is a review, if they've had it before .... And I'll say, "well we're going to add to what you've already learned."
I introduce a lesson by telling what's going to go on in a day. It's really important an agenda or a schedule is given to them so that they know what I expect of them. ... it's real important that you get everyone with you so that they are all the same frame of mind you are.

I'm really crummy at this [introductions] right now, so I know what I do now and it doesn't work. It's usually - let's begin - here we are - let's begin. It is so stupid. I always feel it is the hardest thing I have. I don't know how to do it. I know how I would like to do it [for example]. Let's take math. You are a simulated family. I have given you this house. That's one way I'd like to do it. I hate the way I do it now. ... their minds go AAGH!
the lessons the researcher observed not all steps were used, but the observed lessons generally fit student teachers' descriptions.

Despite instruction in university courses, student teachers did not use the linear planning model. Most described a systematic method of planning uniquely tailored to themselves. May's (1986) synthesis of planning behaviors of experts and novices suggests that the kinds of plans the student teachers created met immediate needs. That is, the plans focused on details of instructing and presenting, the most dominant teaching behavior of student teachers and first year teachers (p. 8). The student teachers' focus on instruction and presenting would be expected initial behaviors when related to Fuller & Bown's (1975) study on teacher concerns. Teacher educators might examine their rationale for continuing to require the use of a type of planning which research clearly indicates is neither appropriate in all circumstances nor used in practical situations.

Student teachers relied heavily on non-verbal and intuitive cues to determine their clarity and the success of a lesson. Interpreting non-verbal cues in a subjective
activity colored by the student teachers' construals of behaviors based on their personal practical knowledge. Jackson's (1986) concept that some teachers develop an understanding about children from association with them through their jobs (p. 26) legitimates this kind of practical experience for student teachers. How they construe pupil behaviors, the meanings they give to them, influences their interactions which are in turn influenced by the realities of teaching.

Climate

The student teachers described the climate of their classrooms primarily as warm and supportive. Climate, is defined by Litwin and Stringer (cited in Sergiovanni & Starratt, 1983, p. 56) as the perceived subjective effects of the classroom environment on the attitudes, actions and behaviors of pupils and teachers. As a group, the student teachers in this sample, believed that children learn better, faster, and more in warm supportive classrooms. Trust, respect, and feelings of physical and emotional safety among teachers and pupils, were listed as the most important characteristics. Student teachers believed specific teacher behaviors which created such a climate
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<td>1st</td>
<td>I: What's the climate like? How's it feel? A: I'm getting all mixed up about that. I really am. If just one classroom does something different do the kids understand it?</td>
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<tr>
<td>4</td>
<td>14</td>
<td>1st</td>
<td>You're setting up this relationship and you want to let the class know you have confidence in them. They're going to be more likely to do things I want if they want to do them. [to please]. Plus if they're afraid of what's going to happen to them, that means I'm going to have to do something negative and that's not going to make me feel good. I just want us to like each other and enjoy being together and enjoy doing good fun things and learning together.</td>
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<td>3</td>
<td>14</td>
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<td>I like them to be independent and a little bit free to do their work at their own pace. The way that I treat them, it would be reciprocal, and they would treat me in the same way. And everything, school, discipline and material respect. I think is all intertwined.</td>
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<td>3</td>
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<td>I think that the physical closeness [hugs] to let them know that they're doing good. There are some students that might not want that or need it.</td>
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<tr>
<td>3</td>
<td>16</td>
<td>2nd</td>
<td>Without mutual understanding learning is harder.</td>
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| 5  | 16   | 1st   | Comfortable. It has to be comfortable. I want the kids to have some say in what the room looks like and how it's arranged. I'm torn between an informal and traditional classroom. I want there to be an area where someone can be by themselves if they want to or read a book with a friend. I want it to be more student oriented than teacher oriented. I don't want to see a lot of things from the teacher's store.
Table 10. (continued)

2-23 12 3rd
I think the teacher is responsible for creating the structure, creating a solid foundation of structure ... said and the steady environment that they are responsible for. I guess it is teacher directed and she sets the limits and makes it easy for students to predict.

2-18 2 3rd
- A managed classroom runs by itself. The children know what to do and they do it.

2-18 27 3rd
... to present an environment where they can feel successful and feel good about themselves.

16 21 4.5
I can't do anything else unless the kids know that they are safe in my room.

16a 18.19 4.5
If kids trust the teacher they learn better - easier. [drawing on her own need for experienced mentor to help her learn, she hypothesizes kids need it too.]

16 3 4.5
Make it a loving environment and just sort of nurturing and letting them do with that and then coming back together for something concrete after that. Smooth, flowing so that it feels more natural, when kids are ready to move on the teacher moves on. You can feel that.

16 12 4.5
When those things are wrong on the final copy - Sunday best - then that's something to talk about and ask if it's an oversight that needs to be thought of accordingly and be evaluated because Sunday best means everything was checked if you were in a writing process classroom.

7 14 5th
He (the principal) does a really nice job. As far as he knows every kid in the school, he knows their names and he makes a point of talking to a lot of them and knows different problems of different kids.
Table 10. (continued)

7 14 5th

S: Do you think it's important to the pupil's learning. A: Yes. I remember when I was in school, if you got sent to the principal's office it was a fate worse than death and the principal seemed to be this ominous person who was in this office over there. For the most part you really didn't see him. [explains how Mrs. R. is different] They know when they go to the principal's office because they are in trouble, but they also know that he'll be fair about it. I think that is important for kids to know.

7 14 5th

Kids can be mean, kids can be very cruel. [long explanation of specific site]

7 15 5th

I guess that is part of trust, knowing what to expect and knowing what not to expect.

14 15 7th

It's a casual atmosphere, but they know I'm the teacher. There's a break between - we're one big happy family but I'm up in front or I'm walking around the room.

7th

Sometimes they need to learn to trust an adult and stuff they tell me won't go past my ears and they test that. (The kids) initiate most of the conversations. It goes back and forth.

(The kids) initiate most of the conversations. It goes back and forth.

You talk about stuff like that - (movies, baseball, local wrestling match).

13 9 7th

Yes. I have been very adamant about building trust.

13 10 7th

I certainly did not read any of them [journals] that said "do not read" because I would not have been able to look them in the face.
It's (trust) critical (for kid's learning). If they don't trust you they're never going to let you see the side that they don't understand.

At ski club for example - I had a real positive experience that I spent a real unstructured time with them.

They have to know you're human because they see you on automatic pilot here getting everything done that you need to get done and you're a totally different person.

On more than one occasion I've sat down with a kid and said, "you and I can either work this out and be friendly, or you and I will not be able to handle it. I might even be your worst nightmare because you are going to disrupt 25 other people and I can't let you do that. It's not your class. It's not my class. It's our class. You can't run it and I can't run it.

We have to have both our cooperations.

They refuse to learn from somebody if they don't trust them, so I had to build this idea of trust. [by keeping their personal problems "secret"][f: You can't teach them if they don't trust you? Is that what you're saying? A: It's not that I can't teach them. They won't learn. If they don't trust you, they are not going to believe you [uses cinderblock metaphor] ... the dress you will never wear, the shoes you hate. They are going in the closet because somebody made you put them there not because you put them there, and you will never use them again. They're lost]
Table 10. (continued)

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<th>Age</th>
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<td>15</td>
<td>7</td>
<td>8th Grade</td>
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<td>However, I think there are certain restraints put on a student teacher. I can only go so far. These are 8th graders and you have to be really careful on how you do that. A lot of times I was too warm and fuzzy and the end result was negative not positive.</td>
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<td>15</td>
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<td>I'm warm and fuzzy. I'm not cold and prickly very often. They have to feel safe and secure and they have to feel that I won't hurt them.</td>
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</table>
included fairness, consistency, a nurturing attitude, shared expectations, and a pupil centered classroom. Research on effective schools supports the notions that children's performance is generally higher in a climate characterized by positive attitudes toward pupils and learning (Sergiovanni & Starrett, 1983, p. 68). Through their experiences in the practical setting, student teachers developed a sense of the balance needed to sustain optimal pupil attitudes and behaviors. In other words, "too much of a good thing", being too nurturing or too warm seemed to produce less desirable behaviors and lower performance (e.g. I/15).

Student teachers indicated that they perceived their classroom environments were affected by the total school environment. According to Litwin and Stringer (cited in Sergiovanni & Starrett, 1983, p. 57) organizational climate affects both satisfaction and performance of the members in a group. For example, one student teacher cited pupil behavior problems resulting from the different expectations she held in her own classroom for independence and the general school attitude that pupils were required to obtain permission for all moves. She
questioned what long range effects her preferred management style, which was in conflict with the principal's, would have on her pupils (I/4).

Teacher Role

A category, Teacher Roles, emerged via inductive analysis of the interviews. Student teachers acknowledged the multiple roles required of them, but each student teacher's responses focused primarily on one of the roles. Student teachers' descriptions emphasized three categories of Heck & Williams' (1984) eleven categories: teacher as understander of the learner (nurturer), teacher as person, and teacher as facilitator of learning, in that order.

Personal involvement with pupils and the curriculum and concern for others feelings typified comments of student teachers assigned to the nurturer role. Student teachers placed in the teacher as person category stressed their own human qualities, placed importance on associating with children in contexts other than the classroom, such as ski club. Facilitators of learning were primarily concerned with the content to be taught and involving children in learning. They more frequently used
statements of theoretical pedagogic knowledge such as helping pupils to 'make new schema for themselves' or 'putting the pupil in disequilibrium' to motivate learning.

The roles student teachers focused on were congruent with the first tasks of learning to teach, and are supported by the hierarchy of teacher concerns (Fuller & Bown, 1975). Student teachers attended first to their perceived needs of self by focusing on rapport building and establishing authority in the teaching framework, survival techniques. Student teachers acknowledged but did not actively assign themselves roles which focused on others and required longer and more intense involvement in the profession, for example teacher as professional leader. In light of Fuller & Bown's (1975) work describing the movement of attention away from the self toward concern for pupils and finally colleagues, the absence of attention to roles focused on others was appropriate for the student teachers.

Comparison of Findings of Nicole to Eighteen Student Teachers' Personal Practical Theories

In this section the findings from the eighteen interviews and from the case study of one student teacher
concerning the beginning development and content of their personal practical theories will be discussed in relationship to each other and to teacher education.

View of Knowledge

All student teachers, including Nicole, espoused a constructionist view of knowledge, that is, children create their own knowledge.

(Katie) ... Susie gives me an answer to my question about how Indians feel about something and then I say "Johnny, what do you think about that? What do you think about Susie's answer?" And start bringing discussion in. Writing it on the board ... What could we learn more about? What is important to us to learn more about? And in that way you draw it back into the children and let them question. (I/16a,4).

However, the materials used, the questions and problems posed by the observed student teachers were replete with 'right' answers indicating an objective view and that the knowledge being sought originated and was validated by sources outside the child. The interactions observed between student teachers and their pupils were not
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<tr>
<th>#</th>
<th>INTERVIEW PAGE</th>
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<tbody>
<tr>
<td>4</td>
<td>14</td>
<td>I</td>
<td>1st</td>
<td>Affirming the kids. Affirming what they know and challenging them to do more.</td>
</tr>
<tr>
<td>1</td>
<td>27</td>
<td>I</td>
<td>1st</td>
<td>They are learning in this room. They are learning a lot. And you know, is excellent. I just think that maybe going beyond them just learning the facts ... just taking them one step further to really doing it and enjoying it.</td>
</tr>
<tr>
<td>1</td>
<td>27</td>
<td>F-1</td>
<td>1st</td>
<td>The bulletin board is filled with brown paper turkeys. Everyone is different. Didn't use patterns.</td>
</tr>
<tr>
<td>1</td>
<td>19</td>
<td>I</td>
<td>1st</td>
<td>I think it's important for a teacher to say, well, why did you get that answer. Did you think this first? Did you think that? Help her to now how she got that.</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
<td>I</td>
<td>1st</td>
<td>Some kids need boundaries .... You have to be real definite about what you want and they just have to regurgitate what you told them. They're real happy with that. And other kids that's real confining, you know. They don't learn that way. That's not learning for them. They need to be able to go do whatever they want with it. I think it's important to teach a love of learning so they become seekers of knowledge. You're making sense of it when you talk about it - negotiate the meaning .... to me it's good conversation when they're negotiating meaning.</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>I</td>
<td>2nd</td>
<td>Most of the students I have now learn best by doing it. By me showing them how it could be done and then by them doing it. I just took an ESL workshop - essentials elements of instruction - and what I've learned is some different ways to see if everybody has learned. I know it's time to move on to the next topic when everyone just rattles off the answers.</td>
</tr>
<tr>
<td>N</td>
<td>FN3-22</td>
<td>3rd</td>
<td>Because they know [texts, writers] they give credence to my ideas. Affirm or reject what I know. So I don't stagnate. You don't keep growing without ideas. You forget why something was important enough to use.</td>
<td></td>
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<tr>
<td>10</td>
<td>1</td>
<td>3rd</td>
<td>I stressed that I think its important that we as teachers are here as facilitators for resource help, but most of the information they are going to learn is going to be done themselves.</td>
<td></td>
</tr>
<tr>
<td>16a</td>
<td>9</td>
<td>4-5</td>
<td>If I have them memorize or work from worksheets and workbooks, that's telling them that the teacher's knowledge is more important than the student's knowledge - that I know everything and that the students know nothing.</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>22</td>
<td>5</td>
<td>If they know the knowledge that I wanted them know, but more than that, I want them to be excited about it.</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>19</td>
<td>5</td>
<td>[Description of lesson:] Randomly I threw out some questions without looking in the book. Just got some feedback from them and they looked at a brain (student had said earlier that she had brought in a cow's brain for the class.) And what does this part do? Is this really what this part of the brain is for? I left it on the table for awhile after that.</td>
<td></td>
</tr>
<tr>
<td>8a</td>
<td>16</td>
<td>6th</td>
<td>Teacher encourages students to hypothesize. Accepts contributions. Writes pupils' words on board. Solicits discussion about future discoveries about electron shells.</td>
<td></td>
</tr>
<tr>
<td>8a</td>
<td>8</td>
<td>6th</td>
<td>I think you have to draw on things that are going to apply to your students' life. I think its important to teach kids the things that are going to be applicable. [students needs to have impact]</td>
<td></td>
</tr>
</tbody>
</table>
Table 11. (continued)

8b  
2  
6th  

I don’t think this class particularly deserves to fail because they can’t organize themselves. It is something that they are going to have to learn.

15  
3  
8th  

First you have to look at the school curriculum and the state curriculum guide and what they have to have. Then you have to look at the students. Each individual class is different.

Now am I going to react to it. If I feel strongly for or against or am uncomfortable and I think it will be hard for me and I have to narrow it down so that I will feel successful with it and can help my students feel successful with it.

15  
3  
8th  

Getting the material across to them. Reading definitely. Second, writing and math skills.

Kids need to have good decision making skills.

Communication skills - writing - listening. Thinking skills is what I think the behavioral things are more important than the content.

9  
5  
1  
9th  

After I present the material I’m giving them the tool and they’re kind of taking the tool and working with it then.

11  
7  
1  
8th  

The point is that at this age I think they’d really rather learn something. They’re not happy yelling and screaming in class. That’s not what they’re here for.

11  
16  
1  
8th  

Get kids to look for knowledge on their own. Think on their own.

9d  
1  
8th  

One thing I always thought was a good idea to teach was in 4th/5th accountability to somebody other than the teacher. Mixed class to. A good idea is like having a math buddy. Large art room. Kids at tables in groups on simulation ‘National Economics’. Very very noisy - most on task and Josh walking and talking to groups.
congruent with the espoused constructivist view. One student teacher who was interviewed but not observed, explained at length how children quickly sense whose knowledge is acceptable and important by their observations of the ways their work is evaluated (I/16). This student teacher's ability to state so clearly a constructivist's theory supported questions about the use of verbal data. These questions are represented as issues in both Chapter III and Chapter VI.

Evidence accumulated about Nicole's, own learning patterns suggested that she acted on her beliefs creating her own meaning from the theories and examples she found. Her application of this belief to the children's learning was based on the content of the subject matter. In mathematics and spelling, for example, children were expected to memorize and respond with predetermined answers. On the other hand, in language arts which included reading and writing, and in science, children were encouraged to think for themselves, to create and to make their own decisions about their work.
Nicole did not articulate an awareness of how cognitive processes such as classifying information, framing problems and solutions, are the same across the disciplines. Her actions suggested a dawning awareness of its meaning in practice. Characteristic of experts in every field is their domain specific knowledge (substantive knowledge) which includes this understanding about cognitive processes. Domain specific knowledge is bounded by the materials and context of the domain. Berliner (1986) suggests teacher education has unused opportunities to help student teachers develop this sort of practical pedagogic knowledge. Along the same lines, Wilson, Shulman and Richert (in Calderhead, 1987, pp. 104-125) are investigating novice teachers' content, knowledge and its relationship to their teaching.

View of Learning

Nicole and the others stated that children created knowledge by handling materials, experiencing and being actively engaged in and directing their own learning. Lecture was rarely mentioned as an instructional technique, though in fact the five student teachers observed and Nicole spent time presenting information in lecture formats. The conception of "doing" each of the student teachers represented is an indication of 'the
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<tr>
<td>1</td>
<td>2</td>
<td>1st</td>
<td>One way is through evaluating their papers, their work they do. You can see someone learning things without actually having to write them down.</td>
</tr>
<tr>
<td>4</td>
<td>6</td>
<td>1st</td>
<td>Well by their responses, their reactions, by their feedback and questions they ask how they complete the activities that follow lessons.</td>
</tr>
<tr>
<td>4</td>
<td>6</td>
<td>1st</td>
<td>You know during a lesson you can tell if they're learning just by their attentiveness, their interest, their questions and their enthusiasm.</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>2nd</td>
<td>Just by watching them I can see the light click on in their minds. They give the answers back. [describes ELI techniques for getting feedback].</td>
</tr>
<tr>
<td>3</td>
<td>8</td>
<td>2nd</td>
<td>I use a lot of observations of kids wanting to tell whether or not they're getting it.</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>2nd</td>
<td>I explain what's wrong. I give them a chance to do it over. I explain how they probably got it wrong.</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>3rd</td>
<td>You're gonna get different reactions from different lessons. I know he learned something just by the answers he gave. Anything they might turn back in to me or in a learning center where they go test out some things.</td>
</tr>
<tr>
<td>10</td>
<td>7</td>
<td>3rd</td>
<td>If he wasn't interested in before and understands what he is doing and it is like a light glows in his head. And he'll ask more questions about it. They'll interact more with others too. Interact with what you're dealing with</td>
</tr>
<tr>
<td>10</td>
<td>7</td>
<td>3rd</td>
<td>If you evaluate someone [by] - well today his eyes lit up and he understood it - how can you give an A for that? and someone that didn't light up? That's why you have scores.</td>
</tr>
<tr>
<td>10</td>
<td>7</td>
<td>3rd</td>
<td>There is no question that testing is important. I did very little oral testing. I did some manipulative testing.</td>
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Table 12. (continued)

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<tbody>
<tr>
<td>10</td>
<td>8</td>
<td>3rd</td>
<td>It is important to have written tests but I think you can have a written test and if there is a problem with it give them a time to do an oral test too. Give them the benefit of the doubt.</td>
</tr>
<tr>
<td>10</td>
<td>8</td>
<td>3rd</td>
<td>[Sometimes] they know what they're talking about but they can't take tests. I keep stressing that but it is awful [sic] to watch them struggle. We start getting better testing and tell them there is no pressure on you to get a good grade here...</td>
</tr>
<tr>
<td>6</td>
<td>2</td>
<td>4-5</td>
<td>Not just grading papers, listening to them in class when they ask a question. The ones who always raise their hands to find out - I know they're learning.</td>
</tr>
<tr>
<td>6</td>
<td>2</td>
<td>4-5</td>
<td>I need to get to the student to find out if they're learning. Something I haven't developed yet is being able to look at an entire class to find out if they're learning.</td>
</tr>
<tr>
<td>6</td>
<td>3</td>
<td>4-5</td>
<td>I keep mutual track of who has understood the process of multiplication and who hasn't so when we go over another problem I know who to go to first. I have worked with these kids enough I know out of the twelve who can and who can't. It's the only way - when there are classes of thirty you need that.</td>
</tr>
<tr>
<td>6</td>
<td>3</td>
<td>4-5</td>
<td>You are working on the spot. Spontaneous. You need to know right now who you think can do it and who can't. Rick and Laura always raise their hands. Louis never raises his hand.</td>
</tr>
<tr>
<td>6</td>
<td>3</td>
<td>4-5</td>
<td>They get excited. They get loud and noisy. I know they are noisy when they are interested. It is a special class. They all work as a team.</td>
</tr>
<tr>
<td>16</td>
<td>17</td>
<td>4-5</td>
<td>What I've seen that seems to work best is traveling around with your little notebook. You might be able to reach ten of them individually and track exactly where they're going and keep anecdotal records each day.</td>
</tr>
</tbody>
</table>
Table 12. (continued)

I would have writing conferences with them, like on Fridays. I'll keep writing folders and if I can't keep the first copy of everything, I'll make photo copies and keep progressions of things so that you can compare September 1 with November 1 and see what changes there are and where the child is going. The kids ... keep spelling dictionaries and are accountable for those words.

16a  12  4-5  Math - How are they progressing as far as the curriculum. How do they compare. I would judge myself on that. How am I keeping up with it? If someone is completely lagging behind - math and science are easier to assign an A, B, D, D than reading and I'm writing because the progression is more concrete.

16a  13  4-5  Effort and things like that can be assessed more concretely. Keeping records, writing down what the kids are working on and what they're thinking about and how it has changed and the little eureka's that they have and any down points that they have. Keeping notes that go home and keeping the notes that the parents send. Keeping their writing. Taping their reading. Listen to them read. Do they understand? Finding out about the kids. That's by no means everything I can do.

16a  16  4-5  I have trouble passing judgment on a student being good or bad because if their having trouble in my classroom something is blocking them from doing what needs to happen to them to grow educationally.

16a  17  4-5  I see them as having some problems that need to be coped with whether it's with me or not. I see them being desirous of information. If not that's something we can work on. I see them as having past influences from other teachers maybe.

7  5  5th  Parents always want test grades, but test grades don't always show that kids have learned. I think by discussing it - only if you can hear them talking about it after class, during lunch or recess.

7  5  5th  As far as I'm concerned a C is average and most people are average and as long as you know what you are talking about a child shouldn't be punished for being an average kid.
<table>
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<tr>
<th>Table 12. (continued)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8a 1 6th At a very basic level they can spit it back to you which doesn't mean they have learned it. It just means they have memorized it.</td>
</tr>
<tr>
<td>8a 2  If they apply it here and now and it makes sense to them then I think they learned it. My preference would be to sit down and have a discussion with them.</td>
</tr>
<tr>
<td>13 3 7th I look at attitude. I look at the work they've done. I look at just their progression, their ability to deal with things other than school work.</td>
</tr>
<tr>
<td>12 4 8th When three weeks after you've finished a unit they come back and say I read something that applies to what we talked about. They're able to carry what they've hopefully been taught into other subject areas. When they're able to apply it to what they're doing and you don't need to remind them. Then you know they've learned something.</td>
</tr>
<tr>
<td>12 4 8th Test them. I hate multiple choice tests. I hate true-false tests because that usually makes you nervous... My big thing is support your ideas. Give me a fact from the book, give me your opinion on it and then support it with facts - be independent. Even if I need to know right on the spot if I can verbally say to them tell me why you think that happened in the book.</td>
</tr>
<tr>
<td>11 4 8th I believe in discussion with the students. Having rapport with them so I would feel confident conferencing one to one with the students if it is small enough. Oh yes, you have your tests, your quizzes and your projects. I believe in having creative projects... where the kid defines their own problem and creates their answers to it. I'd use tests and quizzes for backup just in case somebody comes in and says &quot;where did you come up with that grade?&quot; If you say well I talked to them and it seemed to me... I've discovered that when dealing with administration you need concrete evidence. They're very concrete thinkers.</td>
</tr>
</tbody>
</table>
Table 12. (continued)

11  12  8th  I blink a lot. Any questions [blinks exaggeratedly]? I can tell. I know when someone doesn’t understand. It’s in the eyes. You can see confusion in a person’s face. They are young enough they haven’t learned how to hide confusion. You can tell.

15  11  8th  A piece of paper and a pencil never can tell you exactly how much a student has learned. Individual conferences and talking to them to see how they learned. Observation is the key to seeing whether the student applies these concepts in its everyday life.

12  1   8th  They need to be able to talk about it and discuss it and they need to come up with questions about what they’re learning then you now they’ve learned it - if they can take it that one step further.
personal' (Clandinin & Connelly, 1987) operating in practical situations.

One observed student teacher in a middle school depended heavily on the use of lecture presentation, reading a selection directly from the social studies text, dispensing outlined notes of the material to be added to a notebook of similar materials. Another student teacher used a standard lecture for about one third of a forty-two minute period in algebra. In the remaining time pupils were challenged to work in teams to 'come up with' unique ways to solve a 'real world' problems, applying their mathematical knowledge (Fn/9/4-9). The remaining three used a mixture of lecture presentation and experimentation.

Nicole switched back and forth between lecture presentation and exploration or experimentation depending on the subject matter. For example in language arts children read, wrote and read their writing, and shared their understandings of a story giving their reasons for statements. Mathematics lessons were presented directly from the text and children worked the recommended problems and assignments, answers were checked by a pupil during the afternoon, and papers were handed back. Student teachers did not discriminate well between beliefs about what should happen and actual practices. Nicole was not
always aware a discrepancy existed, but she was developing a reflective habit which prompted her to question her practice when outcomes were not what she anticipated. Reflecting in practice was a new activity requiring a temporary loss of spontaneity to hone the skill. In Bloom's (cited in Berliner, 1986) study of talent a high level of performance cannot be obtained without the automatization of some actions related to the performance. Schon's (1983, 1987) study of practitioners supports this concept. Though not identified as automatization, the behaviors of experts described by Sternberg (1987) suggested that the way experts gathered, held and used information in chunks was a kind of tacit knowledge that shortened the time between steps in problem solving.

Developing teaching techniques that model reflection on practice and supervisory techniques that support and encourage reflectivity will require teacher educators to scrutinize and perhaps change their own practices. Evidence in this work suggests that student teachers do
not have the questions to ask of themselves to improve their practices unaided. Nicole and the other student teachers consistently referred to the interview questions as raising issues they had not previously considered. Chapter VI will present a discussion of the issue of reactivity raised by these comments.

Classroom Management

Uppermost in the minds of the student teachers including Nicole, was classroom management. The term included both discipline and organizational activities, although discipline clearly elicited more concerns and permeated thinking and actions in curriculum, instruction, and pedagogy. Student teachers' actions revolved around learning to recognize and interpret events within the complexity of the classroom context. Events were filtered through each individual's lens of personal constructs of a managed classroom. Behaviors such as talking during study time were problematic in some classroom and normal in others. Nicole wanted quiet and order and felt unsuccessful when that was not achieved. The middle school algebra student teacher expected and encouraged pupils to be active and talking during study time.
According to the work of Fuller and Bown (1975), beginning teachers' first concerns are about self and survival on the job. The emphasis then, placed on discipline and control by these student teachers is typical and appropriate for novices.

It seems probable that such feelings contributed to the student teachers' concerns rather than actual difficulties controlling pupils or handling other managerial tasks such as lunch count, entering and exiting the room for recess or restroom breaks. An alternative interpretation might be that because the student teachers were concerned about discipline and management, they were more keenly aware of any level of interest by supervisors in that part of their practice.

More than "what to do", student teachers were concerned with "how to do", in other words, they were cognizant of theoretical knowledge but unpracticed in applying it. For instance, evidence in practice was found in the manner lessons are planned, with attention given to details of procedures. As Ryle observed "Knowing that is not the same as knowing how" (Cited in Berliner, 1986). For students, acquiring the tacit understanding implicit
in "knowing how" is the most difficult moment in learning. What is learned tacitly is affected by the constructs the individual already holds. Tension is created between the learner and the learning, between what is believed and what is acted. Resolving the tension requires that the student participate in an activity she or he does not yet know how to do.

Curriculum

Student teachers' descriptions of curriculum indicated a vague understanding that their task was to organize human, material, and temporal resources around a specific topic so that pupils may learn. These student teachers were aware of organizational policies such as the graded course of study or the textbook requirements, and some of the constraints and opportunities imposed by them. For example, Nicole struggled with school policies regarding the use of basal readers and their accompanying tests in an attempt to teach a literature-based reading program she valued highly. Most other student teachers in this study followed the dictates of the graded course of study or the
textbooks and expressed the tension between their actions and beliefs as complaints about the system to the researcher.

Values embedded in the structure of the school and the curriculum were accepted nearly without question. Student teachers in this sample hesitated to declare whose values and which attitudes should be taught although they stated that there were some basic values all children should know. They were unanimously agreed that their own values had no place in the curriculum of the classroom. The researcher found this lack of understanding of hidden aspects of the curriculum problematic. Reflective practices would enhance awareness of the interacting factors that influence how student teachers think about what they teach.

Instruction

Teaching content, for example reading, is not the same as doing reading. Student teachers' beliefs about what it means to know reading or mathematics can be determined by the products they accepted as representing goal achievement. Nicole wanted right answers to problems on the work pages in arithmetic, while another student teacher
encouraged exploration rather than right answers (I/ll). Because of her value for the whole language approach, for Nicole the products representing goal achievement in reading were quite different than those in mathematics. These student teachers held different beliefs about meaning for different subject areas. Meaning has been indirectly learned by the student teachers from their own experiences as learners with the subject.

Planning was used to organize ideas, time, pupils, and materials for instruction. None of the student teachers described a linear planning model beginning with a rationale, goals and objectives. Nicole's statement that her plans worked for her despite the fact that they were not written by a university approved model was echoed by the other student teachers. Plans were constructed in a way that was useful and appropriate for the student teacher. Variety in style was the norm. One student teacher described mentally holding an alternate plan for each lesson.

(B) I don't want to fail miserably and have to shift to a plan B in the middle of trying to do something ... If you don't anticipate it and you don't have a plan B, forget it.
(I) So, does that tell me that when you plan you try to have a plan B?
(B) Always.
(I) Where is plan B? Is that in your head? Is that on paper?
(B) That is usually more in my head. If it doesn't work [plan A] how else can I teach these objectives? At least if you have objectives, you are alright. (I/8,a-10).

Student teachers' past experiences in schools did not include knowledge about curriculum or lesson planning. They were developing new ways of thinking about teachers and their work that included planning and curriculum, but they lacked personal practical models making the learning like experimenting in action. "Everything I do comes from my experiences" (I/9), was typical of the situation in which student teachers found themselves. The expert-novice study reported by Sternberg (1986) suggests metacognitive skills which might be learned and practiced giving useful frames for learning new practical tasks such as forecasting, mapping thinking patterns, comparing and
analyzing problem solving approaches, or determining what strategies to use in difficult or unfamiliar learning situations.

**Climate**

All the student teachers in this study stated that they believed learning occurred best in warm supportive climates. The only student teacher in the extended interview sequence described how he had found himself using verbal jibes to motivate or control his middle school pupils (I/9) though it did not blend with his belief. He indicated that he had felt embarrassed about the discovery and applied monitoring skills to correct the behavior to more nearly match his belief (I/9). This did not occur during the observation, but was reported in an interview.

Another student teacher described discovering that being 'too warm and fuzzy' did not elicit respect and cooperation from the pupils (I/15). A primary grade student teacher wanted everyone "just to like each other and do good fun things together", but worried that differences between the climate in her room and the climate of the school might penalize her pupils when they were required to interact outside the classroom (I/4).
Warm supportive climates were closely associated with positive regard. Nicole found positive ways to acknowledge efforts to solve arithmetic problems while pointing out the errors pupils made. Her writing project contained other examples of emphasizing the positives. Positive regard was an attribute student teachers in general valued. Cornett (1987) also found positive regard a highly valued theory of the experienced teacher-participant in his case study. Positive regard is not contraindicative of structure or discipline, although student teachers found themselves becoming more authoritarian in response to pupil misbehavior as the practicum progressed. "I've gotten more behavioral since the fall" (Nicole, I/2-18). To make wise choices student teachers need at least rudimentary understandings of alternatives and how those are applied in practice.

Summary

The purpose of this chapter has been to synthesize the content and beginning development of the personal practical theories of eighteen student teachers.
Additionally, the purpose included an examination of the relationship between this synthesis and Nicole's personal practical theories.

Student teachers in this sample as a group stated that positive regard for others was an overriding value in determining what and how to teach. Evidence in their actions supported this belief. When there was conflict between belief and action, the student teachers attempted to change their actions rather than the belief. (supported in Sergiovanni & Starret, 1983).

Assumptions about the nature of knowledge were held differently for pupils than for the student teachers themselves. Student teachers saw their own knowledge as relative, while knowledge for their pupils was finite. Their construal of the differences in the relativity of knowledge was observable for example in their teaching techniques and examination methods.

Theories about child development were tentatively held. The most commonly voiced was that children develop from interactions of an inner opening of potential and external factors. Environmental factors such as physical and psychological safety or teacher actions formed part of
the external forces. Fewer student teachers attributed pupil success and failures to their own actions than held pupils responsible for themselves.

Student teachers consciously drew on their personal experiences with schooling and their own beliefs and values during interactive teaching. When they were required to act in new ways for which they had few or no past personal experiences and had time for reflection, student teachers researched expert knowledge sources. Nicole exhibited the most wide ranging search pattern, extending it well beyond the school building and theoretical knowledge at hand.

Confronted by tensions between their personal or theoretical knowledge and evidence in the context of their classrooms, student teachers most frequently resolved the problems by conforming to examples set by the cooperating teacher. Student teachers wanted to improve their practices but were not always aware of incongruences between practice and their theories. Both Elbaz (1983) and Cornett (1987) found examples of tensions in their cases.
Finally, it was clear that student teachers had knowledge of what to do, that is a beginning repertoire of examples, but they lacked the artistic understanding of how doing "felt". Student teachers were better able to adjust their actions when allowed time for reflection on action. As Schon (1983) describes it, a novice cannot know the art of a practice merely through descriptions of procedures, rules, and theories (p. 27). Thinking like an expert teacher requires skills in manipulation of the tools of teaching — media, language, and a repertoire of examples.

The next chapter discusses the implications of this study, and proposes questions for further research.
CHAPTER VI

MAJOR FINDINGS AND IMPLICATIONS

Introduction

The purpose of this chapter was briefly to summarize the goals of this study, to identify the major findings, propose implications for teacher education, curriculum, supervision, and educational research, and to make suggestions for further research.

A major goal of this research has been to gain a better understanding of the process of learning how to teach through illumination of student teachers' personal practical theories. Curriculum development, supervision, and educational research are affected by virtue of their intimate connections to teacher. Discussions of implications suggested by the recommendations for teacher education are included.

The theoretical frame for this work has been based on a view which holds that each individual construes the world in terms of her or his own perceptions, perspectives, and judgments. Clearly, this sense of self
or personal history which participants brought to the individual student teaching practicum provided the lens through which they interpreted, evaluated and chose actions.

To interpret the personal practical theories of the eighteen interviewed students, including five who participated in an observation and follow-up interview, and of Nicole when the researcher's assumption about the relationship between thought and action must be explicated. Clark and Peterson (1986) offered a model of the reciprocal relationship between thoughts and action (p. 257). Another way to think about the relationship between thoughts and actions is that thoughts are made visible by actions. Munby (1982), Olson (cited in Clandinin & Connelly, 1987) and Ben-Peretz (1984) had teachers describe their teaching by making or responding to a list of qualities and characteristics such as in the repertory grid technique. Actions in this case were representative of elements making up a person's world view. A dialectical view of the relationship between thought and action, that is one in which practice interacts with thought, has undergirded this work. Although discussing experienced teachers, McCutcheon's
(1985) description of the indeterminancy of teaching applies as well to student teachers, and points out the dialectical relationship between thought and action.

Each day practitioners face a host of complex, context-specific problems about which there are no easy, certain answers. No singular right course of action is available, although practitioners can envision certain courses as better than others. In facing these problems they must take action. Underlying these actions is a personal, guiding theory. By pausing to reflect, by reaching inward and attempting to understand that personal theory of action, teachers and administrators exercise the most powerful aspect of practice. By analyzing students' written assignments, oral responses and activities, teachers can determine whether particular courses of action work well (P. 48).

Further, as Clandinin and Connelly (1987) described, biographical statements, that is statements of prior experiences and the emotional quality embedded in the experience, also became important for this researcher in
interpreting the data. The primacy of biographical influences on teacher thinking pointed toward additional considerations for future research.

Student teacher thinking was construed by the researcher to constitute both a cognitive and affective activity. Student teacher's descriptions of successful lessons, for example, included logical reasons based on visible evidence and evidence based on their "instinct" or feelings. Nicole rejected a form of discipline because it didn't feel right. The interviews contained statements of student teachers describing and reflecting on their teaching experiences. They focused primarily on the practical theories regarding content as determined by the student teachers. The case study, however, used both Nicole's statements and evidence displayed in her practice of her personal practical theories. As Clandinin and Connelly (1987) suggested, using the dual perspective of Nicole's statements and the evidence in her practice expressed the dialectical nature of both thought and action.
The dialectical process may be thought of as a mental conversation involving active reciprocity and an integrative aspect which is experienced at different levels. Conversation essentially represents the manipulation of a symbol system. Schon's (1983, 1987) concept of a conversation as the interaction between an individual and some element of the environment describes the initial level. These conversations in which the environment "talks back" represent the physical reality. By justifying our beliefs about the physical reality in this way, we create knowledge that is at once both practical and theoretical.

Beliefs, assumptions and understandings, constitute an individual's personal theories. They represent an individual's understanding of past experiences. According to Gadamere (1977) the past and present are constantly mediated in a conversation between the individual and the events, persons, or places which he seeks to understand. This cluster of personal constructs creates our prejudgments which are tested against the new immediate events. "For there old and new grow together again and again in living value without the one or the other ever being removed explicitly" (Gadamere, 1977, p. xix).
Vygotsky (cited in Bruffee, 1986, p. 785) determined that we learn by "talking through" our tasks and then internalizing that conversation as thought. Though his concern was with language communication among persons, this researcher suggests that talking through may be thought of more generally as symbol manipulation. Thinking, the second level of conversation, becomes an internalized version of that conversation (Bruffee, 1986).

Findings

It is interesting and somewhat surprising, to note that while the student teachers espoused a constructionist view of knowledge, their actions brought about knowledge reproduction for their pupils. Knowledge as explained by a constructionist view is equivalent to language. Language, the center of understanding, places reading and writing at the core of the educational process. Heavy emphasis in the university methods courses on language, for example, through the whole language approach, or writing across the curriculum, and literature-based reading seemed the source of the student teachers' stated view of knowledge. University instructors emphasis on language, a "community of like-minded peers," fits Bruffee's conception of a constructivist view of knowledge.
Entering the public school classroom with a nascent belief in a particular view of knowledge, the student teachers found a more cognitive view of knowledge in operation. Pupils were expected to produce right answers on tests, to accomplish goals determined by others. The materials provided and sanctioned for use, rules and organizational constraints placed on teaching and learning may have prohibited student teachers from expressing their less traditional beliefs. Additionally, the novices did not seem to know how to interpret the mental conversation between their beliefs and the physical reality of the classroom, as evidenced by a continual compromise aligning them with the traditional or operant view of knowledge.

It is possible that the students were merely repeating lessons learned in a cognitive way in their college methods courses. Alternatively, it is possible that through a dialectical process the students came to critically view their own understanding of knowledge through interaction in their course work and create new understandings for themselves. Some held so strongly to these notions that they were inclined to risk reprimand, as in Nicole's eventual use of a literature based reading program and Josh's insistence that pupils need to talk during non-instructional class time.
Student teachers believed that learning was a combination of internal activities of the child and external factors. Josh's comment that he was not 100% responsible for his pupils' learning captures the predominant attitude. Student teachers wanted information primarily about home life and out-of-school activities. They also stated a belief that what was to be learned must be relevant to pupils' present lives. This suggests to this researcher that the student teachers held a tacit understanding of the influences of their pupils' past and concurrent experiences relative to new events in the classroom. Further, this researcher believes that the student teachers recognized the interaction of pupils' constructs based on all their experiences with their own actions.

The latter finding created a dilemma when the first was considered. If student teachers thought that learning was a function of internal activities of the child and external factors, then why did they teach as if knowledge were reproduced? Several interpretations were possible. First, student teachers may not actually have believed that knowledge is constructed; they may have been reciting statements learned in course work.
Another interpretation would suggest that student teachers may believe what they have said, but have not gained the skill to know how to actualize their beliefs, or observed them. If they have had little opportunity to learn by creating their own knowledge in any of their schooling experiences, then lack of personal experience may limit their knowing how to provide opportunities for pupils to create knowledge. This would partially account for the dichotomy between their thoughts and actions.

A third interpretation may be that historically held beliefs about the meaning of education were distinctly influential in this dilemma. Traditionally knowledge reproduction has been expected and honored in school achievement. Evidence of its continued esteem can be seen in the back to basics movement. Textbooks, testing and measures of accountability depend heavily on teachers bringing about knowledge reproduction for their pupils. It may also be construed that student teachers are so concerned with survival, that is, passing the practicum, that they take a safer route and act in ways that they perceive are acceptable to supervisors and cooperating teachers.
Another finding was that the student teachers held their own knowledge to be relative, tub their pupils' knowledge finite. How the student teachers chose the instructional content and the ways in which they presented that content to their pupils indicated a continued dichotomy between their espoused theory about knowledge and their actions. In Nicole's case for example, the textbook defined the parameters of the knowledge available to her pupils while reading and writing appeared to have fewer constraints. She was willing to encourage attempts to continue a reading task that other may have deemed too difficult because the pupils were reading. Nicole continued to search for more and more alternative ways of understanding, using theory to ground or sanction her practice. Placing theory above practice was based in years of traditional cognitive thought about knowledge, creating a tension within Nicole's practice. She recognized, as did a number of other student teachers interviewed, that the task of education is to prepare pupils to deal with relationships among people and communities of people.
Student teachers did not discriminate well between beliefs about what should happen and their actual practices. Classroom observation of Nicole and five other student teachers found inconsistencies between what the students said they believed and their actions. Nicole stated that she believed learners should be independent, but she controlled their work with carefully made plans, her physical and verbal presence.

Student teachers consciously used their personal knowledge about schooling to think about teaching and learning. When asked to explain how or why they chose some particular action or made specific statements, the student teachers often responded with evidence from their past personal experiences as pupils. Essay tests, for example, were deemed to provide better indications of pupil learning than other types of paper-pencil evaluations based on the student teachers' own positive experiences with them.

Student teachers did not consciously use theoretical knowledge as a frame to think about teaching and learning. Throughout the discussions with the student teachers only infrequent reference was made to specific
theory. That their actions involved consideration of theoretical knowledge was evident however in their uses of particular programs rather than other despite the classroom teacher's program. An example of this was several student teachers' uses of literature-based reading rather than basal readers. Statements such as "Children learn to read by reading" were known to be related to theoretical understandings as presented in methods courses preceding the practicum.

That student teachers combined their personal knowledge and theoretical knowledge in a dialectical process in learning to teach was the primary finding of this study. It suggests major implications for teacher education reform.

**Discussion**

Emphasis through the interview questions on the broader act of reflection encouraged student teachers to examine what they teach and why they teach it. Reflection engaged the individual in understanding and relating personal practical knowledge, e.g., beliefs, assumptions, and analyses, to theoretical knowledge and the activities in which they engaged. Asking quesions, such as those
used in the interviews, stimulated reflective thinking and aided student teachers in relating belief, knowledge and action. Critical self-awareness and analysis carries the potential to create new directions on an individual and eventually professional level.

Classroom management, particularly discipline, was a major concern for the student teachers. The implications of a commitment to a particular view of knowledge has consequences for school curricula. When curricula are defined, in this case by a particular view of knowledge, it determines the opportunities children have to learn. The student teachers' tacit views of knowledge, their enacted views, defined the curricula for their pupils. The eighth grade algebra pupils, for example, could not explore the relationship between music and mathematics since that did not appear in the mathematics text, unless the student teacher created an extension to the text and assigned it. Moving away from the safety of the textbook or risking an instructional form not so easily controlled as a lecture would require more concern for pupils and
less for survival of oneself. Once again the dialectical relationship of the interaction of one's view of knowledge, view of discipline and need for survival is evident.

However, the context in which the student teachers taught, for example, the materials available, the expectations of the cooperating teacher, the constraints of the graded course of study and other school policies, the scheduling and time allocations for subject areas shaped the student teachers' actions, and probably eventually their beliefs.

A case in point was the present testing agenda associated with the "back to basics" movement. Specific reading tests were required to be given in Nicole's school. The tests relied heavily on the material presented in the specific basal reading text. Deviating from the text may have put children at a disadvantage since they were required to achieve at a predetermined level on the tests to pass the grade level reading requirements. As can be seen in this case, testing shaped the opportunities the student teachers had to express their espoused theory of knowledge. By creating
externally generated and validated knowledge on which judgments were made about pupil successes, the student teachers' autonomy was reduced and hence their professional development affected. In this situation, the student teacher's problem was identical with her pupils' problem, that is to "learn how to do what is expected by the people who have the answers" (Eisner, 1982, 12).

The student teachers' responses were predictable; survival of the student teaching experience was initially their primary concern (Fuller & Bown, 1975). Using the materials that accompany the tests reduced anxiety about meeting school requirements. Exploring the meaning of such an emotion laden word as survival, may add further illumination.

In primitive terms survival connotes staying alive. Reynolds (1971) states that the meanings of primitive terms can only be conveyed through the use of examples and non-examples (p. 47) because they cannot be defined by other linguistic symbols. For student teachers' survival is first of all 'passing the practicum'. On reflection, however, it has deeper meanings. Employment and hence the ability to make a living is tied to passing the
practicum. Still deeper is an intuitive sense of self worth at having passed or failed at a chosen venture. The emotional or biographical quality entwined in even the meanings of words used daily strengthens this researcher's belief in the importance of biography to produce more viable understandings of the mental lives of teachers.

Implications

The primary implication are for improvements in teacher education. It is essential that student teachers be well grounded in the sort of knowledge that is common to all disciplines to enable them to guide learning and accept children's responses in this wider array of alternatives. Further, in addition to accomplishing a collection of technical skills, students need to acquire proficiency in reflective inquiry skills, developing the habit of questioning their basic beliefs, assumptions and related actions. They must not only know basic reflective questions to ask themselves (such as What am I teaching? Why am I teaching it? What ends are worth pursuing? What is possible? How do students learn? What do my answers to these questions mean?) but also how to seek and interpret the responses to these questions in their practices, and how to direct and monitor their own behaviors.
Earlier this researcher proposed that teacher education is interconnected with curriculum development, supervision, and educational research. A further recommendation for teacher education reform involves creating a community of like-minded scholars among these areas.

An implication for curriculum development is to create less prescriptive school curricula than are currently available with a wider array of alternatives for children to experience and express what they have learned.

The school curriculum influences the instructional activity of students in their practicum and teachers in school settings, creating implications for supervision. The general focus on supervision of instructional activity and the use of instructional materials would become a shared responsibility between student teacher and supervisor. The supervisor's contribution would be to aid the student teacher in developing the tools of reflective inquiry. Systematic questioning, information collection about specific actions and their effects on pupils, and promoting reflection through dialogue are samples of the
kinds of supervisory activities possible. Additionally, supervisors would be able to reflect inferences about the curriculum - what works and what does not - for those who develop it.

For practicing teachers the implications are clear about their roles in working with student teachers, who should themselves be inquiring professionals, demonstrating habits of reflection in their own practices and be willing to question their interpretations of the curriculum, their instructional activities, and the influences of their instructional materials as a shared activity with the student teachers. As Sanders and McCutcheon (1986) have detailed, teachers might engage student teachers in their own practice centered inquiry (p. 67), creating sound experiential learning.

Implications which affect the curriculum and practicing teachers in the schools also affect public school administrators. Support in terms of budget considerations, time allocations, staff development and personal involvement in the inquiry efforts, ensure more opportunities for success in reflective activities. As Daresh (1988) suggests, an administrator's preparation for
leadership must include the development of and reflection on a personal philosophy platform as the initiation of practice centered inquiry. Reflective administrators are more likely to support and enhance the reflective activities of teachers and novices.

For teacher educators the challenge is to design and implement a curriculum which meets the goals described. This implies changes for the preparation of administrators, supervisors, and criteria for choosing cooperating teachers, as well as content of the curriculum. An often overlooked influence in curriculum change is the attitudes and beliefs of the designers and implementers, the teacher educators themselves. Teacher educators, (and therefore, teacher education), may benefit from the opportunity to view their practices through the lens of reflective inquiry. Collaboration among teacher educators researching their own practices carries promises for informing teachers and student teachers of effective and appropriate means of reflective inquiry.

Educational research must explore new ways of seeing teaching, of recording and making sense of practice and evaluating views of knowledge held by participants. The
implications discussed above point directly to increased involvement of the practitioner in the research efforts in a number of ways, for example, collaboration between university personnel and practitioners, between practitioners and practitioners, and among university personnel across and within disciplines in a community of inquirers.

Summary of Implications

Children can often create a compelling case for teachers to seek control. Control can be obtrusive and restricting or freeing and enhancing of opportunities to learn. Student teachers' needs for control are both predictable and reasonable when what is at stake is considered. Future employment and self concept are strong motivators for student teachers to acquiesce to the perceived demands of supervisors, cooperating teachers. From the pupils' perspective, the aims of the student teacher for using control are critical. If ultimately the student teacher wants to help children become competent independent responsible human beings, believing that they are capable of it, then control will not have a depressive effect. Nicole's need for structure explained by her
actions and statements of her beliefs, indicated a desire to make the classroom environment more conducive for learning. That she measured what was meant by 'more conducive' in terms of her own experiences as a learner was indicative of biographical influence. Each student teacher construed the meaning of structure in different ways based on their own experiences as evidenced in the frequent digressions when answering to statements of personal experience as in "I remember sleeping through seventh grade" (I/9); "They're a product of their environments. They have loving parents that urged activity, although in my family we never got lots of pats on the back ..." (I/11-11).

The demands of society for literacy, numeracy and understanding of scientific principles exerted intense pressures on the student teachers; they were expected to act in ways which they have not yet learned. The implications for the teacher education curriculum are apparent. Student teachers need the opportunity to learn what and how - that is to become skilled in a broad range of instructional models. Having a range of models from which to choose provides them with flexibility to choose
the most appropriate means for meeting pupil's learning needs. Developing student teachers' metacognitive skills such as forecasting and executive control functions, combined with practice and feedback would be likely to give students the intellectual understanding of how to use the skills they have learned to best meet learner needs, and how to guide their pupils in developing and learning to use these skills. A third component of the curriculum must include an opportunity for student teachers to learn the appreciations and artistic employment of these skills in real settings.

Supervisors need to provide the student teacher with data about her or his teaching, establish and maintain a reflective dialogue with the student encouraging the use of metacognitive skills to examine his or her own practice.

Practicing teachers will benefit the student teacher most when they also possess the skills and abilities described. Some research suggests that students learn the technical skills of teaching and the practical skill from the cooperating teacher, while they learn broad generalizations about teaching from their university supervisors.
Methodological Issues

**Writing Style**

Several issues were raised through the research which warrant discussion. Nicole's vitality made it difficult for the researcher to write in past tense. Even though the study had been completed, the relationship created between the researcher and Nicole is viable. What Nicole planned, thought, and did during the days of the observation is still vital; the effects of decisions and actions are ongoing. An equally disturbing problem has been the use of third person in writing an account of this study. It seems to add an unrealistic tone to the work, creating a detachment that is the antithesis of a dialectical relationship. Within the theoretical frame of this work the dialectical has been an important guiding image. Respecting the integrity of the expected style raised an issue in regard to this image.

**Reactivity**

Throughout the study, Nicole and the interviewed student teachers commented that the questions asked by the researcher caused them to view their practices or conceptions of teaching in a new way. Considering the nature of the questions in Appendix A, it is
understandable that such a reaction might occur, but within the accepted methodology it is considered a negative effect which must be carefully documented. The sorts of reactions engendered by the questions are not very different from those anticipated as responses to good clinical supervision. It would seem that in light of the prior discussion concerning the nature of knowledge, what is warranted by research in education is research for education. Research for education, as opposed to research about education, makes the act of research in itself a tool for improving practice (Kemmis, 1983). The dialectical nature of this event was that studying Nicole's practice resulted in the improvement of her practice. As a result of the study and Nicole's communications, the researcher improved her own practice as a researcher, and that may in turn serve to illuminate the manner in which others may improve their practices. One view of reactivity, and the view of this researcher, is that it is not problematic in research for education. Ultimately the aim of educational research is to improve practice. Where the aims of the research are to improve practice, reactivity is essential.
Tacit Knowledge

A third methodological problem which puzzled the researcher was the legitimation of the researcher's tacit knowledge. An example of this problem occurred during writing of the findings about the eighteen interviews. The researcher sensed that the facility with which student teachers structured and restructured their knowledge about their pupils increased as their practical experience increased. The evidence must be found by comparison of responses of those student teachers interviewed during different stages of their practicum experience. Though there is an intuitive sense that this is indeed happening, the researcher at this moment in time cannot point to specific data that support the hypothesis. Therefore, this particular hypothesis was not mentioned as a finding. The question remains a methodological concern.

Verbal Data

Throughout this study, because of the nature of the event being studied - thinking and theory making - it was imperative to accept the statements of student teachers about their thinking. As outlined in Chapter III, some researchers suspect the usefulness of verbal responses as
data sources. They maintain that the real meaning of verbal data is always uncertain. It is probable that individuals can recall thoughts, but it is doubtful that individuals can report sequences of thoughts accurately, possibly due to the nature of language itself. Argyris and Schon (cited in Sergiovanni & Starratt, 1983) offer an alternative way of conceptualizing the usefulness of espoused theory.

When someone is asked how he would behave under certain circumstances, the answer he usually gives is his espoused theory of action for that situation. This is the theory to which he gives allegiance, and which upon request, he communicates to others. However, the theory that actually governs his action is his theory in use. This theory may or may not be compatible with his espoused theory; furthermore, the individual may or may not be aware of the incompatibility of the two theories (p. 306). Theory in use is practice (or actions) and represents tacit knowledge. Merely comparing what is said with what is done does not guarantee understanding since behaviors and motives can form innumerable combinations.
Lack of congruence between the two theories, or between theory and practice, when known creates the tensions found in the teachers in Elbaz's (1983) and Cornett's (1987) studies, and this work. As discovered in all three studies, when the tension was acknowledged the participants moved toward changing their practices. The observers' and the participants viewpoints, both necessary for interpreting and analyzing events, construct a new perspective.

**Epistemological and Conceptual Frames**

An epistemological frame represents the view of the nature of knowledge held by an individual. As the reader will have noted, the researcher's epistemological frame shifted during the process of the study. Initially, as is clear in the opening sections of the document, the view was that knowledge was more finite. An answer to the research question was 'out there' to be found by following certain techniques and rules. As the researcher became involved in the event of research, and involved with the participants, particularly Nicole, and read increasingly more epistemological literature, the view of knowledge slowly changed. In this final chapter, the reader will
have noted the change to a constructionist perspective. That is, the researcher came to believe that knowledge was constructed from experiences by each individual.

A conceptual frame represents the theories a researcher holds. The reader will have noted that this research began with a number of tentative conceptual frames. As the work progressed these frames clearly merged as a better fit with the process and the data. That such a change occurred is reasonable, given the nature of the study.

SUGGESTIONS FOR FURTHER RESEARCH

More investigations are warranted in the nascent field of teacher thinking. Most research reviewed in Chapter II focuses on thoughts isolated from action and biography. This study has focused on personal beliefs as expressed in a dialectical with practical action in the context of the environment. Future research ventures might ask "What composes teacher thinking?" Would response patterns to the questions in Appendix A change substantially at the end of the induction year? What kind and how much influence would experience have on the response to the questions in Appendix A? Student teachers appear to hold
different views about knowledge, and different views about knowledge in different subjects. What effect does this have on the opportunities children have to learn? What effect might this conflict have on how children view schooling, the curriculum, and knowledge? Finally, based on a commitment to research which is useful for education change, this study suggests research about curriculum innovations that support student teachers' efforts to develop "reflective habits of mind" (Dewey, 1933) giving future teachers the tools for improving their practices in education.
### Appendix A

<table>
<thead>
<tr>
<th><strong>Interview Questions</strong></th>
<th><strong>Person</strong></th>
<th><strong>Technique</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>How do children learn?</td>
<td>ST,CT</td>
<td>I</td>
</tr>
<tr>
<td>What's important to teach?</td>
<td>ST,CT</td>
<td>I</td>
</tr>
<tr>
<td>Who decides what to teach?</td>
<td>ST,CT</td>
<td>I,O</td>
</tr>
<tr>
<td>How do you know what to teach?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>In what ways do you introduce a lesson?</td>
<td>ST</td>
<td>I,O</td>
</tr>
<tr>
<td>How do you choose the introduction for lessons?</td>
<td>ST,J</td>
<td>I,O,Ex</td>
</tr>
<tr>
<td>How do you know if your teaching is clear and children understand?</td>
<td>ST</td>
<td>I,O</td>
</tr>
<tr>
<td>How do you know children have learned?</td>
<td>ST,CT</td>
<td>I</td>
</tr>
<tr>
<td>How do you know if a lesson has been successful?</td>
<td>ST,CT</td>
<td>I</td>
</tr>
<tr>
<td>Who is the actor, the teacher or students?</td>
<td>ST,CT,Pr</td>
<td>0</td>
</tr>
</tbody>
</table>
Appendix A (continued)

How are errors handled by the student teacher?  ST  O
How are errors handled by the pupils?  P  O
In what ways are opportunities to learn maximized?  ST, P, CT, ST, CT  O
                                                 ST, CT  I
                                                 J, Mat  Ex
What classroom climate is important?  All  O
                                           J, Mat  Ex
Is confidence and trust in pupils necessary for you?  ST, CT  I, O
                                         J, Mat  Ex
Do trusting confident pupils learn better?  ST, CT  I, O
                                           J, Mat  Ex
How do you get confidence and trust?  ST, CT  I, O
<table>
<thead>
<tr>
<th>Question</th>
<th>Code</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is parental confidence and trust important? In what ways?</td>
<td>ST,CT</td>
<td>I,O</td>
</tr>
<tr>
<td>What's the most important thing you do all day? year?</td>
<td>ST,CT</td>
<td>I</td>
</tr>
<tr>
<td>What pupil information do you need in order to teach as well as you'd like?</td>
<td>ST,CT</td>
<td>I,O</td>
</tr>
<tr>
<td>How do you use pupil information?</td>
<td>ST,CT</td>
<td>I,O</td>
</tr>
<tr>
<td>When you talk to children, who starts the conversation?</td>
<td></td>
<td>I,O</td>
</tr>
<tr>
<td>Why?</td>
<td>ST</td>
<td>I,O</td>
</tr>
<tr>
<td>When do you talk with children?</td>
<td>ST</td>
<td>I,O</td>
</tr>
<tr>
<td>What do you talk about when you talk with children?</td>
<td>ST,J</td>
<td>I,O,Ex</td>
</tr>
<tr>
<td>How are individual differences identified?</td>
<td>ST</td>
<td>I,O,Ex</td>
</tr>
<tr>
<td>Who identifies the differences?</td>
<td>ST</td>
<td>I,O,Ex</td>
</tr>
</tbody>
</table>
Appendix A (continued)

Whose work gets recognition?  ST  I,0,Ex

How is work recognized?  ST  I,0,Ex

What work gets recognition?  ST  I,0,Ex

How do you diffuse potential discipline problems?  ST  I,O

KEY

ST...Student Teacher
CT...Cooperating Teacher
P....Pupils
Pr...Principal
US...University Supervisor

I....Interview (audio tapes, field notes)
O....Observation (field notes)
Ex....Examine artifacts
J....Journals written by student teachers
Mat...Materials (text & plan books, course of study, etc.)
PEDAGOGY

How do children learn?
Is confidence and trust in the pupils necessary for you?
Do trusting and confident pupils learn better?
How do you get confidence and trust?
Is parental confidence and trust important? In what ways?
What pupil information do you need to teach as well as you'd like?
How do you use pupil information?
When you talk to children who starts the conversation?
   Why?
When do you talk to children?
What do you talk about to children?
How are individual differences identified?
Who identifies these differences?
Whose work gets recognition?
How is work recognized?
What work gets recognition?
How do you diffuse potential discipline problems?
CURRICULUM

What's important to teach?
Who decides what to teach?
How do you know what to teach?

INSTRUCTION

In what ways do you introduce a lesson?
How do you choose the introduction?
How do you know if your teaching is clear and children understand?
How do you know children have learned?
How do you know if a lesson has been successful?
In what ways are opportunities to learn maximized?
What pupil information do you need to teach as well as you'd like?
How do you use pupil information?
How are individual differences identified?
Who identifies the differences?
Whose work gets recognition?
How is work recognized?
What work is recognized?

ORGANIZATION

What classroom climate is important?
Is confidence and trust in pupils necessary for you?
Do trusting confident pupils learn better?
How do you get confidence and trust?
What's the most important thing you do in a day?
What's the most important thing you do in a year?
How do you diffuse potential discipline problems?
<table>
<thead>
<tr>
<th>Grade</th>
<th>Subject</th>
<th>Grade</th>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Review all last week</td>
<td></td>
<td>Review and vocabulary</td>
</tr>
<tr>
<td></td>
<td>Checkpoint A - Last 15 months</td>
<td></td>
<td>Structure filler interval tape</td>
</tr>
<tr>
<td></td>
<td>practice 8.4</td>
<td></td>
<td>It's like this</td>
</tr>
<tr>
<td></td>
<td>Mixed Numbers as Fractions (Improper Fractions)</td>
<td></td>
<td>decide on book - who do you like it?</td>
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<tr>
<td></td>
<td>p 1-37 odd (210-211)</td>
<td></td>
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<tr>
<td></td>
<td>Practice: &quot;Fracturing for Breakfast&quot;</td>
<td></td>
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<tr>
<td></td>
<td>Doing it in my head first more than on</td>
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<tr>
<td></td>
<td>fraction worksheet</td>
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<td></td>
<td>Fractions as Mixed Numbers (Fractions in division form)</td>
<td></td>
<td>Vocabulary Test</td>
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<tr>
<td></td>
<td>p 19-21 (27-55 odd)</td>
<td></td>
<td>Silent Reading:</td>
</tr>
<tr>
<td></td>
<td>0 ( \frac{1}{3} ) ( \frac{2}{3} ) ( \frac{3}{3} ) ( \frac{4}{3} ) ( \frac{5}{3} ) ( \frac{6}{3} )</td>
<td>0 ( \frac{1}{3} ) ( \frac{2}{3} ) ( \frac{3}{3} ) ( \frac{4}{3} ) ( \frac{5}{3} ) ( \frac{6}{3} )</td>
<td>p 103-114</td>
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<td></td>
<td>( \frac{7}{3} ) ( \frac{8}{3} ) ( \frac{9}{3} ) ( \frac{10}{3} )</td>
<td>( \frac{11}{3} ) ( \frac{12}{3} ) ( \frac{13}{3} ) ( \frac{14}{3} )</td>
<td>discussion: 7-3</td>
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<td>( \frac{15}{3} ) ( \frac{16}{3} ) ( \frac{17}{3} ) ( \frac{18}{3} )</td>
<td>( \frac{19}{3} ) ( \frac{20}{3} ) ( \frac{21}{3} )</td>
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<td>( \frac{22}{3} ) ( \frac{23}{3} ) ( \frac{24}{3} ) ( \frac{25}{3} )</td>
<td>( \frac{26}{3} ) ( \frac{27}{3} ) ( \frac{28}{3} )</td>
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<td>( \frac{29}{3} ) ( \frac{30}{3} ) ( \frac{31}{3} ) ( \frac{32}{3} )</td>
<td>( \frac{33}{3} ) ( \frac{34}{3} ) ( \frac{35}{3} )</td>
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<tr>
<td></td>
<td>Fractions and Decimals (Fractions, hundredths, thousandths)</td>
<td>Two Minute Mystery</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Writing fractions as decimals</td>
<td>Answers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. Our answer: 4100 ( \frac{1}{10} )</td>
<td>2. all 12 ( \frac{1}{1000} )</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. hundreds: 4100 ( \frac{1}{1000} )</td>
<td>4. thousands: 4100 ( \frac{1}{1000} )</td>
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<tr>
<td></td>
<td>What does 3 tenths look like?</td>
<td>5. all 1-36 all</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Writing Fractions as Decimals</td>
<td>Sequencing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>divide denominator into numerator</td>
<td>Sequencing and Following Directions</td>
<td></td>
</tr>
<tr>
<td></td>
<td>( \frac{1}{3} ) = 1 five annex zeros</td>
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<td>1/3</td>
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<td>Felt Advertisements</td>
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334
<table>
<thead>
<tr>
<th>Monday</th>
<th>Mystery Readers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>“What did you learn today?”</td>
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| Tuesday | Brainstorm Periodic Table
<table>
<thead>
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<tbody>
<tr>
<td></td>
<td>Atom drawing Atomic Weight and Number</td>
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<tr>
<td></td>
<td>Begin “What are Elements made of?”</td>
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</table>

<table>
<thead>
<tr>
<th>Wednesday</th>
<th>Mystery Reader</th>
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</table>

| Thursday | Bumping Pop Bottle
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</thead>
<tbody>
<tr>
<td></td>
<td>Elements List Finish Periodic Table Discussion</td>
</tr>
<tr>
<td></td>
<td>Atoms - electrons, protons, neutrons</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Friday</th>
<th>Atom Models - Bohr Models</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3/8</td>
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</tbody>
</table>
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April 1988


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