

Chapter 6¹

THE ROLE OF ATTITUDES AND BELIEFS IN LEARNING TO TEACH

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Attitudes and beliefs are important concepts in understanding teachers' thought processes, classroom practices, change, and learning to teach. While attitudes received considerable attention in teaching and teacher education research between the early 1950's through the early 1970's, teacher beliefs only recently gained prominence in the literature. Summaries of the research suggest that both attitudes and beliefs drive classroom actions and influence the teacher change process (Nespor, 1987; Pajares, 1992; Peck & Tucker, 1973; Richardson, 1994-b). Teacher attitudes and beliefs, therefore, are important considerations in understanding classroom practices and conducting teacher education designed to help prospective and inservice teachers develop their thinking and practices. In such change programs, beliefs and attitudes of incoming preservice students and inservice teachers strongly affect what and how they learn and are also targets of change within the process.

This chapter examines two roles of beliefs and attitudes in the education of teachers: (a) as facets of individual preservice and inservice teachers that affect the way they process new information, react to the possibilities of change, and teach; and (b) as the focus of change in teacher education programs. Thus, I examine the ways preservice students' and teachers' beliefs influence their learning to teach and look at teacher education programs that are designed to change beliefs and attitudes. I would like to acknowledge a number of summaries of the research that precede this volume and were helpful in developing the framework for this chapter. They include: the learning to teach chapters of Feiman-Nemser (1983), Carter (1990), and Borko and Putnam (in press); the teacher thinking chapter by Clark and Peterson (1986); a chapter on the culture of teaching and its effects on learning to teach by Feiman-Nemser and Floden (1986); teacher beliefs summaries by Nespor (1987) and Pajares (1992); the socialization of teaching chapters by Zeichner and Gore (1990), and Brookhart and Freeman (1992); and a chapter on teacher knowledge by Fenstermacher (1994). These summaries and analyses of the literature suggest that while research on learning to teach is relatively new in the teaching and teacher education literature, it has spawned a growing body of sophisticated conceptual and empirical studies that are influencing thinking and practice in teacher education.

This chapter begins with a conceptual framework gleaned from current work on beliefs and learning to teach and from an analysis of the assumptions underlying the research. It includes definitions of beliefs and knowledge, as well as a discussion of the methodologies used in determining them. The framework section provides a way to

interpret the findings of the research that are summarized in the subsequent section.

CONCEPTUAL FRAMEWORK

Attitudes and beliefs are a subset of a group of constructs that name, define, and describe the structure and content of mental states that are thought to drive a person's actions. Other constructs in this set include conceptions, perspectives, perceptions, orientations, theories, and stances. The heyday of studies that focussed on teachers' attitudes occurred in the 1950's through the early 1970's. While teacher attitudes are still examined from time to time, beliefs have taken over as a major construct of interest in studying teachers' ways of thinking and classroom practices. This shift from attitudes to beliefs is described below.

Attitudes

Following an examination of the various definitions of attitude, Allport (1967) developed his definition: "a mental and neural state of readiness, organized through experience, exerting directive or dynamic influence upon the individual's response to all objects and situations with which it is related" (p. 8). This sense of attitudes as predispositions that consistently affect actions strongly influenced teaching and teacher education research for a number of years.

Of particular interest in the study of teaching during the 1950's and 1960's were teachers' social attitudes toward students, other people and their cultures, learning, and the purposes of education. More particularly, a group of researchers, interested in the development of democratic and integrated classrooms, examined teacher attitudes that hinder or ensure this normative vision. The attitudes of interest in these studies were related to democratic and authoritarian attitudes (Rokeach, 1960), as well as attitudes toward other cultures and races. Peck and Tucker (1973) summarized a series of studies that examined the relationship among attitudes, personality factors, and classroom behaviors. Studies were conducted, for example, on how dogmatic versus open-minded student teachers and their cooperating teachers rated their classroom practices and whether the degree of dogmatism of the cooperating teacher affected dogmatism in the student teachers.

Other areas of interest included the attitudes and values of teachers who choose teaching as a career (summarized by Stern, 1963) and how attitudes affect teacher-student interactions (Brophy & Good, 1974). For example, Stern found that the various studies of incoming teacher education students indicated that they were "essentially cooperative, restrained, lacking in social boldness, friendly, anxious to please" (p. 417).

Shifts in research paradigms in both social psychology and educational psychology moved the study of attitudes in teaching and teacher education out of the limelight. The discipline of social psychology became more cognitively-oriented, as represented by a separation of attitudes (affective) and beliefs (cognitive). For example, Rokeach's

(1968) definition of attitudes included the concept of beliefs. An attitude set, he wrote, is "a relatively enduring organization of beliefs around an object or situation predisposing one to respond in some preferential manner" (p. 112). Fishbein (1967), however, narrowed the scope of the concept, attitude, by separating it from beliefs. The notion that attitudes consist of three components--affective, cognitive, and conative (action)--led to conceptual confusion, he suggested, since the three components were not always correlated with each other in empirical studies of individual attitudes. To deal with this problem, Fishbein limited the term attitude to the affective component, and designated the cognitive as beliefs about objects and the conative as beliefs about what should be done concerning the object. Attitudes, then, for Fishbein, became "learned predispositions to respond to an object or class of objects in a favorable or unfavorable way" (1967, p. 257).

The growing interest in cognition within the discipline of social psychology drew interest away from the affective (attitudes) and toward the cognitive (beliefs), although the difference between the two terms remained somewhat unclear in the empirical literature. For example, Harvey, Prather, White, and Hoffmeister (1968) studied teacher beliefs that varied in terms of concreteness and abstraction, and examined the relationships of these beliefs to classroom atmosphere and student behavior. However, in this study, beliefs, as constructs, resembled attitudes in other studies.

At the same time, behavior, rather than mental processes, reigned supreme in educational psychology. In the study of teaching, process-product studies dominated the literature (Brophy & Good, 1986), although teacher attitudes were often still considered as "presage" variables (Dunkin & Biddle, 1974). Even the study of attitudes took on a behavioral twist. Campbell (1967), for example, defined social attitudes as "consistency in response to social objects" (p. 175). But perhaps the shift away from the study of attitudes and personality in research on teaching and teacher education could be attributed to an end in a cycle of findings, such that only a new way of looking at the concepts could reverse the trend. Getzels and Jackson (1963) described many of the findings in teacher attitudes research in this manner:

The regrettable fact is that many of the studies so far have not produced significant results. Many others have produced only pedestrian results. For example, it is said after the usual inventory tabulation that good teachers are friendly, cheerful, sympathetic, and morally virtuous, rather than cruel, depressed, unsympathetic, and morally depraved. But when this has been said, not much that is especially useful has been revealed. . . .(p. 579).

Beliefs

Anthropologists, social psychologists, and philosophers have contributed to an understanding of the nature of beliefs and their effects on actions. There is considerable congruence of definition among these three disciplines in that beliefs are thought of as psychologically-held understandings, premises or propositions about the world that are

felt to be true. Goodenough (1963), for example, described beliefs as propositions that are held to be true and are "accepted as guides for assessing the future, are cited in support of decisions, or are referred to in passing judgment on the behavior of others" (p. 151). Eisenhart, Shrum, Harding, and Cuthbert (1988), however, added an element of attitude to Goodenough's definition: "a belief is a way to describe a relationship between a task, an action, an event, or another person and an attitude of a person toward it" (p. 53). Rokeach (1968) defined beliefs as heuristic propositions that may begin with the phrase: "I believe that. . ." (p. ix). He was particularly interested in the structure of belief systems, which he believed were organized in a psychological but not necessarily logical form. He also wrote that some beliefs are more central than others, and that central beliefs are more difficult to change.

Green's (1971) philosophical approach to a description of beliefs provided an understanding of how humans can hold incompatible or inconsistent beliefs. He suggested that people hold beliefs in clusters, and each cluster within a belief system may be protected from other clusters. In Green's formulation, there is little cross-fertilization among belief systems, and beliefs that are incompatible may be held in different clusters. As long as incompatible beliefs are never set side by side and examined for consistency, the incompatibility may remain.

While there is considerable agreement across disciplines about the nature of beliefs, there are many other mentalist constructs that, if not synonymous with beliefs, are closely related. Pajares (1992) suggested that such concepts as attitudes, values, preconceptions, theories, and images are really beliefs in disguise. But perhaps the most complex issue in current research on teaching and teacher education is the confusion between the terms belief and knowledge.

Beliefs and Knowledge. In the traditional philosophical literature, knowledge depends upon a "truth condition" that suggests that a proposition is agreed upon as being true by a community of people (Green, 1971; Lehrer, 1990). Propositional knowledge has epistemic standing; that is, there is some evidence to back up the claim. Beliefs, on the other hand, do not require a truth condition. As Feiman-Nemser and Floden (1986) pointed out, "It does not follow that everything a teacher believes or is willing to act on merits the label 'knowledge'" (p. 515).

Such a differentiation between beliefs and knowledge is not evident in much of the teaching and teacher education literature. Fenstermacher (1994) suggested that many scholars use the term knowledge as a grouping term. For example, Alexander, Schallert, and Hare (1991) described 26 terms that are used in the literature on literacy to denote different types of knowledge. They also equated beliefs and knowledge: "*knowledge* encompasses all that a person knows or believes to be true, whether or not it is verified as true in some sort of objective or external way" (p. 317). Kagan (1990) also made the decision to use the terms beliefs and knowledge synonymously in her analysis of methodological issues inherent in studying teachers' knowledge. Her rationale for this formulation was that teachers' knowledge is subjective, and therefore

much like beliefs.

There is also considerable similarity between the terms knowledge and beliefs in the concept of teachers' personal practical knowledge. Practical knowledge, first explored in teaching practice by Elbaz (1983), and developed further by Clandinin and Connelly (1987), is an account of how a teacher knows or understands a classroom situation. Practical knowledge is gained through experience, is often tacit, and is contextual. This form of knowledge, however, is not synonymous with beliefs because it is thought of as embodied within the whole person, not just the mind (see, also, Hollingsworth, Dybdahl, & Minarik, 1993). Embodied knowledge is more than cognitive and relates to the way in which people physically interact with the environment (Johnson, 1987). It is this knowledge that Yinger (1987, and Yinger and Villar, 1986) suggested is used by the teacher in an improvisational manner in the classroom. Yinger stated that this knowledge may be inseparable from a particular classroom action, a view that is similar to Schön's (1983) notion of knowledge-in-action. As Carter (1990) pointed out, this conception of understanding or personal knowledge does not separate the knower from the known. It is personalized, idiosyncratic and contextual, and, for Yinger (1987), emerges during action.

The term *belief*, as used in this chapter, is derived from Green (1971), and describes a proposition that is accepted as true by the individual holding the belief. It is a psychological concept and differs from knowledge which implies epistemic warrant. However, many other terms that are close in meaning to beliefs are used in the teacher education literature. In these cases, I will refer to the concepts in the same way as the authors. Thus, this chapter will include the terms attitudes, beliefs, conceptions, theories, understandings, practical knowledge, and values, as used by the particular author whose work is being described.

The Relationship Between Beliefs and Action

Conceptions of the relationship between teacher beliefs and teaching practice are related, in part, to the goals of the researchers. As Doyle (1990) pointed out, studies conducted until quite recently were meant to lead to predictions and to research findings that could be used for such decisions as entrance into the teaching profession. There was a clear sense in this research of cause (attitudes) and effect (classroom behaviors). The attitudes and personality factors thought to cause certain classroom behaviors were relatively stable and difficult to change, and therefore were considered to be valid indicators of the future effectiveness of a teacher. There were also experimental studies that tested teacher education programs designed to change dysfunctional attitudes.

More recently, studies conducted within the hermeneutic tradition suggest a complex relationship between teachers' beliefs and actions. In fact, the concept of 'relationship' is sometimes viewed with disfavor since the separation of thinking and action, while useful for research and analysis, may make little sense in practice. The purpose of these studies is to conduct research that leads to understandings of the complexities of the

contexts of teaching and of teachers' thinking processes and actions within those contexts. Understanding of a teacher's practices is enhanced by research attention to both beliefs and actions--through interview and observation. Further, such attention may contribute to change in beliefs and practices, particularly if the research is conducted in a collaborative manner. But these understandings are quite person- and context-specific; thus, the number of individual case studies has increased dramatically in the literature.

In most current conceptions, the perceived relationship between beliefs and actions is interactive. Beliefs are thought to drive actions; however, experiences and reflection on action may lead to changes in and/or additions to beliefs. Examples of these complex interrelationships may be found in research dating from the 1970's. One of the first large-scale studies of teachers' beliefs in the modern hermeneutic tradition was conducted by Bussis, Chittenden, and Amarel (1976) who examined teachers' personal constructs of the curriculum and children. These personal constructions, they suggested, result from an individual's interpretation of the world, and they "are forerunners of action" (p. 17). Significant teacher change can only occur, they concluded, if teachers are engaged in "personal exploration, experimentation, and reflection" (p. 17). For Clandinin (1986), a teacher's experiences lead to the formation of images that are a part of personal practical knowledge; and these, in turn, are elements of classroom practices such as routines and rhythms: "Teachers' practices [are] the embodiment and enactment of their personal practical knowledge. . .of which imagery is a part" (p. 36). Cochran-Smith and Lytle (1990) suggested that teachers' theories are "sets of interrelated conceptual frameworks grounded in practice" (p. 7). While many researchers separate beliefs and actions for purposes of conducting research, they understand that these constructs operate together in praxis, defined by Schubert (1991) as "a union of theory and practice in reflective action" (p. 214).

Why Beliefs Are Important in Learning to Teach

Beliefs are thought to have two functions in learning to teach. The first relates to the constructivist theories of learning that suggest that students bring beliefs to a teacher education program that strongly influence what and how they learn. The second function relates to beliefs as the focus of change in the process of education.

Current cognitive theories view learning as an active and constructive process which is strongly influenced by an individual's existing understandings, beliefs and preconceptions (Resnick, 1989). Existing knowledge and beliefs play a strong role in shaping what students learn and how they learn it.

Constructivist theories have also been used to understand the learning to teach process (see summary in Borko & Putnam, in press). For example, students come to teacher education programs with strong theories of teaching acquired during many years of being a student (Brookhart & Freeman, 1992). These theories have been shown to influence the way students approach teacher education and what they learn from it (for

example, Calderhead & Robson, 1991). In addition, the beliefs that practicing teachers hold about subject matter, learning and teaching influence the way they approach staff development, what they learn from it, and how they change (Richardson, in press-b). These studies will be described in the section on findings.

Beliefs are also the focus for instruction. Green (1971), for example, suggested that teaching is concerned with the formation of beliefs, and one goal of teaching is to help students form belief systems that consist of a large proportion of beliefs based on evidence and reason.

Teaching has to do, in part at least, with the formation of beliefs, and that means that it has to do not simply with *what* we shall believe, but with *how* we shall believe it. Teaching is an activity which has to do, among other things, with the modification and formation of belief systems (p, 48).

Teachers, he submitted, should also help students minimize belief clusters, and promote cross-fertilization among the clusters.

This concept of the purpose of education was extended to teaching and teacher education by Fenstermacher (1979). Fenstermacher argued that one goal of teacher education is to help teachers transform tacit or unexamined beliefs about teaching, learning, and the curriculum into objectively reasonable, or evidentiary beliefs. The process by which this can happen is to help preservice and inservice students identify and assess their beliefs in relation to their classroom actions (Fenstermacher, in press).

A number of studies have examined preservice and inservice education programs that focus, in part, on the participants' beliefs (Richardson, 1994-a). Evidence from these studies indicate that many of these programs have been successful in changing teachers' beliefs, although inservice programs appear to be more successful than preservice. These studies, too, will be described in the section on findings.

Where Do Teachers' Beliefs Come From?

In the literature on learning to teach, three categories of experience are described as influencing the development of beliefs and knowledge about teaching. These categories may not be mutually exclusive, and, in fact, may be studied together, as is the case with many teacher biography and life history studies (Ball and Goodson, 1985; Bullough and Baughman, 1993; Crow, 1987; Goodson, 1992; Knowles, 1992; Woods, 1984). The three forms of experience begin at different stages of the individual's educational career. They are personal experiences, experiences with schooling and instruction, and experiences with formal knowledge.

Personal Experiences. This form of experience includes aspects of life that go into the formation of world view, intellectual and virtuous dispositions, beliefs about self in relation to others, understandings of the relationship of schooling to society, and other

forms of personal, familial, and cultural understandings. Ethnic and socio-economic background, gender, geographic location, religious upbringing, and life decisions may all affect an individual's beliefs that, in turn, affect learning to teach and teaching.

A growing literature examines the relationship between personal experiences and how one approaches teaching. These are generally case studies of individual teachers. For example, in developing the theory of personal practical knowledge, Clandinin (1986) suggested that personal experience is encoded in images that affect practice. Images have moral, emotional, personal, private, and professional dimensions. Clandinin and Connelly (1991) wrote a case study of an elementary school principal, Phil Bingham, with whom they worked in constructing and reconstructing his narrative in order to understand his personal practical knowledge and actions as a principal. An important image in Bingham's narrative was community, an image developed from his experiences of growing up in a tightly-knit community on Toronto Island. This image of community affected his approach to the involvement of the community in his school. Another example is Bullough and Knowles' (1991) case study of a beginning teacher, Barbara, whose initial metaphor for teaching--teaching as nurturing--was thought to come from years of parenting.

Experiences with Schooling and Instruction. Lortie's (1975) discussion of the apprenticeship of experience suggests that students arrive in preservice teacher education with a set of deep-seated beliefs about the nature of teaching based on their own experiences as students. It is speculated that these strong beliefs, in combination with the salience of the real world of teaching practice, create conditions that make it difficult for preservice teacher education to have an impact.

A number of studies have examined beliefs acquired from such experiences and how these beliefs affect teachers' conceptions of their role as teacher. In a study of teachers' theories of children's learning, for example, Anning (1988) concluded that the theories about children's learning held by the six teachers in her study were determined "by their own particular previous experiences of teaching and learning in their classrooms" (p. 131). Britzman's (1991) case studies of two student teachers indicated that they held powerful conceptions of the role of teachers--both positive and negative--gained from observing teaching models. Britzman suggested that these conceptions profoundly affected the student teachers' classroom behaviors.

Life history studies often conclude that combinations of the first two types of experience--personal and schooling--strongly affect preservice education students' and inservice teachers' beliefs. For example, Knowles (1992) conducted case studies of five preservice secondary teachers, and found that family influences and previous teachers had influenced all five students' conceptions of the teacher role. Most researchers involved in life history and socialization research also agree that the experiential effects of personal life, previous schooling and student teaching are more powerful in building conceptions of teaching than the formal pedagogical education received in teacher education programs (Brousseau, Book, and Byers, 1988; Feiman-Nemser, 1983).

Experience with Formal Knowledge. Formal knowledge, as used here, is understandings that have been agreed upon within a community of scholars as worthwhile and valid. When students enter kindergarten, and often before, depending upon the nature of family and community life, students experience formal knowledge in their school subjects, outside readings, television, Sunday School classes, etc. Of particular interest in the consideration of learning to teach is knowledge of subject matter, conceptions or beliefs about the nature of subject matter and how students learn it, and experiences with formal pedagogical knowledge that usually begin in preservice teacher education programs.

School Subjects: In an attempt to understand teachers' classroom actions, researchers have recently examined the form and structure of a subject matter in the minds of preservice students and inservice teachers. Leinhardt (1988), for example, investigated a teacher's experiences with math texts as a student and as a teacher, and how these experiences contributed to her beliefs and understandings of the nature of mathematics and affected her classroom instruction. John (1991) followed five British students through their student teaching to determine how their perspectives on planning changed with experience. He found differences between the math and geography teachers in terms of how they viewed planning. The math student teachers' concepts of their subject strongly impacted their formation of ideas about planning, whereas the geography student teachers had little overall conception of their subject matter, which, therefore, had little effect on their planning.

John's (1991) geography example seems the more likely scenario for teachers of many school subjects in American schools. Summarizing the longitudinal Teacher Education and Learning to Teach (TELT) study conducted by researchers at Michigan State University, McDiarmid (in press) concluded: "Elementary and high school teachers frequently lack connected, conceptual understandings of the subject matters they are expected to teach" (p. 1). Further, they have few opportunities, even in college or in teacher education programs, to develop that connected understanding of their subject matter.

Knowledge of subject matter, in combination with understandings of how students learn the subject matter combines to form what is called pedagogical content knowledge (Shulman, 1987). A number of case studies have examined this form of knowledge in teachers, and its effects on classroom teaching (e.g., Grossman, 1990; Gudmundsdottir, 1991; Munby and Russell, 1992; Wilson and Wineburg, 1988).

Pedagogical Knowledge: Another type of formal knowledge that teachers experience is pedagogical knowledge, most often initially encountered in preservice teacher education courses taken prior to student teaching. Pedagogical knowledge relates to the practice of teaching and includes such topics as classroom management, models of teaching, and classroom environment. As mentioned earlier, experiences with formal pedagogical knowledge is seen as the least powerful factor affecting beliefs and conceptions of

teaching and the teacher role. This does not mean that the influence is negligible, however. Several sets of case studies examined the nature of pedagogical content knowledge and teaching actions on the part of subject matter specialists who have and have not experienced formal pedagogical knowledge (Grossman, 1990; Grossman and Richert, 1988). These studies indicate considerable differences between pedagogically- and non-pedagogically-educated teachers in terms of their pedagogical content knowledge and classroom actions. Clift (1987) found significant differences in the beliefs about teaching and learning between English majors not interested in teaching, and English majors who had completed their student teaching in a certification program. The English majors saw the teacher as the authority on the interpretation of literature, whereas the future teachers were much more constructivist.

Crow (1987) conducted a case study of the formation of teacher role identity of preservice teachers. Using a life history approach, she found that models of former teachers and early childhood family experiences strongly influence teacher role identity. However, she also concluded that while there was no evidence of the influence of formal pedagogical knowledge in the first several months of teaching practice, there may be a "lag time", at which point the cognitive changes that took place during formal pedagogical training find their way into teaching practice (Crow, 1988). Featherstone (1993) also suggested that there may be a "sleeper effect" of teacher education: "the voices of teacher educators sometimes echo forward into these first years of teaching; the novice sometimes rehearses, with a new ear, propositions which seemed to make little impact on them at the time they were offered" (p. 110).

Summary. Studies of the origins of teachers' beliefs indicate that many different life experiences contribute to the formation of strong and enduring beliefs about teaching and learning. Within a constructivist learning and teaching framework, these beliefs should be surfaced and acknowledged during the teacher education program if the program is to make a difference in the deep structure of knowledge and beliefs held by the students.

Methodology for Examining Attitudes and Beliefs

The measurement of attitudes and beliefs in teaching and teacher education have undergone considerable change, reflecting the paradigmatic shift from positivist research strategies to a more hermeneutic approach (Doyle, 1990). The teacher attitude research of the mid-century attempted to develop predictive understandings of the relationships between teacher attitudes and behaviors so that attitude inventories could be used in the selection of teachers. Most of this research was large scale and employed paper-and-pencil, multiple choice attitude surveys. More recent research on teacher beliefs reflects a shift toward qualitative methodology and the attempt to understand how teachers make sense of the classroom. Interviews and observations are the two most widely employed data gathering techniques in this research.

The Minnesota Teacher Attitude Inventory (MTAI), a popular and representative measure of teacher attitudes, was used in many studies of preservice education students and inservice teachers (see Khan and Weiss, 1973). The MTAI, a likert scale, was designed to differentiate among teachers in terms of their relationships with students. The major attitude factors that were thought to distinguish between good and bad teachers were understanding, democratic values versus harsh, authoritarian values and progressive versus traditional orientations. The form of measurement and the research questions of interest led to large-scale correlational studies that examined differences in attitudes between elementary and secondary students and teachers, and males and females. Semi-experimental studies, using various likert attitude measures also examined the effects of student teaching and other teacher education activities on education students' attitudes.

The purposes of a number of measures were disguised for the subjects who were not aware that attitudes were being measured. An example is the Thematic Apperception Test, in which the subject writes (or talks) about an interpretation of pictures representing ambiguous scenes. These measures were summarized by Campbell (1967) but were not used as much in the teaching and teacher education literature as were the various attitude inventories.

For a number of years, beliefs were also measured by multiple-choice tests. For example, Wehling and Charters (1969), who defined attitudes as a complex organization of beliefs, developed a set of questionnaires of teacher beliefs. They then used factor analytic techniques to identify dimensions thought to characterize teachers' attitudes.

Current thinking in the measurement of teachers' beliefs is that multiple-choice measures are too constraining. Multiple-choice tests of beliefs are derived from the scholarly literature and are predetermined by the researcher. These theories may not map on to teachers' beliefs (Hoffman and Kugle, 1982). For example, Schmidt and Kennedy (1990) found that experienced teachers' theories are highly eclectic. An individual teacher can hold beliefs that are at both ends of a particular scholarly educational controversy. Pinnegar and Carter (1990) found that teachers' theories of learning did not match learning theories as explicated in three current educational psychology texts. Further, teachers' beliefs combine elements that are considered separately in the scholarly literature. Duffy (1981) and O'Brien and Norton (1991), for example, found that teachers' theories of reading were often conjoined with theories of classroom management. Thus, predetermined beliefs that are included in multiple-choice measures often do not validly represent teachers' beliefs.

More recently, qualitative methodologies, many borrowed from anthropology, have been used to examine teachers' beliefs, inductively. While several researchers advocate the determination of beliefs through observation alone (Thompson, 1992), most researchers use interviews in combination with observations. The goal of these studies is not to develop predictive indicators of teacher effectiveness but to understand the nature of

teachers' thinking and world view. More structured approaches, such as the Kelly Repertory Grid (KRG) (Kelly, 1955), and the Heuristic Elicitation Methodology (HEM) (Steffle, Reich, and McClaran, 1971) have been used in studies with large number of teacher education students or teachers. For example, Corporaal (1991) examined teachers conceptions of "good teaching" using the repertory grid technique, and Eisenhart, Shrum, Harding and Cuthbert (1988) employed the HEM technique in their study of preservice student teachers' beliefs about teaching.

Less structured approaches involve extensive interviewing and/or practical arguments with individual teachers and students in which beliefs are determined from the transcription of the interviews (see, for example, Richardson, Anders, Tidwell, & Lloyd, 1991). Elicitation of metaphors has also been used to determine teacher beliefs (for example, Munby, 1986; Russell, Munby, Spafford, & Johnston, 1988; Tobin & Jakubowski, 1990); as have narrative semiotic analyses (Kagan, 1991) and concept maps in which students and/or researchers develop diagrams of student thinking on a particular topic (Morine-Dershimer, 1989; Tochon, 1990). Kagan (1990) summarized and critiqued many of these procedures and concluded that multiple measures should be used in determining teachers' cognitions.

A significant trend in hermeneutic studies of teachers' beliefs is the use of the data for purposes of teacher change as well as research. Bullough (1993), for example, used journals and portfolios to learn about preservice teacher development, at the same time as the tasks of writing these materials contributed to beginning teacher development. In the Reading Instruction Study, Anders and Richardson (1991) conducted belief interviews with teachers who were participating in staff development on the teaching of reading comprehension. During the first session Anders and Richardson, who were the staff developers and researchers, presented the teachers with transcriptions of their interviews, with their empirical premises highlighted. Many of the teachers later acknowledged that the interview itself, in combination with reading the transcription, significantly affected their approach to reflection and change. These and other trends in this area of research have led to the need to reconceptualize the nature of research and practice, and to develop new understandings of warrantability in the findings of such research. These issues will be addressed in the conclusions section of this chapter.

FINDINGS

This section summarizes the findings of the studies on teachers' beliefs and attitudes, beginning with a description of the beliefs of students who are entering their preservice programs. Studies examining the influence of beliefs on learning to teach are then reviewed, followed by descriptions of studies examining the effects of certification and staff development programs on preservice students' and inservice teachers' beliefs and practices.

The Attitudes and Beliefs of Entering Preservice Students

A common thread throughout the research on the attitudes and values of entering preservice students is the finding that these students exhibit optimism and confidence, public service orientation, and a general belief that experience is the best teacher. These results are consistent across time (1950's--late 1990's), methodology (large-scale attitude survey or qualitative case study), and nations. While some of the studies have examined the beliefs and attitudes of preservice students in general, others have explored differences among identifiable groups of students.

Entering Attitudes and Beliefs. The possibility of engaging in public service and helping children are strong motivators for entering preservice students (Book & Freeman, 1986; Pigge & Marso, 1988). This finding has been replicated in other countries such as Malaysia (Kam, 1990) and Israel (Ben-Peretz, 1990). Extrinsic rewards, such as salary, play a much smaller role in the decision to enter teaching, and in the motivation to improve teaching practice (Mitchell, Ortiz, & Mitchell, 1987).

Preservice students' philosophies of teaching are loosely formulated (Buchmann & Schwille, 1983); for example, in a study of prospective teachers' perceptions about ethnicity and gender, Avery and Walker (1993) found that the students' explanations for gender and ethnic differences in achievement were simplistic in nature. In fact, as described in the results of the Teacher Education and Learning to Teach (TELT) research program, preservice students believe that categorical differences among students--ethnicity, gender, class--do not make a difference in teaching. However, they believe that students' personalities do affect teaching (National Center for Research on Teacher Education, 1991). In fact, Gomez and Tabachnick (1992) suggested that the views of the prospective teachers in their sample toward children of color and from low-income families would limit the children's opportunity to learn and prosper from schooling. This view of ethnicity, class and learning may relate to the preservice students' limited background. Surveys of teacher education faculty suggest that preservice students have had little contact with minorities, are parochial, and have not travelled very much (Zimpher & Ashburn, 1992).

Entering students hold strong images of teachers, both negative and positive, and these images strongly influence how they approach their teacher education program (Britzman 1991; Calderhead & Robson, 1991). These students are, by and large, highly confident of their own abilities as teachers (Book & Freeman, 1986); in fact, Weinstein (1988 & 1989) suggested that they are "unrealistically optimistic". They believe that there is not much they can learn in preservice teacher education, except during their student teaching experiences (Book, Byers, & Freeman, 1983) and they hold strong beliefs that learning to teach can only be accomplished through experience (Richardson-Koehler, 1988).

The conceptions of schooling held by entering students are that the teacher hands knowledge to students, and learning involves memorizing the content of the curriculum (Black & Ammon, 1992; McDiarmid, 1990). Conceptions of the content of the curriculum reflects a positivistic view as described in Erickson and MacKinnon's (1991)

study of secondary science teachers and by Civil (1993) in her study of elementary preservice students in her mathematics course. This conception suggests that one correct answer exists for every question, and that the teacher's responsibility is to get all students to learn the propositions presented to them or develop strategies for obtaining the correct answers. Entering preservice students often believe that some elementary and secondary students are not capable of learning basic skills in reading and math (Brousseau & Freeman, 1988).

Entering Beliefs by Categories of Students. A number of studies have examined differences in preservice students' beliefs depending on whether they are elementary or secondary majors, male or female, and traditional or nontraditional students. Book and Freeman (1986), for example, found that elementary preservice students were more child-oriented than secondary majors who were more interested in their subject-matter content (see, also, Kile, 1993; Newfeld, 1974). Elementary preservice majors were more tolerant toward behavior problems in students than secondary majors (Khan & Weiss, 1973); and, in a study of preservice students in Israel, secondary majors were higher in self-concept than elementary majors (Ben-Peretz, 1990). Silverman and Creswell (1982) found differences in cognitive developmental level between elementary and secondary majors in terms of their preferences for mathematical consistency in a mathematics system. They found that elementary and secondary majors exhibited different cognitive levels of development in mathematics and that elementary majors were more anxious about the subject. In Avery and Walker's (1993) study of teachers' beliefs about ethnic and gender differences in achievement, secondary majors located the rationale for differences in a broader societal context and their explanations were more complex than those of elementary majors.

Differences in entering beliefs by gender seem fewer in the literature than those between elementary and secondary majors, although there is a correlation between level of schooling and gender; a higher percentage of females teach at the elementary than at the secondary level. In their summary of the literature on teachers' attitudes, Khan and Weiss (1973) concluded that elementary and female teachers held more positive attitudes toward students than secondary and male teachers. Book and Freeman (1986) found males more likely than females to state that they selected teaching as a career because they had been unsuccessful in their first subject matter major.

A relatively new interest in research on initial conceptions involves non-traditional students--those students who have had a gap in their formal educational studies, either having pursued another career or homemaking. Powell and Birrell (1992) found that many of the non-traditional students in their study were parents and they framed their conceptions of teaching around their experiences with their own children. Whereas traditional students stated that their conceptions of teaching were related strongly to former schooling experiences, nontraditional students' conceptions were grounded in their former work experiences. Kile (1993) examined differences in conceptions and beliefs of a group of 22 elementary and secondary majors who also varied in terms of

traditional and non-traditional status. He found differences in traditional and nontraditional students' beliefs about teaching and learning as they entered the program. Non-traditional students appeared to understand the complexities of teaching and learning more than the traditional students. For example, traditional students believed that they could determine whether or not students were learning from their classroom behavior: if they looked like they were enjoying the activity, they were learning what the teachers wanted them to learn. Non-traditional students believed that student learning could only be determined through an examination of student work. As compared to non-traditional students, traditional students were surprised at the academic diversity in classrooms and did not indicate a need to adapt instruction and materials for different students.

A strand of the research on differences in traditional and non-traditional students focusses on second-career teachers. Crow, Levine, and Nager (1990), for example, studied 13 students who were switching careers and entering a teacher certification program. They found that these students could be divided into three groups in terms of their motivation to switch careers and their approaches to transitions. Homemakers were people who had always dreamed of becoming teachers but had ended up doing something else. The converted were those who had successful careers, but entered teaching because of a major life change such as the birth of a child. The unconverted were those who had achieved high status in their previous occupations, but became dissatisfied with an element of it, and expressed a vague interest in education. The first two categories of students successfully negotiated the transition into teaching, but the third group did not. Novak and Knowles (1992), whose sample of preservice students pursuing their second career resembled Crow, Levine, and Nager's (1990) second variety, the converted, found that their past occupational experiences strongly affected their beliefs about teaching and learning.

These studies suggest that the beliefs about teaching and learning that preservice students bring with them to teacher education programs are powerful and relate to their previous life and schooling experiences. They also suggest, as has Brookhart and Freeman (1992), that entering candidates should not be considered as an undifferentiated group, but that attention should be paid to individual and group differences in conceptions and developmental levels. The most powerful group differences appear to be those between traditional and non-traditional students, and elementary and secondary majors.

The Influence of Beliefs In Learning to Teach and Teaching

While knowledge of entering teacher education students' beliefs is interesting, it becomes useful to the teacher education process only through an understanding of the relationship between these beliefs and learning to teach. A number of studies, conducted at both the preservice and inservice levels, have explored the role of teachers' beliefs in learning to teach and classroom practice. These studies point to the importance of understanding students' and teachers' beliefs when engaging with them

in a change process.

Preservice Teachers. Many current studies of the relationship between preservice students' beliefs and learning to teach take place within programs that attempt to advance reflection and constructivist philosophies. For example, in a study that investigated preservice students' entering perspectives and their learning to teach processes, Ross and colleagues (Ross, Johnson, & Smith, 1991) examined students' perspectives and learning in their PROTEACH teacher education program at the University of Florida, designed to prepare teachers as reflective practitioners. They found a number of factors that influence how and what their students learned in the preservice program, but the most important were the students' entering perspectives on learning and teaching.

Holt-Reynolds (1992) provided an example of the effects of entering preservice students' beliefs on the processing of the material presented in a content-area reading course. In an interview with nine students, she found that they brought with them beliefs about teaching and learning derived through their past life experiences. These beliefs contradicted the constructivist approaches that were being promoted by the professor, reducing the students' receptiveness to the professor's ideas. MacKinnon and Erickson (1992) also found that the positivist views of scientific knowledge held by a student teacher, Rosie, led to her strong verbal domination of the classroom. She had great difficulty understanding her constructivist-oriented cooperating teacher's critique of her teaching.

Hollingsworth (1989) examined the entering beliefs of 14 preservice students in a program designed to develop a constructivist perspective on teaching and learning. A number of the students held strong beliefs that the role of the teacher is to hand knowledge to students in a direct-instruction manner. At the end of the program, while all students believed that students construct meaning, some held this belief in much greater depth than others.

In a study of student teachers within a teacher education program that encourages reflective teaching, Korthagen (1988) found that the student teachers varied in terms of their learning orientations from those who learn within an internal orientation (reflection) to those who have an external orientation (just tell me what I should do). These orientations, Korthagen suggested, may relate to their beliefs and implicit theories about how students learn. Many students, whose approaches were not reflective and therefore not in tune with the orientations represented in the program, dropped out after one year, suggesting to Korthagen that teacher educators should understand both their students' learning orientations, and those of the program.

Crow, Levine, and Nager (1990) also found a group of students in their career changers sample who tended to grow less and less interested in teaching as the program progressed. Their third category of career changing students, the unconverted, maintained business values and beliefs during preservice training. They were product-

oriented and were not happy with a group orientation.

Several studies have examined the images of self held by student teachers and the effect of these images on learning to teach, particularly during the student teaching experience. In a collaborative case study of two student teachers, Clift, Meng, and Eggerding (1994) found that one student teacher's image of self as superior student interfered in her communication with the cooperating teacher. In a study of 27 student teachers, Calderhead (1988) found that they learned very different things from their teaching experience, depending, in part, on their conceptions of professional learning and their own roles as student teachers.

Practicing Teachers. Learning to teach at the inservice level involves the development of what has been called practical knowledge, which is gained through experience and is often tacit (Fenstermacher, 1994). Several recent longitudinal studies examined the learning to teach process to explicate how practical knowledge is acquired. However, prior to a discussion of these studies, a foundational premise in the argument that beliefs are important in the learning to teach process needs to be addressed. This premise suggests a relationship between beliefs and practices.

Grossman, Wilson, and Shulman (1989) suggested that "teachers' beliefs about the subject matter, including orientation toward the subject matter, contribute to the ways in which teachers think about their subject matter and the choices they make in their teaching" (p. 27), an idea born out in a growing number of studies. For example, in an exploration of teacher beliefs and practices in reading comprehension, Richardson, Anders, Tidwell, and Lloyd (1991) were able to predict how a sample of teachers taught reading comprehension on the basis of analyses of extensive interviews of the teachers' beliefs about teaching and learning. Peterson, Fennema, Carpenter, and Loef (1989) found that teachers with a more cognitive perspective taught mathematics differently than those with a less cognitive perspective. The former taught more word problems, and their students did better on achievement tests than the latter group of teachers. Wilson and Wineburg (1988) studied four history teachers and found that their subject matter knowledge and beliefs about the nature of history strongly affected their teaching of the subject.

An understanding of the relationship between beliefs and learning to teach, however, would be enhanced by longitudinal studies of teachers who move from preservice teacher education into teaching practice. Hugh Munby and Tom Russell at Queens University, Ontario, Canada, have conducted a number of these studies. In a chapter that summarizes some of the studies, Russell (1988) described the development of teachers' knowledge through an examination of their metaphors (see also Munby, 1986, 1987). Russell concluded that "the image one holds of the relationship between theory and practice can significantly influence understanding of the personal learning process at every stage in one's development of the professional knowledge of teaching" (1988, p. 15). Munby and Russell (1992) also examined how conceptions of subject matter affect learning to teach in the early years of teaching. They concluded that learning by

experience involves the development of new frames (Schön, 1983) and that some students are more predisposed than others to reframe their conceptions of practice.

Changes in Beliefs and Attitudes

In the last ten years, research on teaching and teacher education has shifted from a focus on teacher behaviors and skills to an emphasis on teacher thought processes. In fact, an examination of the goals of teacher education as well as national standards programs (e.g., Interstate New Teacher Assessment and Support Consortium, 1993) reveals a considerable deemphasis of skills and behaviors in favor of an emphasis on the formation or transformation of teacher thinking and reflective processes, dispositions, knowledge, and beliefs. This has led to numerous studies that examine changes in beliefs at the preservice and inservice levels, both as a natural process that accompanies the acquisition of teaching experience or as an outcome of systematic teacher education programs.

Perhaps the greatest controversy in the teacher change literature relates to the difficulty in changing beliefs and practices. For some scholars, beliefs are thought to be extremely difficult, if not impossible, to change. This apparent difficulty is often used as an explanation of the sense that teachers are recalcitrant and do not like to change. Another group of scholars and educators, however, are optimistic that teachers and teacher education students can change, in fact, often do change their beliefs and practices and that programs can help them do so in significant and worthwhile directions.

The studies described below are grouped in two categories: (a) those that examine changes in belief and attitude as a general outcome of socialization and teaching experience and (b) those that examine changes in belief as an outcome of specific teacher education or staff development programs.

Changes in Beliefs Through Socialization and Experience. Much of the work on socialization has focussed on student teachers, since this period represents the transition from formal pedagogical education into teaching. Of considerable concern to teacher educators is student teachers' change in attitude concerning the role of the teacher vis-a-vis the students. The change in attitude involves what Hoy (1967) described as moving from the humanistic view often stressed in teacher education programs to becoming more custodial or seeing students less as friends and individuals and more as students to be controlled by the authoritarian teacher. Cochran-Smith (1991) suggested two rationales for the findings that student teachers become less humanistic and more custodial. One suggests that student teachers are affected by the conservative press of schooling; and the second is related to the students' years of experience in schools that powerfully affect their beliefs. While they may express humanistic views in their formal pedagogical classes at the university, when the student teachers move into the classroom, their preexisting beliefs prevail. Thus, the formal teacher education program does little to affect the beliefs that they bring to the program.

Hoy and Woolfolk (1990) reexamined Hoy's (1967) findings by comparing changes in the pupil control ideology of student teachers with those who were taking a beginning Educational Psychology course. They found, again, that the custodial ideology increased for those students during student teaching. The authors attribute the changes in ideology to socialization within the context of schooling. However, Tabachnick and Zeichner (1984) suggested that student teachers may be able to resist changing their perspectives to become more custodial if the teacher preparation programs they attend are inquiry-oriented, and their cooperating teachers' perspectives are humanistic.

Brousseau, Book, and Byers (1988) examined the beliefs of teachers related to the culture of the school among four groups of teachers differing in classroom experience. They found that the more experienced teachers were likely to believe that their students were trustworthy. This suggests that while students teachers become more custodial, over time and with experience, they eventually become less custodial. However, they also found that, over time, experienced teachers' sense of efficacy decreased.

Experience in the classroom also is thought to shape beliefs and practical knowledge; in fact, a teacher may only acquire practical knowledge through classroom experience (Carter, 1990; Fenstermacher, 1994). Black and Ammon (1992), for example, posited a developmental stage theory of conceptions concerning the nature of learning that develops with classroom experience. Through experience, teachers move from behaviorist conceptions toward more constructivist conceptions that are differentiated and integrated. John (1991) examined the perspectives on planning of five student teachers and how these changed with experience in the classroom. The changes were quite idiosyncratic and related to the initial beliefs that the students brought into their teacher education program.

Bullough, Knowles, and Crow (1992) also suggested that teachers' personal identities, as examined through their metaphors, develop and change with teaching experience. Their longitudinal study of a teacher, Kerrie, revealed that she initially thought of teaching, metaphorically, as teacher as mother; later on, she developed a sense of teaching, non-metaphorically, as its own particular role (Bullough & Knowles, 1991). Bullough & Baughman (1993) concluded that Kerrie's new beliefs "grew out of her life experience generally and her teaching experience specifically" (p. 93).

Changes Attributed to Teacher Education Programs. Some of the more exciting work in this field is research that assesses the effects of preservice and inservice teacher education and staff development programs on preservice students' and inservice teachers' beliefs. The results are complex. Some programs affect change and others do not; some programs affect certain types of students and not others; and some beliefs are more difficult to change than others. An analysis of this work begins to provide an understanding of the nature of programs that seem to affect change in a positive direction and the types of students who are affected.

Preservice: A number of studies have examined conceptual change and changes in beliefs in preservice teacher education students. Hollingsworth (1989) explored changes in conceptions of learning within a constructivist preservice teacher education program. She found that student teachers' initial beliefs affected the changes in beliefs that occurred during the program and that students who were able to confront their beliefs developed deeper knowledge. Belief confrontation was aided by placing student teachers in classrooms in which the cooperating teachers held contrasting viewpoints. Feiman-Nemser, McDiarmid, Melnick, and Parker (1989) examined conceptual change in 91 students enrolled in an introductory course designed to help students examine conceptions of teaching and learning. They found that the students' conceptions changed in four areas: (a) the nature of teaching was more complex than they had initially thought it to be; (b) they began to realize that there is a relationship between teaching and learning; (c) they became aware of the school and classroom contexts of teaching; and (d) their views of the nature of teacher knowledge expanded considerably.

In many cases, the studies indicate that some students change and others do not; or that they change in different ways. Morine-Dersheimer (1989), for example, used concept maps to assess eight students' changes in concepts in a course in which they practiced models of teaching. She found that the students changed their conceptions of both planning and content and found differences in undergraduate seniors and M.A. students. The undergraduates used their concept maps to look back at the lessons they had taught, and the M.A. students looked to future possibilities. Richardson and Kile (1992) also looked at differences in changes in beliefs of traditional and nontraditional students enrolled in a beginning teacher education course, in which students analyzed videocases three times during the semester. They found that the students' theories of learning shifted from traditional (teacher as knowledge giver and student as passive recipient) to a more open, active theory of learning. In a content analysis of the written work, they found that the non-traditional students' initial orientations to the videocases were focussed on the teachers, and the traditional students were concerned with the students (see, also, Serow, Eaker, & Forrest, 1994). However, by the end of the class, the traditional students' orientations toward the teacher resembled those of the non-traditional students. Ben-Peretz (1990) summarized research conducted in Israel that suggested that more dogmatic students do not change toward a more progressive orientation to education, whereas the less dogmatic students do.

Korthagen (1988) found that students who came to a reflective teacher education program with a reflective orientation did well in the program. Those who did not have a reflective orientation either dropped out or changed orientations. However, Korthagen warned that the changes measured in such studies may be surface-level; these students may "simulate learning behaviour (quasi-adaptation to the conceptions of learning of the educators)" (p. 48). Bolin (1990) also found that not all students benefit from a reflective teacher education program. In his case study of a student teacher, Bolin found that he did not become reflective; he seemed to resist developing reflective capacities. In fact, Tickle (1991) conducted research that suggests that novice teachers

do not begin to develop reflective abilities until they have started teaching.

A number of studies indicate that the particular teacher education program being studied (and in which the researchers are often working as teacher educators) had little effect on students' beliefs and conceptions. Most of these studies involved programs designed to help preservice students become more reflective and/or to develop a constructivist learning theory. Zeichner, Tabachnick, and Densmore (1987) used classroom vignettes before and after a reflective student teaching experience to examine the effects of socialization on student teachers' beliefs and perspectives. They found that the student teachers' perspectives tended to solidify rather than change during their student teaching experience. In a case study of two preservice students, Olson (1993) found that students did not change their beliefs and assumptions about good teaching during the course of their teacher education program. Her explanation was that the students were not encouraged to confront their beliefs, and therefore continued to hold them. McDiarmid (1992) examined changes in teacher trainee's beliefs following a series of presentations on multicultural education. Few changes were noted, and McDiarmid suggested that the content of the course confused the students. McDiarmid (1990) also studied changes in the conceptions of preservice students in a class which was designed to change students' misconceptions. While he found some changes in conceptions, he stated that he remains skeptical about the changes. Preservice students' beliefs, he believes, are extremely difficult to change.

A number of other scholars question the possibilities of changing preservice teachers' conceptions in one course, or even one program. Often conducting research on their own teacher education classes and programs, they found that many of their students' beliefs and conceptions did not shift in the hoped-for directions (Ball, 1989; Civil, 1993; Simon & Mazza, 1993). Feiman-Nemser and Buchmann (1989) presented a case study of a student who:

combined past experience with ideas she encountered in formal preparation in a way that reinforced earlier beliefs and reversed the intended message of her assigned readings on the inequitable distribution of school knowledge (p. 371).

Wilcox, Schram, Lappan, and Lanier (1991) found that students in their program designed to develop preservice teachers' pedagogical content knowledge in math actually did change their thinking about mathematics for themselves. However, this change did not encompass their beliefs about how the elementary math curriculum should be presented. For these students, their beliefs about the school curriculum remained positivist rather than constructivist.

Inservice: Recent studies of the effects of inservice programs on teachers' changes in beliefs are quite encouraging. This may be because of the nature of the staff development programs that focus on the teachers' beliefs and life histories. For example, Tobin (1990) found that metaphors reveal teachers' beliefs and an

examination of the metaphors may be used to change beliefs and influence practice. In staff development programs that focused on teacher metaphors, teachers adopted new metaphors, and teaching practices changed along with the metaphors.

Barnett and Sather (1992) worked with a group of teachers to examine the notion of students' misconceptions in mathematics. The staff development consisted of extensive group case discussions in which teachers revealed their beliefs. Sixteen of the 20 teachers changed their beliefs toward a more constructivist conception of teaching. Senger (1992) worked with five mathematics teachers in a constructivist process that involved group elements and individual conversations around actions in their classrooms, and found that most of the teachers changed their conceptions of mathematics and teaching mathematics. Peterman (1993) participated with a group of teachers in a similar manner around notions of concept development and also found that the teacher with whom she was conducting a case study developed new understandings about teaching and learning.

Kelchtermans (1993) collected career stories of ten experienced Flemish elementary school teachers. This process resulted in the reconstruction of professional self and a subjective educational theory. Freeman (1993) traced changes in the language used by two foreign language teachers enrolled in MAT programs. He found that changes in conceptions of teaching accompanied the introduction into their vocabulary of current professional concepts and premises.

Of course, one wonders whether these changes in beliefs and conceptions affect teachers' practices. In a long term study of teachers' beliefs and practices, Richardson (in press-b) and colleagues examined the effects of a practical argument staff development process on changes in teachers' beliefs and practices in teaching reading comprehension, as well as the effects on student achievement. This practical argument process (Fenstermacher, 1994) consisted of group and individual elements designed to help teachers examine the empirical, value, and situational premises that relate to their classroom actions, and consider alternative premises and practices that are brought into the conversations by the staff developers and colleagues. The staff development process focussed on teachers' beliefs about teaching and learning reading comprehension. They found that teachers changed their beliefs (Richardson, 1999-a) as well as their practices in teaching reading comprehension (Tidwell & Mitchell, 1994). Further, using an achievement measure that relates to constructivist views of the reading comprehension process (Valencia, Pearson, Reeve, & Shanahan, 1988), they found that the students' reading achievement in the participating teachers' classrooms improved in comparison to students whose teachers had not yet participated in the process (Bos and Anders, 1994). In a follow-up study of the teachers two years later, Valdez (1992) found that the teachers' beliefs had continued to change. In addition, they had developed an improvement orientation and felt more empowered.

Marx et al (1994) presented case studies of four middle school teachers who were involved in a change process related to project-based science instruction and

collaborative conversation. The teachers were involved in a staff development process that included cycles of collaboration, enactment and reflection (Blumenfeld, Kracjik, Marx, & Soloway, 1994). The research team found that changes in beliefs and practices did occur, and describe how these changes were influenced by context and the teachers' existing beliefs and knowledge.

A remaining question concerns whether major changes in beliefs in one subject matter transfer to another subject. For example, if, during a staff development program, a teachers' beliefs about mathematics teaching and learning shift in a constructivist direction, will this influence her teaching of reading? Two studies have produced conflicting evidence of such transfer, leading to the conclusion that this is a ripe area for more research. Wood, Cobb, and Yaker (1991) worked with a teacher in changing the nature of mathematics teaching in her classroom. She changed her understandings of mathematics teaching and learning and her instructional practices in a constructivist direction. However, her conceptions of and practices in reading did not change. On the other hand, Ball and Rundquist (1993) found that Rundquist's changes in beliefs and practices in the teaching of mathematics transferred to other subjects, particularly science and language arts.

The conclusion from these studies is that staff development that focusses, in part, on teacher beliefs are important in changing instructional practices. This view is buttressed by several studies that found that teachers participating in staff development programs that advocated and taught about a particular teaching method accepted the new practices only if their beliefs matched the underlying assumptions of the new teaching method (Rich, 1990; Sparks, 1988).

Summary of Change Studies. The research on changes in teachers' beliefs suggests that the context of schooling and classroom experiences exert powerful influences on teachers' developing beliefs and knowledge. It also implies that, depending on the staff development program, facilitating meaningful change in inservice teachers--that is change in both beliefs and practice--may be easier than promoting changes in beliefs at the preservice level.

The research on changing beliefs in staff development programs indicates that programs that approach learning to teach in a constructivist manner are successful in engaging their participants in examining and changing their beliefs and practices. An analysis of successful constructivist staff development programs yields the following characteristics (see also, Richardson and Hamilton, 1994):

1. The participating teachers' beliefs and understandings are a major element of the content of the staff development process.
2. The goal of the process is not to introduce a specific method or curriculum to be implemented by the teachers. Instead, the goal is to facilitate conversations that allow the participants to understand their own beliefs

and practices, consider alternatives, and experiment with new ones.

3. Conversations about beliefs and practices are brought together with considerations of the moral dimensions of teaching and schooling.
4. During the course of the process, the discussions among staff developer and teachers move away from domination by the staff developer toward teacher control of the agenda, process and content.
5. The staff developer is knowledgeable about current research and practice; however, he or she is not seen as the only "expert". A collaborative process is facilitated that allows the teachers to recognize and value their own expertise.
6. The staff development process is long-term, and it is expected that teachers change at very different rates.

Preservice teacher education, however, poses challenges for those interested in changing students' beliefs and conceptions about teaching. The complications in preservice teacher education are the lack of practical knowledge on the part of the students and the difficulty, if not impossibility, in helping students tie their beliefs to teaching practices. The beliefs they hold when they enter their programs have not been tested in the classroom, and they are not aware of the role that these beliefs will take in their actions as teachers. Perceived changes in preservice students' beliefs and conceptions may be transitory or artificial and turn out not to drive their actions when they become teachers. As Korthagen (1988) suggested, students are good at figuring out what the teacher educator wants to hear.

Nonetheless, a number of the characteristics listed for successful constructivist staff development programs could be replicated in preservice teacher education programs, particularly those related to the exploration of the students' own beliefs as well as alternative beliefs and practices. In addition, preservice students should have the opportunity to engage extensively in the active exploration of classroom contexts--in written and video-cases, discussions with practicing teachers, and field work. This process may promote the first stages in the acquisition of practical knowledge.

CONCLUSIONS

The research on the role of attitudes and beliefs in learning to teach presents a picture of preservice students who enter their initial teacher preparation program with strong, or perhaps even central, beliefs (Rokeach, 1968) about teaching, learning, subject matter, and students. They hold images of teachers--both negative and positive--formed during their experiences as students. The entering preservice students are not, however, an undifferentiated group. Differences in entering beliefs have been observed between elementary and secondary majors, traditional and nontraditional students, and males

and females.

Except for the student teaching element, preservice teacher education seems a weak intervention. It is sandwiched between two powerful forces: previous life history, particularly that related to being a student, and classroom experience as a student teacher and teacher. Experience as a student is important in setting images of teaching that drive initial classroom practice, and experience as a teacher is the only way to develop the practical knowledge that eventually makes routine at least some aspects of classroom practice and provides alternative approaches when faced with dilemmas.

There is, however, some indication that the academic elements of preservice teacher education have an impact on teachers, although perhaps not recognized by them. Several studies highlight differences between teachers who went through pedagogical education and those who did not (e.g., Grossman, 1990), and others suggest a lag time between when teachers start their career and when conceptions acquired in preservice education begin to make an impact on practice (Crow, 1987). Further, a growing number of studies point to changes in conceptions and beliefs on the basis of specific teacher education classes. Nonetheless, these changes do not appear to impact teaching practice in as powerful a way as life experiences and teaching experience; leading, perhaps, to the skepticism in the possibilities of changing beliefs expressed by Ball (1989) and McDiarmid (1990).

Changes in conceptions and beliefs may be easier to facilitate at the inservice than at the preservice level. Certain forms of staff development programs help teachers examine and assess their practical knowledge and beliefs and tie that knowledge to their classroom practices. The major factor in the difference in effects of preservice vs. inservice programs would appear to be experience as a classroom teacher. The deep practical knowledge held by experienced teachers is closely tied to action, and it is this action that is understood by teachers to be the focus of change.

This conception of the learning to teach process does not lead, directly, to prescriptions for teacher education practice. In fact it leaves many questions unanswered. The following are conceptual and research issues derived from an analysis of this work.

Conceptual Issue: Is Change Improvement?

Current research on teachers' and students' beliefs stems from the European hermeneutic tradition of social theorists such as Hans-George Gadamer (see McCarthy, 1981, Chapter 3). The purpose of contemporary hermeneutic research is to explore the meaning constructed by individuals operating within a cultural tradition. It is understood that the person (researcher) who is attempting to understand how another person constructs meaning is actually constructing an interpretation of the other's interpretation. This is called the double hermeneutic by Giddens (1976). Thus, a number of scholars suggest that the narrative that elucidates a teacher's understandings should be co-constructed--by the researcher and the teacher (Clandinin & Connelly, 1991; Schön,

1991).

The approach to research employed in the hermeneutic studies of teachers' beliefs and conceptions is relativistic. That is, nothing within the contemporary hermeneutic social science tradition provides for the possibility of a normative conception of teaching or a critique of the picture that emerges. As Habermas (1984) pointed out, this approach does not allow for the identification of distortions in the understandings held by the participants. Beliefs and conceptions that are interpreted by researchers are neutral and, without a normative conception of teaching, change in beliefs can be considered no more than that--change, not learning or improvement.

However, many educational researchers are interested in improvement and learning. But within the hermeneutic research tradition, researchers' normative conceptions are often hidden, or, at least, are not revealed. It may be understood by many readers of a particular hermeneutic study that certain beliefs about learning and teaching on the part of preservice and inservice teachers are not conducive to teaching in a certain way. But the relationship between the beliefs of the participants in a study and the normative conceptions of the researcher is seldom made explicit. In fact, studies of "change" are often meant to imply change in a positive direction, but the worthiness of the change is seldom discussed. An example of equating change and learning or growth is provided by Kagan (1992), who stated: "*professional growth* is defined as changes over time in the behavior, knowledge, images, beliefs, or perceptions of novice teachers" (p. 131). What is it about the change that makes it growth?

For many, the solution to the dilemma created by research whose goal is educative, but conducted within the hermeneutic tradition, is a move to critical theory (for example, Carr and Kemmis, 1986; Zeichner, 1994). The goal of research in the critical tradition is emancipation through self-reflection, specifically, reflection on the underlying assumptions that drive the system in which one operates. Whether or not research on teachers' beliefs heads in this direction, researchers will have to become more explicit about normative considerations if the research is to become truly educative. Is the change in beliefs and conceptions that took place during a staff development program or a teacher education course a valued change? If so, why? And how do we know?

Research Issues

Beliefs and Actions. During the last decade, research on teaching and teacher education shifted dramatically from a focus on behaviors to an interest in cognition. Researchers have developed interesting and useful ways of examining teacher beliefs and changes in beliefs, conceptions, and cognitive processes, and these are being used to examine the impact of teacher education on what and how teachers and preservice students think. While empirical work has been conducted that links beliefs to practices, we cannot assume that all changes in beliefs translate into changes in practices--and certainly not practices that may be considered worthwhile. In fact, a given teacher belief or conception could support many different practices or no practices at all if the teacher

does not know how to develop or enact a practice that meshes with a new belief (Richardson, Anders, Tidwell, & Lloyd, 1991).

This concern calls for research that examines both beliefs and actions and perhaps further develops the concept of praxis within teaching and teacher education. Further, as educators, we should also be interested in understanding how changes in teachers' beliefs and practices affect student learning. This calls for research that moves beyond descriptions of preservice and inservice teachers' beliefs and conceptions, and toward the observation of teachers' actions in the classroom and their students' developing understandings.

Research on Teacher Educators. This chapter describes a large and robust area of research that focusses on preservice and inservice teachers' beliefs and practices. Missing from this body of research are similar studies of teacher educators. There are exceptions, however, and most represent high-risk activities: teacher educator as researcher studies. These researchers study themselves as teacher educators. Rene Clift studied herself as the teacher educator in a collaborative study of the student teaching process (Clift, Meng & Eggerding, 1994). Sandra Hollingsworth (1990) studied herself as teacher educator and discovered profound changes in her beliefs and practices over time. Margaret Olson (1993) is one of the first to explore the personal practical knowledge of teacher educators in her own teacher education program. And Tom Russell (Munby & Russell, 1993; Russell, 1994) is exploring his own beliefs and practices as he moves from teacher educator to high school physics teacher for one period a day. This field of research will continue to grow, as evidenced by the large number of scholars who have instituted a special interest group on self-study in the American Educational Research Association.

Research on teacher educators' beliefs and practices will be particularly helpful in attempts at reform. I believe, though, that teacher educators as researcher studies--particularly those conducted within a faculty of teacher education--will be particularly helpful in the improvement of teacher education practice.

Research and Practice Designs. Conducting research on change programs that employ the constructivist aspects of teacher education described in the previous section of this chapter requires a unique set of design characteristics. These elements differ from those of the assessments of more traditional forms of teacher education (Sparks & Loucks-Horsley, 1990). The training model assessments generally employ quasi-experimental or process-product designs to assess whether the participating teachers changed classroom behaviors in directions that match the intent of the programs (Cruickshank, Lorish, & Thompson, 1979). Such a research design would violate the nature of the newer constructivist programs. These newer teacher education programs do not have specific behavioral or skills objectives to be attained by all participants. They focus on the participants' beliefs and practices, and each participant develops his or her vision of change.

Richardson and Anders (1994) outlined a set of design characteristics that would be appropriate for examining changes in beliefs and practices in such constructivist teacher education programs. These characteristics include an open-ended, qualitative approach to research, the collection of rich data, and the use of multiple measures of cognition (also see Kagan, 1990). Since the focus of change is decided upon by each teacher and evolves during the process, the constructs of change that are examined also emerge during the course of the study. Most importantly, the research design, as is the staff development process, is collaborative; that is, the teachers and researchers participate as equal colleagues in the process. Data that are collected during the course of the study become part of the content of the teacher education process. For example, a videotape of a staff development session may be shown at the next session to remind participants where the conversation was heading. Transcribed belief interviews may be returned to the participants and the results discussed in the group.

Given the nature of the change process and assumptions of change inherent in the constructivist model, it is questionable whether the use of a control group adds to our understanding of teacher change. This leaves open the question of whether a research design using these characteristics can lead to valid conclusions concerning the effect of the teacher education or staff development process on changes in teachers' thoughts and practices. Without a control group, it may be difficult to attribute the changes observed in individual teachers to the particular process in which they participated. It is, therefore, essential that the changes in beliefs and practices be tied to the nature of the conversations that took place during the process.

These design characteristics constitute a very different approach to research on change, and many of the studies described in this chapter employed elements of them. It is critical that we allow well-conceptualized normative conceptions of teacher education to drive our research rather than permitting traditional research designs to constrain our programs. In this way, teacher educators can conduct research that is truly educative for the reform of schooling in America.

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Beliefs and Attitudes in the Classroom Although few teachers would argue with the premise that there are particular character and personality traits that are more likely to produce good thinking than others, teaching these attitudes is an even bigger challenge than teaching the skills that support them. There are, however, things that teachers can do to help students acquire the attitudes and beliefs that will make them good thinkers. We know that students are likely to learn when they are assessed. But how can a belief or attitude be assessed? At first thought, this seems like an impossible task, assessing a student's flexibility of thinking, empathy, or desire to look for good reasons. Teachers' beliefs play a central role in the process of teacher development; changes in teachers' practices are the result of changes in teachers' beliefs. The notion of teacher change is multidimensional and is triggered both by personal factors as well as by the professional contexts in which teachers work. The most commonly reported core belief centered on the role of grammar in language teaching and the related issue of how grammar should be taught. Out of 38 responses, 25 discussed the importance of grammar for communication, comprehension and clear expression. Others described grammar as the foundation of English language learning or referred to the need for grammar at the early stages of language learning.