Answering the "So What?" Question: What Do These Case Studies Tell Us?

Whenever I engage in research or work with graduate students or talk with other educational researchers, I always ask these questions either explicitly or implicitly: "*So what? So what is the point of this research? So what can we learn from this study?*" In fact, I believe the "So What?" question is very important to ask during the planning, analysis, interpretation, and dissemination stages of every research study. In keeping with my beliefs, I must ask myself these same questions: So what do these teachers' stories have to tell us about teacher development, especially about the development of teachers' thinking in the pedagogical domain? The answer to this question rests with what case studies of these four teachers have to say with regard to these five questions:

- When teachers face the reality of classroom life and become socialized into the profession and school culture, do they lose what they learned during a teacher preparation program?
- How do teachers' pedagogical understandings grow and change over time?
- What influences teachers' thinking about pedagogy? What personal and professional influences in teachers' lives influence their understanding of teaching and learning throughout their careers?
- What do other theories of teacher development have to say about teachers' lives?
- What lessons can be learned from longitudinal case studies of teachers' thinking about pedagogy?

In this chapter, I offer my answers to each of these questions based on a cross-case analysis of the four case studies presented in this book. Obviously my answers are not the only possible answers to these questions, so I challenge you as the reader to think about what makes sense to you based on their stories and given your experiences with teachers in your context. I also invite you to think about what I might have missed or misinterpreted in the case studies presented in this book. I hope that as you read this chapter, you think about how you can apply what you understand about the development of teachers' pedagogical thinking based on the case studies of these teachers. Perhaps the lives of the teachers in this book will have some additional value if you can use what you learn from them in your own teaching and in mentoring other teachers.

To reiterate, this longitudinal study of the personal and professional lives of four educators was undertaken to understand the complex nature of teachers' pedagogical understandings as they develop and to uncover influences on teachers' pedagogical thinking over time. These influences include (a) teachers' prior beliefs and personal values; (b) professional experiences as teachers (e.g., their formal teacher preparation, various ongoing professional development opportunities, and day-to-day classroom experiences with students); (c) the contexts in which they find themselves teaching (e.g., supportive or nonsupportive colleagues and administrators, changing school and political climates); (d) their personal relationships both in and out of school (e.g., the influence of friends, mentors, colleagues, and family); and (e) other life circumstances (e.g., children, health, and changing educational policy climate). What also emerged from this study are three important themes that shape the development of teachers' thinking in the pedagogical domain: (a) The importance of a support system, (b) the necessity for ongoing professional development, and (c) a propensity for reflection and metacognitive thinking. These three factors are so essential for teacher development in the pedagogical domain that I believe teacher education programs must find more and better ways to foster support for teachers, offer them continuous professional development and other opportunities to learn, and cultivate their ability to reflect and think metacognitively about their pedagogy.

This chapter is organized around the five main research questions that guided this study. In answering each question, I looked across all four cases for evidence to support my claims based on the longitudinal data that comprise the foundation for each case. In this final chapter, I also describe several other models of teacher development. I conclude with recommendations for ways that teacher education programs can support preservice teachers so they are likely to continue developing their understandings about pedagogy as they graduate and move into the real world of today's classrooms.

DO TEACHERS LOSE WHAT THEY LEARNED DURING A TEACHER PREPARATION PROGRAM?

The simple answer to this question is that "it depends." Whether teachers lose what they learn during their teacher preparation program, whether teacher education *washes out* as some researchers have written (Lortie, 1975; Veenman, 1984; Zeichner & Liston, 1987; Zeichner & Tabachnik, 1981; Zeichner, Tabachnik, & Densmore, 1987), depends on several factors. Among these factors are (a) the nature of individual teachers and their propensity to learn and apply what they learn as teachers, (b) the focus and structure of the teacher education programs they attended, and (c) the nature of the various contexts in which teachers find themselves throughout their careers. I do not answer "it depends" to the washout question to equivocate. Rather, my response to this question captures much of the complexity of the teaching–learning situation for preservice teachers learning to teach in vastly different teacher preparation programs and then applying their knowledge, skills, and dispositions to teaching–learning situations in the unique contexts in which they find themselves during the induction years and beyond. However, I do answer the washout question with an unequivocal "NO" for the teachers who are the focus of this longitudinal research. The teachers in this study did *not* lose what they learned in their teacher education program. In fact, I believe what they learned in their teacher education program about children's development and learning, and about teaching, is still foundational in their thinking about these topics today. To support this claim, I present evidence from across the cases in this study and offer my reasons for making this claim.

Evidence Countering the Washout Effect

Throughout the interviews and observations on which this book is based, these educators articulated their understanding and application of the developmental-constructivist theory they learned as preservice teachers in the DTE program. Sometimes their current level of understanding and applying developmental-constructivist theory to their practice was implied in their interview responses, but often is was stated explicitly. In fact, they talked about Piaget and developmental-constructivist theory in every interview, although none of the clinical interview or open-ended questions ever asked directly about theories or theorists (see Appendix B). Instead, their responses and actions revealed that their understanding of theory is foundational to their thinking. Even in their most recent reflective writing, which was undertaken 15 years after entering the DTE program, these educators refer to developmental and constructivist theory. For example, Julie wrote that, "*Children need to explore materials and concepts on their own to capital-*

ize on the brain's desire to make sense of the world," which sounds like something Piaget could have written. Sandy wrote about how her understanding of children's development always underlies her thinking and planning:

> *. . . I am still very committed to developmental education and believe that instruction should match the individual learning styles and the development of the student. Being a teacher is fascinating work. I love to watch the children grow and develop during the school year. Since they come from such different backgrounds and experiences, I know that no two children are the same. Therefore, I try to understand where each child is developmentally and use that knowledge to guide our work together for the rest of the year.*

Ralph's understanding of developmental-constructivist theory has also evolved and broadened due to his experiences in several different teaching contexts. As he notes, he now questions whether Piaget's model of cognitive development applies in all cultural contexts, but he still believes in the basic tenets of developmental-constructivist theory as posited by Piaget and other constructivists.

> *I continue to believe in a developmental approach to teaching and learning—but I don't see this as the same kind of process I once did. I question the universality of the Piagetian model certainly. What I retain is the conviction that it is UNDERSTANDING, and not just information, that matters—and that all learners construct the framework of their own understanding. I have broadened my thinking as to how many different ways that framework gets built, and to the different pressures and needs that shape children's learning.*

Rick also expresses his current understanding of developmental-constructivist theory as he applies it in his classroom in a coherent and integrated manner. Rick's application of Piagetian theory to his curriculum is complex and sophisticated, as can be seen in this excerpt from his recent reflective writing during the summer of 2000.

> *Currently, my thinking about my teaching practices centers around the idea of meeting the social, ethical, and academic needs of children within the context of the variety of the developmental range of the class and the differing learning styles and cultures of individuals and groups within the class community. As a teacher, I believe it is my job to empower students to learn how to learn, how to build and engage in effective social relationships, how to question and process information, how to create connections between what they know and what they wish to know, and how to make productive decisions regarding all of the above. I believe strongly in constructivist theory, which in practice allows me to facilitate the integration of learning through varying levels of questioning and challenges that cause the disequilibrium necessary for growth. We value mistakes as information, build a community of learning and support through consistent interaction in different sized groups, explicit teaching of conflict resolution strategies and the art of negotiation, and dedicated time to sharing all of our personal lives and reflecting on our*

> *strengths and weaknesses as whole people (as opposed to simply students and a teacher). The curriculum must meet all of these needs in order to have a place in my classroom and is frequently altered so that it can be done cooperatively, actively, and with a spirit of "our success is my success" and vice versa.*

These excerpts show that what these teachers learned about children's behavior and development and about teaching and learning in the DTE program did not wash out. Rather, it is still foundational to their pedagogical understanding today. Of course, each of these people understands and applies developmental-constructivist theory in different ways because they are different people with different understandings and developmental trajectories of their own. So, the question of whether teachers lose what they learned during their teacher preparation program when they face the reality of classroom life and become socialized into the profession and school culture is answered with an unequivocal "NO" for these teachers as it may be for many teachers from other teacher education programs. However, the question of how and why their understandings did not wash out needs a fuller explanation.

Nature of the Teachers.   Beginning with the character of the four people in this study, I believe they all have a desire to learn and apply what they learn to their lives as educators. They all entered the DTE program predisposed to learn what was offered to them over the 2 years they spent at UC–Berkeley. This is evidenced by the fact that they chose a rigorous, theoretically coherent, 2-year postbaccalaureate program leading to a master's degree at a major research university for their own preparation to teach. They could have chosen many other routes to obtain teaching credentials, but they did not. They were interested in understanding *why* children behave and learn as they do, which was a good fit for what the DTE program had to offer them. Although some people enter their teacher education programs believing they already know a lot about children and teaching, these four people believed they had a lot to learn about teaching and learning and about behavior and development. They were open to learning how to teach and desirous of understanding the *why* behind what they were observing as they learned to teach.

Nature of Preservice Teacher Preparation.   In fact, they did learn why and how children develop and learn from the perspective of developmental-constructivist theory, mainly from the perspective of Piaget. They accomplished this mostly by thinking about how the theories they were learning in their foundations and methods courses applied to what they were seeing and learning in their field experiences. However, one unique advantage of their attending the DTE program was that they learned more about Piaget's

theories of cognitive, social, and moral development than most students who major in education psychology or child development. Not only did they learn the theory in detail, but they also learned how Piaget's theories can be applied to teaching and learning in school settings. During their teacher education program, they (a) read and discussed many primary sources (albeit translated into English) as well as secondary sources, (b) conducted many Piagetian experiments with children, (c) learned to use school subjects and readily available school materials to create additional Piagetian-like assessment tasks, (d) viewed and analyzed videotapes of others conducting Piagetian tasks, and (e) practiced asking the kinds of questions (known as *clinical interview questions*) that are designed to get at how students think about and understand various concepts. They also learned about children's thinking in the social and moral domains from the perspectives of Piaget and Kohlberg, and about the application of this kind of thinking to classroom practices, including cooperative learning and classroom management. Furthermore, they were exposed to applications of these theories throughout their 2-year program, rather than in just one or two courses, which is typical of most teacher education programs. In the first year of the DTE program, they explored Piaget's theories as they learned about the students and the content they would teach, and then they revisited these ideas again at a deeper level in the second year when they worked to apply Piaget's ideas to the curriculum and to more students in their classrooms.

In addition, the kind of teaching they were exposed to in their methods classes included inquiry-based, hands-on methods designed to encourage students to act like young scientists and explore and inquire about their world before didactic instruction begins or algorithms are presented. This was the focus of their methods classes about teaching science, math, social studies, and the reading and language arts curriculum. They also tried out this kind of active instruction in their field placements, which they participated in concurrently with their theoretical and methods coursework throughout their program. More information about the structure and curriculum of the DTE program is located in Appendix D, which describes the sequence of experiences and coursework, and in Appendix C, which describes the kinds of developmentally appropriate practices stressed throughout the DTE program.

Nature of the Teaching Context.   Finally, these teachers were able to observe and practice what they learned in classroom settings that matched and modeled what they were learning in their theory and methods classes. Field experiences were carefully selected so that DTE students could see and try out developmentally appropriate and constructivist teaching methods at several different grade levels. Master teachers (as the DTE program calls its *cooperating teachers*) were carefully selected because their teaching philosophy and practices closely matched the developmental and constructivist philosophy of the DTE program. In addition, every DTE student was placed in the classroom of at least one DTE graduate so they were sure to see in action the kinds of things they were learning about in their coursework, and so that they would have a master teacher who could talk with them from the same perspective they were learning in their university courses. This careful attention to the selection of teaching contexts was extremely important in helping DTE students move beyond just learning about developmental constructivist theory to actually being able to see it applied with real students in real classrooms, and to try out developmental constructivist theory and practice in supportive contexts.

Furthermore, the teaching contexts that Julie, Sandy, Ralph, and Rick found themselves in after leaving the DTE program were more or less a match for what they had learned about how children develop and learn. Unfortunately, Julie felt little support in her school and was frustrated by the demands of having to develop so much of the curriculum on her own. It was not until her last year of teaching that Julie had a few colleagues to team with and talk to about teaching. Sandy always worked with DTE grads at the two public schools she taught in for 10 years and is currently teaching in a private school that is a very good philosophical match to the DTE program. In fact, Wilson School in San Leandro where Sandy taught for many years regularly hires DTE graduates and has hosted many DTE student teachers over the years due to supportive administrators and a compatible staff who understand and regularly use developmentally appropriate constructivist teaching practices. Ralph found himself in a rather traditional school at first, but he had a few colleagues and an administrator who supported his efforts to teach the ways he learned in the DTE program. Later he moved to a private school that was also an excellent match philosophically to the DTE program and where he had many colleagues who understood and applied developmentally appropriate teaching practices. Rick has remained in the same school since 1987 largely because he has a knowledgeable and supportive principal, as well as enough colleagues and other mentors who value what he does and support him in his continued efforts to teach in developmentally appropriate ways.

All four of these teachers also had student teachers from the DTE program placed in their classrooms over the years. Taking on the role of mentoring a prospective teacher provided them opportunities to articulate, model, and answer questions about why and how they teach as they do. This role also put them in a position of having to reflect on their teaching goals and practices, which often served as a catalyst for metacognitive thinking about their students' learning and their own teaching (Levin & Ammon, 1992).

Factors That Promote the Development of Reflective Teaching. Zeichner and Liston (1987) described several factors they believe impede the development of reflective teaching. Among these factors are apprenticeship models of teacher education with limited field experiences for student teachers and the *ideological eclecticism* and *structural fragmentation* of most teacher education programs, which are still all too common in many teacher education programs. These factors can easily limit the realization of program goals and likely contribute to an apparent wash out effect for some students in some programs. The structure and focus of the DTE program, however, appears to circumvent many of the factors that Zeichner and Liston (1987) claimed can prevent teacher reflection and hence interfere with teacher development. In fact, several components of the DTE program appear to foster the continued development of teacher:

• The DTE program is a 2-year program of ongoing theory and methods coursework taken concurrently with five progressively more involved student teaching placements. With five master teachers to compare, the structure of the DTE program counteracts the apprenticeship model of teacher education by encouraging prospective teachers to construct their own understandings of what good teaching looks like. Furthermore, with the extended 2-year time frame, DTE preservice teachers are able to consolidate what they learn in the first year of the program based on additional coursework and field experiences taken during the second year. By reflecting on what they learn at the university and in the schools, they are able to develop deep understandings about how children learn, behave, and develop.

• Problem solving through reflection is a *habit of mind* cultivated in the DTE program. DTE students write dialogue journals regularly throughout their 2-year program. DTE supervisors respond in writing to these journals and maintain an ongoing dialogue through these journals, and in person, with the goal of helping the preservice teachers make sense of their observations and experiences as they learn to teach. This practice conveys to DTE students that ongoing reflection is an integral and necessary part of a teacher's development.

• A thorough grounding in developmental-constructivist theories, especially Piagetian theory, for all DTE students offers a foundation for testing out their own ideas and making sense of their observations and experiences in the field. With this knowledge base, they have a foundation against which to examine their own developing conceptions of teaching, learning, behavior, and development. These three practices in the DTE program—extensive fieldwork, in-depth study of developmental constructivist theory and methods, and ongoing reflective writing—work together to provide both a foundation and vision for what effective teaching can be from a development-constructivist perspective.

• The small size of each DTE cohort group, and of the DTE program faculty, also mitigates against the *structural fragmentation* and *ideological eclecticism* decried by Zeichner and Liston (1987). All facets of the DTE program are guided by a shared theoretical perspective, which underlies the theory, foundations, and methods courses. The program faculty all share a fairly cohesive philosophy, and the small numbers allow for individual attention to each prospective teacher's development.

• One aspect of that shared philosophy is that learning to teach is an ongoing process. DTE students develop a metalevel understanding that the program can provide them with some tools and a cohesive theory from which they can operate as beginning teachers, but that figuring out what and how to teach is something they will continue developing throughout the course of their careers. The result is that most DTE teachers see themselves as developing teachers in much the same way as they understand their children as developing learners.

• Finally, there is the fact that the DTE program makes a concerted effort to stay in touch with its graduates and asks them to serve as master teachers for new groups of prospective teachers. This mentoring experience offers program graduates opportunities to articulate, model, and answer questions about why they do what they do in their classroom and opportunities to articulate their teaching philosophy and practices. Such opportunities offer additional chances for further reflection and metacognitive thinking, hence opportunities for continued development of their pedagogical thinking. In addition, in recent years, the DTE program has hired program graduates to serve as supervisors for 1 to 3 years, either full time or part time, if they continue to teach part time.

Although not all DTE graduates have student teachers every semester or get the opportunity to return to the university to be a DTE supervisor, each of the teachers in this study has had multiple opportunities to serve as a master teacher since their graduation from the DTE program in 1987. Ralph served as a DTE supervisor for 3 years. Programs that maintain connections with their graduates and employ them as supervising teachers have the opportunity to pass on their program philosophy and continue to influence their thinking. However, it still takes a desire to continue learning as a teacher, the foundation of a theoretically coherent rather than a structurally–fragmented teacher education program, and supportive teaching contexts throughout a teacher's career to prevent the wash out effect.

As Sandy said at Time 5 in 1997:

DTE teachers are really different than those who come from elsewhere, and I think that I wouldn't be the teacher that I am without DTE. It just made me more aware of developmental education and how children develop and [how] everyone develops at their own

rate, and goes through stages. I would hope that most credential programs study Piaget, but we did it in such depth. I do have to say that what we did then I did not appreciate and I don't think I got it. I wasn't ready to hear a lot of what Paul [Ammon, the codirector of the DTE program] or even Allen [Black, also a codirector of the DTE program] said, because I was coming from a really technical background in economics, math, and psychology and children were really foreign to me. I think that the people that go through the program now are a lot more experienced, and so they are ready to receive that information and probably got a lot more out of it than I did. But I think it set up that bug in my head that this is the way that they learn and laid the foundation so that everything that I learned or heard had to jibe with that or else I didn't use it or it didn't make sense to that theory. I think that a lot people when they come into teaching, they don't know how children learn, they don't have an understanding or a philosophy of how kids learn, they just do things without thinking about why and what it means for the kid.

HOW DOES THE PEDAGOGICAL UNDERSTANDING OF TEACHERS GROW AND CHANGE OVER TIME?

The previous response to the washout question focused on theoretical and structural influences on the development of teachers' thinking. I now turn to a process question that asks *how* teachers' understandings can grow and change over time, assuming that structural supports are in place as described before. The question of *how* these four teachers' understandings about pedagogy developed over time has been of great interest to me throughout this longitudinal study. My own thinking is influenced by developmental-constructivist theories of learning offered by Piaget (1952, 1963, 1972) and Vygotsky (1986) as well as by the data collected during this study. That is, I believe that the pedagogical understandings of these teachers developed on two levels simultaneously—on an inner level and also on a social level. By *inner level,* I mean that my data show that these teachers' pedagogical understandings changed and developed into more complex ways of thinking when they had to solve problems or when they confronted dilemmas in their practice. This happens when things are not going the way teachers imagine they should in the classroom or when there is a mismatch between a teacher's image of teaching and learning and the reality they observe in the classroom. For example, when students are not behaving as expected, when students are not learning what the teacher believes they are capable of learning, or when a lesson does not meet the needs of many of the students in the class, the teachers in this study see a problem to be solved.

These kinds of experiences happen to teachers every day. Some teachers ignore a failed lesson and move onto the next lesson. Some teachers ignore misbehavior or a student who is not learning as expected until they can fig-

ure out what to do about it. Some teachers even think that some students cannot learn, are not motivated to learn, don't behave appropriately at school, or cannot learn because of their home life.

One of the unique things about the four teachers in this book, unlike many teachers I have know in my 13 years as a teacher educator, is that they do not blame their students. When something is not working in their teaching, when a student is not learning or behaving as expected, or when their interactions with students are not productive, they believe they are the ones who need to make changes. After all, they are the professionals. They confront the typical problems and dilemmas of teaching and learning as puzzles or problems to be solved, not as problems. They do not believe that it is the students who have the problem. Instead, they understand that they need to change their approach or instructional methods to meet the needs of their students. They struggle with what they know and what they need to know to solve the problem at hand. Much of this struggle takes place as internal dialogue about the problem—as reflection and metacognitive thinking about their teaching practice and about how children learn. Piaget would describe this as *self-regulation.*

In a way similar to Piaget's notions of disequilibrium, these teachers enter a state of cognitive conflict (and sometimes moral and ethical conflict too) or disequilibrium when they have a problem to solve. They struggle within themselves and with the limitations of their current understanding of the students or the curriculum until they find a solution to the problem at hand. Sometimes they seek help from outside sources, such as talking with other teachers, reading books, or attending workshops. Sometimes they get more insights from talking with the students, with family members, or others with more knowledge than they do about particular students, instructional strategies, or curriculum. Once they have some new input from outside sources, they can assimilate it to their current ways of understanding, ignore it altogether, or transform the way they understand the problem by changing or accommodating their way of thinking about the problem at hand. This often happens internally through self-talk or inner dialogue, although sometimes it may look like an intuitive leap in understanding. It also happens when they try something and consciously evaluate the results by reflecting on them. Both metacognitive thinking and self-regulation are involved in this process.

Sometimes the teachers in this study are able to solve the problem at hand through dialogue with others. Perhaps they consult with another teacher who has taught their children or the curriculum. They particularly benefit from consulting with other DTE graduates and student teachers from the DTE program, who think about the problems of practice in similar ways because they have the same theoretical perspectives and similar images of the way things should operate in the classroom from a developmen-

tal-constructivist orientation. In conjunction with their own inner dialogue about the problem at hand, sometimes the opportunity for dialogue with colleagues and supportive family and friends outside of education assists them in thinking about how to solve the problem. Thus, the pedagogical understandings of the teachers in this study often develop simultaneously on an inner level and a social level as they seek to resolve pedagogical problems. Some examples of how this works for the teachers in this book follow.

At the time of her graduation from the DTE program in 1987, Julie believed that her skill in observing and analyzing her students and her predilection for being reflective are two major factors that explain how her thinking has changed in response to classroom situations.

Probably the ability to evaluate what's going on in my classroom, and evaluate myself, how I'm feeling about what's going on, and the ability to analyze. If the kids weren't responding to this, could it be that I didn't present it in the right way, or they're not ready for it—just the ability to analyze the learning situations and what I'm doing. The ability to look at myself and see what I might change, and all that kind of thing, through just thinking about what's going on in the classroom, observing things in the classroom. (Time 2, Clinical interview, 1987)

After 3 years in the classroom, Julie describes how her experience teaching students, the reading she has done, and her background in developmental theory are additional factors that, combined with her reflective nature, explain how she thinks about and solves problems in her teaching.

Experience in the classroom definitely . . . and then also the things that I learned during DTE, different parts of the program, like the developmental theory, Piaget's theory. . . . Things I've read and my own pulling together of the information and making sense of it. Things that I've learned, theories I've learned, and things that I've done in the classroom—it all fits together.
   I think I'm a real reflective or introspective person, so that's something that helps. Sometimes it hurts too, but it helps me process things and think about what's going on and how come that didn't work, what can I do next time. So having that inner dialogue with myself helps too. . . . (Time 3, Clinical interview, 1990)

Again in 1997, Julie reiterates her predilection for reflecting on her experiences, as well as how several external factors (reading professional literature, attending staff development opportunities, and talking with other teachers) influenced her own development as an educator and explain how she understands pedagogy at this time.

I think other teachers are a great resource. And then I've always enjoyed reading professional material, journals and things, "Mathematics Teacher" or "Teaching Children Mathematics" magazines that are put out by various professional organizations. I've always enjoyed going to staff development opportunities. So those are all great resources

and I think that that's probably something that really kept me motivated and learning new things was trying other things and exposing myself to new ideas and talking with other teachers and continually trying new things. . . . And I just think that I've had time to reflect over the years and I think I'm still making connections with things that I learned. You almost forget at some point where you learned something but I think the connections still are being made to experience that I had due to teaching or whatever and still sort of putting things together and realizing things. (Time 5, Clinical Interview, 1997)

For Sandy, similar factors were at work when she confronted problems in her teaching over the years: observing her students, thinking about her teaching, taking courses, talking with other teachers, and being willing to change. For example, at Time 2 in 1987, when she was graduating from the DTE program, Sandy explained that one of the ways she knew what and how to teach was by observing others:

Seeing how they teach a certain subject or how they deal with a certain problem, courses that you can take to learn about content. But I think friends and teachers [mainly]. Especially people from this program, since we've had the same background and lot of us are staying in the same area. I would see them as being a real resource. (Time 2, Clinical interview, 1987)

At time 4 in 1993, Sandy said the same things influenced her thinking: her experience, attending workshops, reading educational books, talking with other teachers, and her training in the DTE program, which she elaborated on:

The terminology gets lost sometimes, but I have to say also that it's easy to get caught up in the everyday stuff, all the everyday worries that we have to think about, and to forget about the developmental stuff. I was thinking about this the other day because I think one of the reasons why . . . , it's made me think, maybe, more developmentally is because I've had student teachers. I hadn't had a student teacher in a year and a half, and it was easy [to forget]. I felt like when I talked to Carli [her current student teacher from the DTE program] that she was bringing me back to thinking about some of these issues that I tended to lose track of over the last year and a half. [But also,] I still have a basic philosophy that I develop about education, in which I assume a lot of the terminology and jargon and stuff. . . . (Time 4, Clinical interview, 1993)

Sandy also mentions some of these same influences on her thinking at Time 5 in 1997, when she came back to teaching after taking 2 years off to stay at home with her children:

In some ways I think that I know a lot more now than I did 2 years ago or when I graduated. A lot of it is inside, and being able to articulate it is difficult. I read a lot, and what I read makes sense at the moment, but it's difficult to be articulate. We were talking

about having a community where I could talk about these ideas or having a student teacher—I feel like I was more thoughtful and more articulate about it then. Yeah, I have learned a lot and yet I feel in some ways I have regressed a little bit in not having an opportunity to discuss my teaching with others. (Time 5, Clinical interview, 1997)

Ralph also understood that teaching and learning involved problem solving very early on. At Time 1, when he first entered the DTE program, he remarked that learning is like "*solving a puzzle or problem or dilemma, a quality of opening . . . a way out of a particularly stuck place . . . understanding something that was a mystery . . . a tension that is resolved.*" In a later interview at Time 5, he elaborated on these same notions and described in detail how he goes about solving his puzzles, problems, and dilemmas by observing, seeking feedback, and talking with his students and other teachers.

That comes with familiarity of students and it comes with experience and seeing kids at different grades. Basically starting with student teaching and seeing what kids are doing—talking with other teachers, and going to the previous teacher of the grade you are in and asking what was successful and what might not have been so successful—and looking at published materials . . . [asking] my grade level colleagues . . . "What are you doing? What is your curriculum? When are you teaching this? When are you teaching that?" You get a lot of informal conversation, and then with direct experience in working with the kids . . . and of course, everything is case-by-case and kid-by-kid. . . . You get feedback by asking for feedback from the kids. . . . (Time 5, Clinical interview, 1997)

Ralph also talked about the value of interacting with others and explained the process of how he dealt with his own understandings about pedagogical issues in his role as a DTE supervisor in 1997. Here he explain how he justifies his thinking both to himself and to the preservice teachers he dialogued with every week, both in his written responses to their weekly journals and in conversations with them.

And I get to do that, and I am forced to explain my positions. I'm forced to articulate what I think. I'm forced to articulate what I see, and in essence I'm forced to think about both in very specific ways [like] How do you handle pencils in your classroom? and much broader. What are the ramifications of such-and-such management system on the development of visual learners? . . . I've had to write 20 pages a week on, over the course of the year, on what I've seen, and what I think, and why. I have to justify that until it makes sense. (Time 5, Open-ended interview, 1997)

Rick also reflected throughout his career about how he solves the problems and dilemmas that arise for him in his classroom, but he summarizes it best in the writing he completed for this book during the summer of 2000:

I believe strongly in constructivist theory, which in practice allows me to facilitate the integration of learning through varying levels of questioning and challenges that cause the disequilibrium necessary for growth. We value mistakes as information, build a community of learning and support through consistent interaction in different sized groups, explicit teaching of conflict resolution strategies and the art of negotiation, and dedicated time to sharing all of our personal lives and reflecting on our strengths and weaknesses as whole people (as opposed to simply students and a teacher). The curriculum must meet all of these needs in order to have a place in my classroom and is frequently altered so that it can be done cooperatively, actively, and with a spirit of "our success is my success" and vice versa.

Rick also talked at Time 6 about how he approached a personal challenge he wanted to take on in this explanation of how he plans to tackle the issue of racism in his classroom following a talk he heard about racism in schools:

But it's—the other thing he said—it was good 'cause he got up there and he didn't try to give everybody answers. He didn't have any answers. What he said was, "If you're serious about this you gotta go find answers," and I started thinking about that. For me, that means I need to go read about this. I need to go find somebody who's done something about this and find out how they do it and whether they do it well. Whether it's going to work, I have to try it. And then I have to see if it works for me. And then I have to go talk with some more people. And then I have to get in touch with these people's parents. I have to find out where they do come from and I have to find out what does work for them at home. And then I have to try and make what happens in here look something like that and all the while still doing right for the kids that it works for now. And so I don't know when that's going to happen, but I know about it. It has to sit with me for awhile. I have to think it through.

So for Rick and the other teachers, solving cognitive conflicts and resolving any disequilibrium they feel proceeds on internal and external planes. It involves thinking, reflecting, and the ability to think metacognitively about the problems at hand, but it also occurs with external supports such as conversing with others, reading, and attending workshops to gather information on which to reflect. This is the process of *how* the teachers' pedagogical thinking in this study developed over time.

WHAT PERSONAL AND PROFESSIONAL INFLUENCES IN THE LIVES OF TEACHERS IMPACT THEIR PEDAGOGICAL UNDERSTANDINGS THROUGHOUT THEIR CAREERS?

The words these teachers use to explain *how* teachers' thinking about pedagogy develops over time certainly apply to this question as well. However, the focus of this question is on *what* personal and professional influences in their lives have impacted these teachers' pedagogical understandings over

time. In their written reflections and throughout the data collected over the past 15 years, five themes appear to have influenced their thoughts and actions as educators: (a) prior beliefs and personal values; (b) professional experiences as teachers (e.g., their formal teacher preparation, various professional development opportunities, and day-to-day classroom experiences with students); (c) the contexts in which they find themselves teaching (e.g., supportive or nonsupportive colleagues and administrators, changing school and political climates); (d) their personal relationships both in and out of school (e.g., the influence of friends, mentors, colleagues, and family); and (e) other life circumstances (e.g., children, health, and changing educational policy climate). These factors have all interacted over time to influence the development of their understanding of learning, teaching, behavior, and development and lead to their current thinking about pedagogy. For all four teachers, their predispositions to reflect on their practice; converse with other educators about their students, curriculum matters, and their teaching; and continue professional development through readings or attending workshops and conferences have influenced their thinking. However, each person also experienced other things in their personal and professional lives that influenced the development of their thinking.

For Julie, the opportunity to develop curriculum in the area of mathematics took her in a different direction professionally. For Sandy, her early interest in emergent literacy influenced her professional life for over 10 years, and the birth of her two daughters also influenced her career as a teacher because it led her to job sharing, part-time work as a reading specialist, and finally teaching in the private school her daughters attend. For Ralph, his personal life as a gay man influenced the path of his professional career as he sought compatible teaching contexts with people who valued diversity and thought about teaching and learning in the same way he did. His time as a DTE supervisor also influenced his professional life as he sought the opportunity to teach in a diverse and large urban school so that he could "walk the walk" and not just "talk the talk" about what it takes to teach in such a setting. Rick, like the others, also benefited greatly from timely professional development experiences, his own reading, and his interactions with other teachers. In addition, Rick's personal and professional lives are tightly coupled, and the opportunities he has had to read and discuss education-related issues with his wife, also an educator, and his principal have been influential for him. The connections Rick makes between thinking about the kind of education his own children are getting and what he offers his students are also important factors as he works to provide the best learning experiences possible for the students in his classes. For Rick and the other three teachers highlighted in this study, continual reflection on their practice and teaching goals also influences the development of their pedagogical understandings. In fact, the following words offer rich information about the influence of their

personal and professional lives on their development, especially on the development of their pedagogical thinking.

In retrospect, Julie's metaphor expressed at Time 3 in 1990 reveals her surprise at the demands of teaching and foreshadows some of the reasons she ended up leaving the classroom after 5 years.

> *Teaching has just been incredibly, I don't know what I ever thought it was going to be, but it's more. . . . I compare it to being on a roller coaster. You're like up in the air, then you're down at the bottom, and you're up in the air. It's just so many different things. It just pulls so much from you. You're like an actor. You have to be dramatic. You have to be patient. You're like an actor. You're just so many different things, it's just mind boggling sometimes. I guess I didn't realize that teaching was going to be such a varied, have such varied demands, I guess.*

Three years later, Julie was in a new position and reflected on some of the reasons she left teaching for a job with a large publishing company.

> *I would say probably off and on in my fifth year, probably end of December or January. . . . I had these intense periods of frustration. It just seemed like I wasn't happy with the job I was doing. It felt like I was just kind of cruising. I had lost my enthusiasm. And I heard myself saying things to the kids that I . . . didn't want to be, I didn't like the way I sounded. And I just thought I've got to take a break. I had a couple kids that . . . took a lot of my energy, and . . . I would just get so mad at these kids and then, inside of myself I was just saying these horrible things and I thought, you know, this isn't right. I'm not having a good time right now, and they probably aren't either, so I should take a break.*

At Time 6 in 1999, Julie also reflected on the reasons she left teaching, and they included both personal reasons (frustration, high personal expectations, feeling pressured and stressed, lack of confidence, headaches) and professional reasons (pace of teaching, teaching context, lack of a set curriculum, pressures from her students' parents, large class sizes).

> *One feeling that I had was that I could never accomplish everything. I remember this and I wonder if it would be different in a different setting. But, I remember when I was in [East Bay] that we really weren't using the new textbooks and we were pretty much creating a lot of our own curriculum and the district was pretty lose about the expectations were, so I felt a huge burden to figure out what to do with these kids and how to do it. It was kind of up to me to connect with other teachers to figure it out . . . but that was a huge thing for me. Having to plan a curriculum was so big.*
> *I felt pressure from the parents in my classroom. I don't know, I just felt a lot of pressure about their expectations. They always wondered about homework and especially in the beginning they didn't like having a new teacher looking after their child. Writing me long notes about things—I didn't like that.*
> *I didn't feel confident enough. I think towards the end I did, but that was hard and I didn't like the pace of the classroom, just the unending—all the decision making that*

happened. Having to deal with all the different kids. I felt like, I think that was a stress for me. I remember just being annoyed and having a headache everyday when I got home. Now I look back and wonder. Maybe that just wasn't the right place for me. I wonder what it would have been like at a different school or at a different grade level. What would I do better in? Would I be better at getting the classroom in the right climate for my style or whatever? That was really something—the annoyance, and the kids and everything. . . . The class size too, that would make a difference.

For Sandy, personal and professional influences on her development as a teacher are intertwined because of trying to juggle being a mother with being a teacher. In her effort to make time for family, Sandy job shared and worked part time for many years, which influenced her professional development. At Time 4 in 1993, she talked about her struggles trying to balance her life in the classroom and at home:

It makes it harder. There are a lot of things going on. Part of it is that I have a baby, so I don't have as much time at home in the afternoons, and evenings, and on weekends to spend planning for school. The other part is teaching part-time and job sharing. . . . I'm not completely free to do what I want to with the curriculum, and so I'm kind of tied down that way. . . . Right now I'm thinking of possibly taking a leave next year and doing something related, but I don't want to give up everything that I've done the last seven or eight years [since] DTE. And I'd like to do something related to teaching, . . . work in a preschool or go back and take some more classes, or do something somewhere else that's related to teaching, because I've got all this stuff at home, and I don't want to give it up, and I want it to be used . . . I like being with the baby, but I don't know if I could be there full time. So that's the other thing . . . part of me doesn't want to get out of teaching because I think it would be hard to go back into teaching once I leave, because I think that the classroom dynamics are changing so fast.

In that same interview, I asked Sandy about whether she would like to teach in a private school where the class sizes are smaller. Ironically, this conversation foreshadowed what Sandy eventually ended up doing after 10 years in public schools. However, at the time, she was not thinking about teaching anywhere else, although she was feeling the pressures of teaching in the public school system.

That goes against my philosophy . . . and all my training from DTE to work in public schools. We're going through this dilemma now that Hannah's a year old. What are we going to do when she gets to be school age? Are we going to send her to private school or to a public school? . . . My husband is pretty frustrated with the whole process . . . [and] I think if she were going to school next year we'd be sending her to a private school. . . . I believe in public education, but I also think that there have been a lot of changes and a lot more demands put on the teacher that make it more difficult for the teachers to teach.
The money's not there, so the class sizes have gotten bigger. The support for the teachers has gone out the window. You don't get the psychological help that you need for the

kids, and the support from the parents isn't there, and you're getting a lot more non-English speaking kids, like I said before, in your classroom. And you're not getting help for that, and then we've got some kids in there that need a lot of psychological help and the special programs aren't there to take them into the special day class or the emotionally disturbed class. Those programs aren't there, so everything's being done by the teacher. . . . So there're just a lot of demands being put on us, the public school system, and the teachers can't deal with it by themselves. Or like, I shouldn't say they can't, just that it's very demanding, and it's hard to meet everybody's needs.

In 1993, Sandy also elaborated on the conflicts related to job sharing and balancing having a baby at home and her teaching.

I wouldn't job share if I didn't have the choice. . . . That's why I'm thinking of taking a leave. I'm thinking that there's something else that I could do. I would really love to be teaching full time if I . . . felt like I could do a good job and yet not take away from my being a mom. But I can't. So, I have to give that up.
It's frustrating, that part of it, not being able to do what I want to do because I'm job sharing. That's frustrating, and not being able to plan, . . . even if I did have my own classroom, which I could do, then I wouldn't be able to plan for it like I wanted to do, because I have a baby at home. So, there's all these things going on, and . . . It's hard to know, which one is weighing more heavily.

Sandy almost left teaching permanently, but after taking 2 years off to stay home when her second child was born in 1994, she did return to the same school to teach several days a week as a Title I teacher and then as a Reading Recovery teacher. She was job sharing during this time, but in reality she was splitting a full-time position with another teacher and they worked with different groups of students in both pull-out and push-in situations.

The thing that has been good is that I have been able to work part time, but I haven't had to split my time with someone else and coordinate, because that kind of wore on me. Next year the teachers are saying we need somebody to work with the kids and them, so they want more time, and they want to look out for the kids so they're talking about pull-out again and working with the kids, not the teachers, and probably more a full-time position, 80% or 100%, and I don't want to work that much yet, so . . . I'm in flux again.
I'm willing to work up to 80% but that's my limit. If they want more I'll have to share with somebody, which will then get me back to that same situation. On the one hand I'm pretty independent, and I like to do my own thing, and [although] I see the value of working with other people, . . . it's just how much time that takes and whether I am on the same wavelength. Because if I'm working [with] somebody who doesn't do things the same way I do or think the same way I do, then it's difficult . . . so . . . I'm kind of waiting to see what's going to happen next year.

Sandy's personal life as a parent of two daughters also influenced her thinking about how children learn and beliefs about their behavior and development. At Time 5 in 1997, she said, "*Seeing just how they develop is fascinating, how they grow and change and make sense of their world and starting to read and write and watching it develop and talking.*" Being a parent also changed how she thought the nature versus nurture question: "*They are who they are because of who they are and not entirely their family.*" She also developed more empathy for the perspective of her students' parents.

> *You look at kids as your students, not as somebody's children, so that now that I have my own children I think well, gosh I really want their teacher to know this and that about them. It's not that I didn't think about it, but when you have so many kids, it's really hard to think about each child when you have the whole class, and what you can do for the class. Of course there were individual children that would stick out and you would worry, but as a teacher you worried more about the group and not the individual child, so [having a child] just made me more aware of these kids as people. . . . It sort of makes me appreciate the parents' point of view, which I didn't have that perspective.*

Being a parent changed her perspective, which caused some of her pedagogical beliefs and practices to change.

> *I never used to like sharing because I always thought that it would be something that they brought from home, and it would be materialistic and . . . [I] thought it took time away from academics. Being a parent, you realize how important it is for kids to bring something to share. My daughter always wants to bring something to school, a toy or whatever. And I never wanted toys in my classroom, but I think that it's made me realize that they need something to help them bridge that gap from home to school. . . . I read an article about this recently, it was just [about] how sharing is a good thing because it does bridge that gap for the younger kids. But then for the older kids, it doesn't have to be something from home, but something about them or something that they have done at school, and it could be academic or not.*

At Time 6 in 1999, Sandy was still job sharing, but with a new partner, and she was still finding it challenging to balance home and school life.

> *Well, I taught second grade for 3 years and then I went to first grade, and I taught first grade for 3 years, and then I took 2 years off, and then I did Title 1 for 3 years. But that was mostly language arts, and I was working with different age groups, and mostly it was in intervention, . . . helping the second graders who weren't reading yet, or going into classrooms and helping the kids who were struggling readers in those classrooms, and helping teachers set up some kind of program that was able to meet their needs. . . . So this has been a real learning experience for me . . . I worked with fourth graders during the last two years, but my whole focus at the beginning of my teaching career was all in primary grades and developing literacy. My training was . . . emergent literacy, and so in working with older kids and teaching fourth grade, I have learned a lot and I am still learning.*
> *Everything that I did in second and first grade I threw out, partly because I have learned a lot more since I was in the classroom last time, and partly because I was start-*

> *ing with a new partner. We just threw everything out and started from scratch. Being at a different grade level I feel like I am just starting anew. So it has been quite a learning experience for me, and the other thing is that I don't have the time to devote to thinking about teaching and planning as I did when I was first starting out. Now I have kids at home. Back then my weekends were wide open and my evenings were wide open, so it is very different.*

The benefits of Sandy's varied teaching experiences since she started teaching in 1987 seemed to pay off, however, in an increased sense of efficacy, which now permeates her professional life.

> *Because I have moved around so much, now I feel like that at any age group, I could teach them and learn something from them, and each group has their own special need, and not just need, but an area that I could get interested in—so like, say fourth and fifth grade, the literature is really rich and the social studies curriculum is really rich. But in the primary grades, like first grade, teaching them how to read and write is really exciting too. . . .*

Nevertheless, Sandy still felt she was not able to be the kind of teacher she envisioned for herself because she also wanted to be a good parent—a paradox that many teachers face.

> *I guess my obstacles would be that I can't be the kind of teacher that I want to be. I can't put out that much effort and have a family too. So I work part time and then I get frustrated as a teacher because I am not doing what I want to do and I don't have the systems in place, I don't have the time to plan or to think or research, or whatever it is that I need to do to be the kind of teacher that I want to be. I know that is an opportunity cost for me and that I have to sacrifice who I am as a teacher so that I can be a half-decent or good-enough parent and that once I get beyond the child rearing age I can then focus more on teaching, but also have a life.*

One final note about Sandy is that she did leave public school teaching in 1999 to teach at the private school her daughters attend in Berkeley. This school is not only more convenient for her as a parent, but also is an excellent match philosophically with what she learned in the DTE program and still believes about teaching, so the personal and professional factors in her life are now more closely aligned. The only drawback is that this school is a cooperative and so every teacher has many additional duties to fulfill. However, as Sandy wrote during the summer of 2000, she still thinks about trying something that would be more compatible with her family life.

> *[When I think about the future] I would really like a 9–5 job, with a 5-day workweek!! I'm still trying to decide if classroom teaching part time works for me (you'd think I'd know after 5 years and four different teaching partners!) and if working as part of the collective is where I want to put my extra energy, since it takes away from my teaching.*

Thoughts of grad school enter my head once in a while as I would like to learn more about literacy, as do ideas of working in a children's bookstore where I can read books I love all day long! I would then have evenings free to quilt.

Being a parent has changed my life as a teacher. On a very concrete level, it's affected how much I teach and how much time I'm able to give it. I can also live like Piaget and test my theories and understandings about child development on my children. But mostly, parenting has challenged me to find balance in my life—to make time for my family, hobbies, and exercise, because teaching itself can be a 24-hour job. . . .

Although Ralph had plenty of personal factors that likely influenced his thinking during this study, including similar issues about juggling family life with teaching school, he did not discuss them with me during the clinical interviews. In fact, it was not until the 1997 interview, when I first began to ask open-ended questions preceding the clinical interview questions, that I even knew Ralph had stepchildren he was raising with his partner, Jim. However, during the summer of 2000, following his first year at Garfield School, Ralph wrote about the many questions and few answers he had after a challenging year in a teaching context that was different from any of his other teaching positions. Some of his questions relate to his personal life and the differences between Ralph and his students (e.g., ethnicity, social class, and lifestyle), and some of them relate to professional issues that are influenced by his personal beliefs (e.g., standardized testing, value of arts in education, skill development vs. concept development):

I will return with bundles of unanswered questions:

I share ethnicity with none of my students. How much will that continue to limit me in knowing them and in knowing how to teach them effectively?

How do I address other issues of race? Why is it that of the six students in my class who are seriously "behind," five of those are African American? How do I talk about this and get help so I can teach these students more effectively?

How do I address issues of my own sexual orientation in the school community at Garfield? At present, I'm "out" with staff/district, bring Jim along to parties and school events, etc. But I've not brought Jim into my life in the classroom (sharing details with students and families about MY family life). How do I want to go about beginning that process?

Standardized tests have assumed paramount importance at the school (for the district, the state, and some of the parents). Is my disdain for these measures a reflection of an upper class luxury—and should I be doing more to better prepare my students for the testing?

How much time do I allow for art, for hands on science, for "conceptual development" as opposed to teaching skills—I had the luxury in Moraga to spend a good portion of my time and energy into more critical and creative pursuits, knowing that the nitty-gritty skills would be covered (at home or elsewhere in the school)—I do NOT have that luxury now.

To what extent do I attempt to address the emotional needs of my students? This past year I brought in snacks, met with students at lunch, provided modeling clay and board games and choice time and papier-mache. My thinking has been that by giving them "emotional space" they would settle in and could begin learning. To an extent, I still believe this. But I have to seriously question any time spent away from content and skills. Time is too precious, especially when students are already "behind" and have so much stacked against them.

In addition to these macro-level questions, I carry many micro level curricular questions into next year. (How do I carry Writer's Workshop further? How can I create more independent work? How can I use guided reading? What phonics program can I find to help fill in the gaps in a more organized way? How do I involve families more, and how can I actually USE parents in my classroom? What rewards/consequences do I want to establish at the beginning? etc. etc.) I'm only really thinking 1 year at a time right now. I'll see where this might lead. For now, I'm glad I'm back in the classroom. I feel proud, in a new way, to be a teacher.

Even after nearly 10 years of teaching and 3 years as a DTE supervisor, it is obvious that personal and professional issues are interrelated and continue to influence Ralph's thinking about pedagogy. In this case, a new teaching context triggered many of these questions, but some are personal issues as a gay man that he has dealt with throughout his career. Fortunately, Ralph is able to articulate many of the questions and issues he is grappling with and therefore should be able to think about them metacognitively and will self-monitor his progress toward resolving them. For teachers who are unable to articulate the questions, problems, or dilemmas they need to address, it is less likely that they will be able to resolve the cognitive conflicts they experience related to their personal and professional lives. Ralph's ability to reflect and previous experience with solving earlier problems will very likely help him continue to think about and find ways to answer these questions satisfactorily. In fact, my observation of Ralph at Garfield during his second year there, and subsequent conversations with him, indicate that he has begun to resolve many of his pedagogical questions successfully.

The personal and professional influences on Rick's pedagogical thinking were highlighted in his case study in the previous chapter, but are reiterated here. For example, as Rick says at Time 6 in 1999, he is both supported and challenged by his principal, with whom he often discusses educational theory and policy:

I have a principal who understands what I do and values what I do. I'm not sure I could do what I do just anywhere. . . . Not everyone at this school teaches the way I would like them to, but I believe that everybody, every teacher at this school truly cares about kids and is trying to do the right thing for kids. . . . I need to be around people like that.

Rick's colleagues are also an important professional influence because they offer him the opportunity to talk about teaching, share perspectives,

and problem solve. He especially enjoyed several years of Monday meetings during lunch when interested teachers would get together to discuss their students and teaching in a supportive, problem-solving environment.

> I want to be in this really dynamic environment where people are thinking about the same kind of things that I am and they are working with their kids and when I get them they have already had a few years of it and I can take them someplace new with that, they have some background in them. I have a lot of energy for that. What we are doing on these Mondays is a part of that. It is satisfying something for me. I didn't think it would but it really surprised me.

However, Rick's personal life also influences his professional life in at least two ways. First, Rick volunteers in his daughters schools when he was on breaks from his year-round schedule, which caused his to think about and compare their classrooms to his own.

> My own kids . . . when you look at your own kids going through and you see what is missing from their school. . . . It has made me look really hard at what I am doing. How would a parent look at what's going on in here? Am I communicating well with the parents? Do they understand? Do they care? I think they are just happy that their kids are happy.

Second, Rick and his wife, a classroom teacher for many years and now a graduate student and teacher educator, regularly read and talk about educational issues at home. She also serves as a sounding board for him as he tries to work out problems in his classroom.

> My wife—she's a resource just because she understands all the stuff and we can talk things over. She's a teacher, she knows about this stuff. We can collaborate that way and talk through things that we're in flux about. But she's also a resource for me because she reads so much educational material that I can't get to. . . .

From Rick's perspective, his interactions with his wife and family, as well as with his principal and colleagues, have influenced his thinking about teaching and learning over the years. Like Sandy, Rick also reads a lot of educational theory and research articles for pleasure, as well as for input in finding ways to improve his teaching.

> And then, just books. Books, books, always books. I'll get one author and then that author will lead me to some other author. Just some new take always on how to present this, how to think about it, how to frame it, make it easier for kids, or make it easier for me to understand and make it part of a life.

These examples of the personal and professional factors that influence the thinking of the teachers in this book seem rather obvious in retrospect,

but teacher educators, myself included, often do not acknowledge their impact on teacher development. We especially do not enough pay attention to the influence of teachers' personal relationships both in and out of school, such as the influence of friends, mentors, colleagues, and family, or the influence of other life circumstances on teacher development, such as children, health, and changing educational policy climate. Perhaps this is because we have little control over these factors, just as we have little control over teachers' prior beliefs and the teaching contexts they work in beyond student teaching. However, we can and must acknowledge these influences, and we must make an effort to incorporate them into our teacher education curriculum. This is one of the many lessons I have learned from conducting this research.

Although the Ammon and Hutcheson Model of Pedagogical Development is foundational to this study, there have been many other theories of teacher development suggested over the years. What follows is my response to the question of how other theories of teacher development describe the lives of teacher.

WHAT DO OTHER THEORIES OF TEACHER DEVELOPMENT HAVE TO SAY ABOUT THE LIVES OF TEACHERS?

In addition to the Ammon and Hutcheson Model of Pedagogical Development, several models and theories of teacher development have been posited over the past three decades. Although none of these studies focuses solely on the development of teachers' thinking about pedagogy as the longitudinal case studies presented in this book do, all of them address teachers' thinking, teachers' lives and careers, and teacher development in some way. Although most of the research on teacher development focuses mainly on teachers' early development, especially on their preservice and induction years (e.g., Fuller, Hollingsworth, Kagan, Ryan, Sprinthall), other work addresses teacher development across the span of teachers' careers (e.g., Berliner, Bullough, Huberman, Nias). Although no one theory or model captures the complexity of the development of teachers' thinking or addresses all domains involved in teachers' thinking about the teaching–learning process, each offers heuristic value to help us think about ways to better understand and support teachers as they develop during their preservice and student teaching experiences and throughout their careers in the field. It is with this heuristic value in mind that I summarize and comment on nine other studies of teacher development that have been published during the last three decades.

In response to the question of what do other theories of teacher development have to say about the lives of teachers, I describe these studies in chro-

nological order. I begin with Frances Fuller's seminal work on teacher concerns (Fuller, 1969; Fuller & Brown, 1975), include the theoretical and empirical efforts of Norman Sprinthall and his colleagues to apply cognitive-developmental theory to teacher education (Glassberg, 1979; Sprinthall & Thies-Sprinthall, 1980, 1983; Thies-Sprinthall & Sprinthall, 1984), Kevin Ryan's (1986, 1992) description of stages of teacher development through the induction years, the work of David Berliner (1988) and his colleagues on the development of teacher expertise (Berliner, 1986; Carter, Cushing, Sabers, Stein, & Berliner, 1988; Carter, Sabers, Cushing, Pinnegar, & Berliner, 1987; Sabers, Cushing, & Berliner, 1991), the research of Sandra Hollingsworth and her colleagues' (Hollingsworth 1989, 1994; Lidstone & Hollingsworth, 1992) longitudinal study of the learning to teach process, and Donna Kagan's (1992) review of the evolution of teachers' professional growth in the early years of teachers' lives. I also briefly describe Jennifer Nias' (1989a, 1989b) study of primary teachers' sense of self as teacher and Martin Huberman's (1989) work on the life cycle of teachers because both of these take a longitudinal look at teachers lives and careers. Nias' longitudinal study looks at British primary teachers' individual sense of self as teacher 10 years into their careers, and Hubermans's cross-sectional study of secondary teachers focuses on the professional life cycle of teachers. Unfortunately, none of this research includes in-depth case studies that describe the development of individual teachers' thinking in detail. Rather, they are based on interviews with many teachers. Therefore, I also discuss the work of Robert Bullough and his colleagues (Bullough, 1989, Bullough & Baughman, 1997; Bullough & Knowles, 1991; Bullough, Knowles, & Crow, 1991), including his longitudinal study of Kerrie because of the length and depth of this single case study (Bullough, 1989, Bullough & Baughman, 1997).

It should be noted that these studies and models represent different theoretical perspectives and describe different aspects of teacher development than the developmental-constructivist model of teachers' thinking about pedagogy, which is foundational to this book. For example, Fuller's model takes a counseling and psychological perspective and focuses on the concerns of beginning teachers. Sprinthall's work was based on the application of cognitive-developmental constructs, including moral, ego, and conceptual development as these apply to teacher education. Berliner's model was based on schema theory and information processing; it focuses on teachers' cognitions about classroom practices as exemplified by teachers who range from novices to experts. Kagan's work validates and elaborates on the Fuller and Berliner models to describe some of the mechanisms that occur as teachers develop and grow as professionals. Hollingsworth's study (Hollingsworth, 1989; Lidstone & Hollingsworth, 1992) started out using cognitive psychology and information processing as its theoretical framework,

but at the end of this 6-year study, Hollingsworth interpreted her findings from a feminist perspective (Hollingsworth, 1994). Nias' theoretical perspective is based on psychological, philosophical, and sociological theories, including symbolic interactionism and Freudian and Kahoutian notions of self. Huberman's study is grounded in psychological and sociological perspectives. Nevertheless, each of these models allows us to look at the development of teachers' thinking from different perspectives, which should provide additional insight into the lives of the teachers in this study.

Fuller's Model of Teacher Concerns

Frances Fuller's (1969) original model described three stages of teacher concerns. Fuller and Brown (1975) later modified this model to include four stages: fantasy, survival, mastery or craft, and impact. These stages describe the focus of teachers' concerns, which begin during the fantasy stage, with preservice teachers being concerned about how their cooperating teachers and students will perceive and judge them. This first stage is followed by the survival stage, when preservice teachers' concerns focus on how well they will be able to handle a class, and then by concerns about how they will be able to teach the curriculum during the mastery stage. The last stage of concerns described by Fuller and Brown focuses on how well all students' needs will be met during the impact stage.

Shifts in the focus of concerns of preservice teachers from self to students, which Fuller and Brown's (1975) model describes, is one that most teacher educators observe repeatedly in most of their beginning teachers. However, the amount of time that preservice and induction-year teachers spend in each of these stages varies greatly. Furthermore, whether these stages constitute an invariant sequence in the concerns of beginning teachers is disputed (Kagan, 1992). Nevertheless, this model is useful to consider when looking at the development of beginning teachers, especially when trying to understand where their focus and concerns lie.

Sprinthall's Cognitive-Developmental Framework for Teacher Development

In the early 1980s, Norman Sprinthall and his colleagues applied the cognitive and developmental psychology-based theories of Hunt (1974), Kohlberg (1969), Loevinger (1976), Perry (1970), and Piaget (1963, 1972) to understanding adult learning and development in general, and to their own theoretical framework for teacher education in particular (Sprinthall & Thies-Sprinthall, 1980, 1983; Thies-Sprinthall & Sprinthall, 1984). These papers reviewed and applied the current research (at the time) on cognitive, moral, and ego adult development to teacher education by suggesting

that instruction should begin with teachers' current levels of cognitive complexity and proceed with the goal of helping teachers move ahead to the next highest level of development in each of these domains. They also proposed a cognitive-developmental framework for teacher education based on matching instruction and field experiences to teachers' levels of cognitive development and conceptual complexity. Part of Sprinthall and Thies-Sprinthall's proposed framework for teacher education included creating optimal mismatches and cognitive dissonance that would provoke disequilibrium in teachers, hence the possibility of promoting developmental growth toward more complex ways of thinking and teaching. Their assumption was that teachers with higher levels of cognitive, moral, and ego development and cognitive complexity are better suited to meet their students' varying needs. They suggested that such teachers are more flexible in their instructional strategies, use higher order and more complex thinking strategies with their students, and are better able to tolerate ambiguity (Glassberg & Sprinthall, 1980; Sprinthall & Thies-Sprinthall, 1980, 1983; Thies-Sprinthall & Sprinthall, 1984).

Unlike most of the thinking about adult development at the time, these educators believed that the thinking and conceptual levels of adults can be developed. They also believed that teacher education was in desperate need of "coherent theory and practice to promote teacher development" (Glassberg, 1979, p. 2). Agreeing with others at the time who called teacher education atheoretical, Thies-Sprinthall and Sprinthall (1984) posited six assumptions for their framework, which are based in cognitive-developmental theory:

(1) All humans process experience through cognitive structures . . .

(2) These cognitive structures are organized into a hierarchy of stages, a sequence from less complexity to more complexity.

(3) Growth occurs first within a particular stage and then only to the next stage in the sequence. This latter change is a qualitative shift, a major quantum leap to a significantly more complex system of processing experience.

(4) Growth is neither automatic nor unilateral, but occurs only with appropriate interaction between the human and the environment.

(5) Behavior can be determined and predicted by an individual's particular stage of development. Predictions, however, are not exact.

(6) The stages themselves are conceptualized as a series of partially independent domains. A domain is a major content-structure area of human activity. . . . (p. 39)

Thies-Sprinthall and Sprinthall (1984) suggested the following ways to promote increasing levels of cognitive development for teachers: (a) significant role-taking experiences, (b) roles that are sufficiently matched to the cognitive complexity of the teacher, (c) careful and continuous guided reflection with feedback, (d) a balance between real experience and discussion and reflection on teaching, (e) continuous use of the previous techniques including peer teaching and tutoring, (f) personal support and challenge by a leader who would also provide modeling and create some dissonance, and (g) assessment of cognitive, moral, and ego development using several measures.

Sprinthall and Thies-Sprinthall (1983) also compared developmental stages across different domains relevant to teacher development studied by the major theorists of human growth and development. This work provides a theoretical framework for teacher development that has similar theoretical underpinnings to the Ammon and Hutcheson Model of Pedagogical Development, although it address teachers' cognitive development in general, rather than in the pedagogical domain specifically.

The work of Sprinthall and his colleagues (Glassberg, 1979; Glassberg & Sprinthall, 1980; Sprinthall, Reiman, & Thies-Sprinthall, 1996; Sprinthall & Thies-Sprinthall, 1980, 1983; Thies-Sprinthall & Sprinthall, 1984) is especially useful for thinking about how teachers' cognitive development can be fostered and for understanding how cognitive, ego, and moral development interact.

Ryan's Model of Beginning Teacher Development

In 1986, Kevin Ryan described four developmental stages that new teachers go through as they begin teaching and throughout their induction years. Using similar terms and a sequence much like the one posited by Fuller (1969), Ryan described four stages: fantasy, reality, master of craft, and impact. The fantasy stage, which begins when prospective teachers first begin to think about themselves as teachers and what their life might be like as a teacher, usually extends to the time teachers begin their first teaching position. Ryan also wrote about *dark* fantasies that teachers have when they get closer to having their own classrooms and begin to have anxieties about managing a classroom on their own. According to Ryan (1986),

> Whether the fantasies are pleasant or anxious, preservice teachers often do not think about their future careers in a careful, analytical manner. One reason why preservice teachers find education courses irrelevant is that these courses often have little to do with what is going on in their fantasy lives. (p. 11)

From Ryan's perspective, the reality stage sets in during or shortly after the excitement of the initial weeks of teaching, when beginning teachers find themselves continuously adjusting and readjusting their plans and

ideas about students, and they are trying to solve a multitude of problems they encounter. Ryan (1986) wrote that the survival stage for many teachers often extends through their first year in the classroom and is one of the biggest challenges in their personal and professional lives. In talking about the survival stage, Ryan stated that it ". . . can have far-reaching and complex effects depending on the individual teacher. It can affect the way in which the teacher will view teaching in the future" (p. 14).

Having survived the reality stage, confronted problems, and succeeded or not as the case may be, Ryan's next stage is the mastery of craft. For some beginning teachers, this stage may begin as early as February of the first year, but for others it may take much longer. In this stage, the beginning teacher gradually masters the six most common problems that beginning teachers have to deal with: shock of the familiar, students, parents, administrators, fellow teachers, and instruction.

Ryan's final stage of beginning teachers' development is the impact stage, when teachers begin to resolve and master all the problems described earlier so they can focus on their students' learning.

Like Fuller and Brown's model of teacher concerns, Ryan's model is useful for looking at what teachers are focused on in the early years of their development. However, neither Ryan's nor Fuller and Brown's model addresses teacher development after the induction years or discusses mechanism for helping teachers change their focus to the next level.

Berliner's Model of the Development of Teacher Expertise

David Berliner's studies of teacher expertise (Berliner, 1986; Carter, Cushing, Sabers, Stein, & Berliner, 1988; Carter, Sabers, Cushing, Pinnegar, & Berliner, 1987) represent an information-processing view of teacher cognition. His 1988 paper focuses on the implications of these studies of pedagogical expertise for teacher education and evaluation. In this research, Berliner highlighted the role of experience in teachers' understanding of pedagogical thinking, skills, and attitudes as they develop from novices to experts. He described five stages of development, each of which is characterized by distinct views of pedagogy: novices, advanced beginner, competent, proficient, and expert (Fig. 7.1).

At the novice stage, which Berliner said corresponds to student teachers and many first-year teachers, the novice teacher is learning context-free rules and labels through real-world experience. At the advanced beginner stage, which often corresponds to the second and third years of teaching in Berliner's model, the teacher is developing episodic and strategic knowledge, and context is beginning to influence the teacher's behaviors. However, advanced beginners still have difficulty knowing when to break or follow rules and established procedures. The competent stage for many
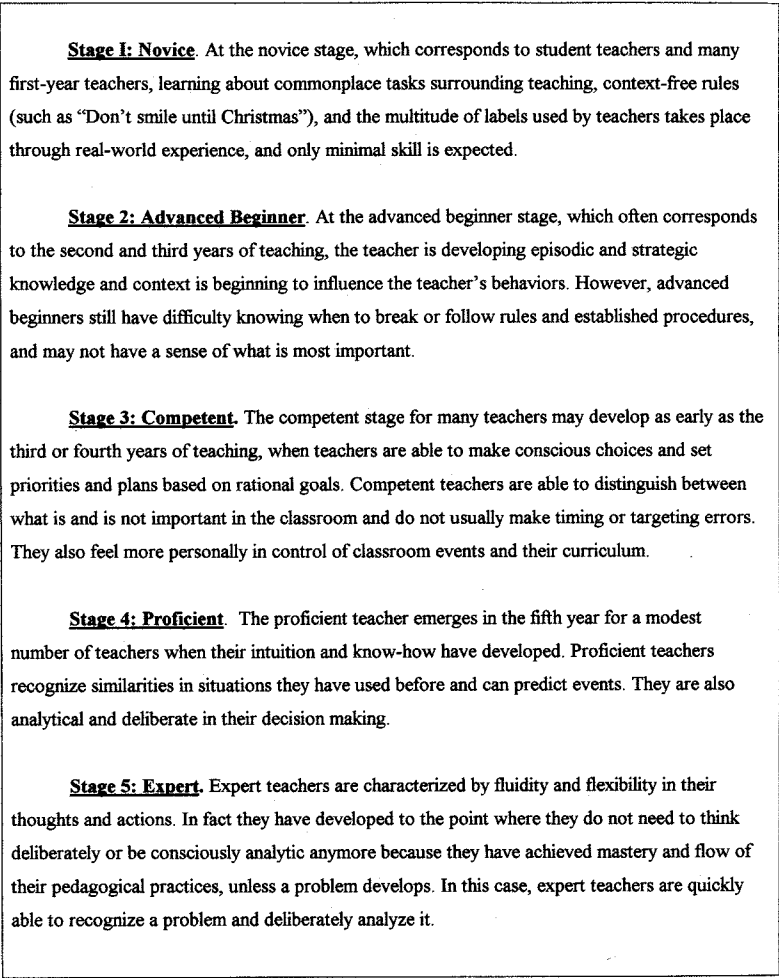

Stage 1: Novice. At the novice stage, which corresponds to student teachers and many first-year teachers, learning about commonplace tasks surrounding teaching, context-free rules (such as "Don't smile until Christmas"), and the multitude of labels used by teachers takes place through real-world experience, and only minimal skill is expected.

Stage 2: Advanced Beginner. At the advanced beginner stage, which often corresponds to the second and third years of teaching, the teacher is developing episodic and strategic knowledge and context is beginning to influence the teacher's behaviors. However, advanced beginners still have difficulty knowing when to break or follow rules and established procedures, and may not have a sense of what is most important.

Stage 3: Competent. The competent stage for many teachers may develop as early as the third or fourth years of teaching, when teachers are able to make conscious choices and set priorities and plans based on rational goals. Competent teachers are able to distinguish between what is and is not important in the classroom and do not usually make timing or targeting errors. They also feel more personally in control of classroom events and their curriculum.

Stage 4: Proficient. The proficient teacher emerges in the fifth year for a modest number of teachers when their intuition and know-how have developed. Proficient teachers recognize similarities in situations they have used before and can predict events. They are also analytical and deliberate in their decision making.

Stage 5: Expert. Expert teachers are characterized by fluidity and flexibility in their thoughts and actions. In fact they have developed to the point where they do not need to think deliberately or be consciously analytic anymore because they have achieved mastery and flow of their pedagogical practices, unless a problem develops. In this case, expert teachers are quickly able to recognize a problem and deliberately analyze it.

FIG. 7.1.   Berliner's (1988) model of pedagogical expertise.

teachers may develop in the second or third year of teaching, when teachers are able to make conscious choices and set priorities and plans based on rational goals. Competent teachers are able to distinguish between what is and is not important in the classroom and do not usually make timing or targeting errors. They also feel more personally in control of classroom events and their curriculum. Berliner says that the proficient teacher begins to emerge in the fifth year, when their intuition and know-how have developed. Proficient teachers recognize similarities in situations they have experienced before and can predict events. They are also analytical and de-

liberate in their decision making. Finally, according to Berliner's model, expert teachers are characterized by fluidity and flexibility in their thoughts and actions. Expert teachers have developed to the point where they do not need to think deliberately or be consciously analytic anymore because they have achieved mastery and flow of their pedagogical practices—unless a problem develops. In this case, expert teachers are quickly able to recognize a problem and deliberately analyze it.

I agree with Berliner that this model of teacher expertise development has heuristic value for how we might think about educating and evaluating teachers. That is, this model and the others described before, including the Ammon and Hutcheson Model of Pedagogical Development that undergirds the analysis of the teachers in this book, provide us with alternative ways to think about teacher development. Although Berliner's work uses schema theory and includes a lot of behavioristic language, it offers another way to describe the development of teachers' pedagogical thoughts and actions across their careers.

Nias' Model of the Development of Teachers' Sense of Self

Nias' (1989a) longitudinal study of British primary teachers focused on understanding the ways teachers' conceptions of their careers change from the beginning to the midpoint of their careers and how they define and derive their sense of self as teachers. Nias also addressed teachers' satisfactions and dissatisfactions with their work and what it means to feel like a teacher. As mentioned earlier, Nias used psychological, philosophical, and sociological theories, including symbolic interactionism and Freudian and Kahoutian notions of self, to explain the influences on and the developing nature of teachers' sense of self as teacher. This study was based on semistructured interviews with 99 beginning teachers conducted in 1975 to 1977 and follow-up interviews with 51 of these teachers 10 years later at the midpoint of their teaching careers. In her book, Nias (1989a) described teacher development as who a person becomes as a teacher and the importance of the affective, cognitive, and practical tasks of teaching. Nias said these cannot be separated from teachers' sense of self because they are central to the work of teachers. The role of the school context is also a major theme in Nias' study.

Nias' study provides a long-term view of how teachers' conceptions of their work change from the beginning to the midpoint of their careers, which matches the time frame of the longitudinal study in this book. Her study highlights different ways that career teachers view and identify themselves as teachers and the sources of their identity development, using multiple examples from the extended interviews she conducted (Nias 1989a, 1989b). Although there are no in-depth case studies of individual teachers

in Nias' work, she does address the importance of teachers' roles in both their personal and professional lives as these influence their sense of self.

The results of Nias' (1989a) study relate to this study at Time 5 in 1997, which was the 10th year of teaching for Sandy, Rick, and Ralph. Unlike the teachers in this study, a good portion of the teachers in Nias' study did not see themselves as career teachers, were frustrated at their lack of vertical promotion and increasing responsibilities, or even took on extensive outside interests to offset boredom, which Nias called *parallel careers*. Sandy's case is similar to many of the married female teachers in Nias' (1989b) study because they also found ways through part-time and flexible roles to continue their personal and professional growth and to have an influence on others. Similar to some of Nias' midcareer teachers, Rick also expressed some potential career dissatisfaction at Time 5 after 10 years in the classroom, when he resolved to remain at his school but to get more involved in school committees again.

Huberman's Model of the Professional Life Cycle of Teachers

Martin Huberman's (1989) longitudinal study of teachers' professional lives was based on cross-sectional data gathered from self-reports of 160 mostly male secondary teachers in Switzerland in the 1980s. The goal of these studies was to describe the evolution of the professional life cycle of teachers throughout the span of their careers as a heuristic for understanding the influence of both psychological and sociological factors on the life cycle of teachers. Huberman's purpose was also to describe possible stages or periods in the professional life cycle of teachers' careers, which he believed have heuristic rather than prescriptive value. Huberman did not focus on teachers' pedagogical understandings, but his work provides another useful perspective on teacher development and includes descriptions of what teachers focus on at various stages of their careers. A summary of each of these stages follows (Fig. 7.2).

The first stage in Huberman's study, the career entry stage, is characterized by themes of survival, discovery, and exploration.

The "survival" aspect renders what is commonly called the "reality shock" of the initial year—the initial confrontation with the same complexity of professional work that most experienced members of the profession deal with—and its attendant dilemmas, continuous trial and error, preoccupation with oneself and one's sense of adequacy, wide discrepancies between instructional goals and what one is actually able to do in the classroom, inappropriate instructional materials, wide swings from permissiveness to excessive strictness, concerns with discipline and management that eat away at instructional time, recalcitrant pupils, and the like. On the other hand, the "discovery" theme
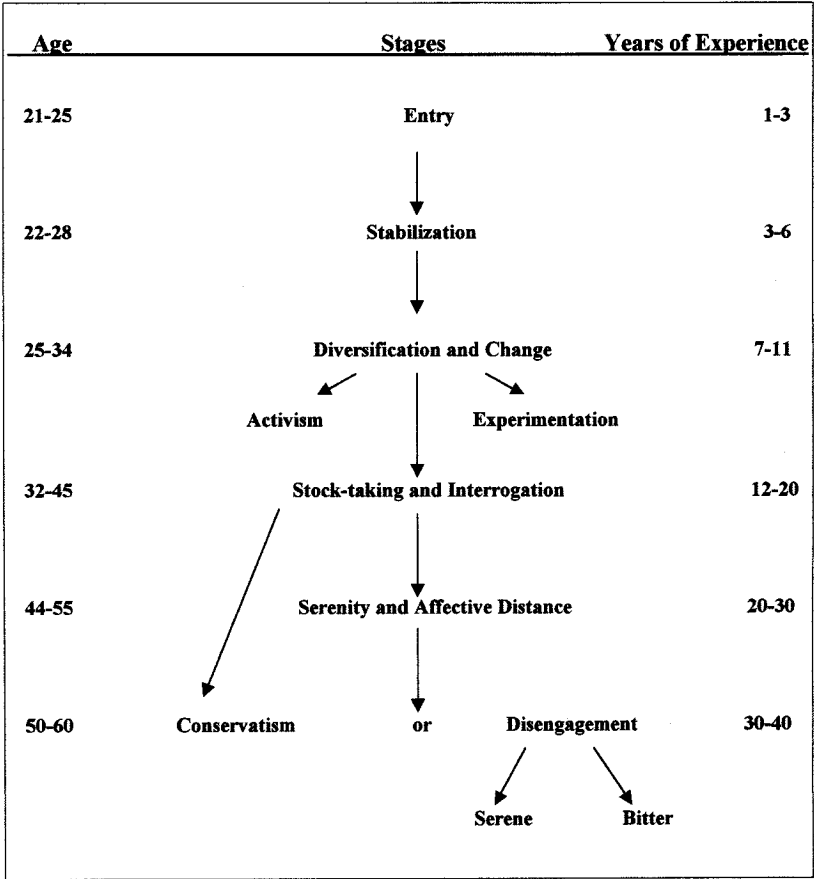
Age	Stages	Years of Experience
21-25	Entry	1-3
22-28	Stabilization	3-6
25-34	Diversification and Change	7-11
	Activism Experimentation	
32-45	Stock-taking and Interrogation	12-20
44-55	Serenity and Affective Distance	20-30
50-60	Conservatism or Disengagement	30-40
	Serene Bitter	

FIG. 7.2.   Huberman's (1989) model of the professional life cycle of teachers.

renders the initial enthusiasm of teaching, the sharp learning curve, the headiness of having one's own pupils, one's classroom, one's program; the pride of collegiality and of "place" within a profession. (Huberman, 1989, p. 349)

Huberman said that the survival and discovery stages often occur in parallel during the entry stage, with the excitement and challenge of the discovery stage serving to pull beginning teachers through the survival stage. The exploration theme also has to do with discovery and experimentation in the classroom as new teachers enter their careers.

The second stage in Huberman's model, the stabilization stage, is characterized by personal commitment, becoming responsible, earning tenure, independence, liberation, emancipation, growing sense of instructional mastery, and greater confidence. Huberman reported that many teachers perceive this stage positively and describe it as a period of commitment to the choice of teaching as a career, as having a more assertive sense of professional autonomy, and as a time for developing instructional mastery.

> Generally speaking, there is the juncture of a personal commitment (the decision to make a career of teaching) and an administrative act (the granting of tenure). One is now a teacher, both in one's own eyes and in the eyes of others—not necessarily forever, but for a good block of time. . . . Virtually all empirical studies associate the period of 3–5 years into the career with a growing sense of instructional "mastery." . . . With greater ease in more complex or unexpected classroom situations, teachers describe themselves as consolidating, then refining a basic instructional repertoire on which they can, finally, rely on. (Huberman, 1989, p. 350)

According to Huberman, these first two stages are fairly ubiquitous in studies of teachers' careers, but the paths individuals take beyond the first 6 or 7 years in the career cycle are quite divergent.

Huberman called the next stage the *diversification and change stage* because the teacher's career can go in two directions: activism or experimentation. According to Huberman, reasons for seeking diversification and change range from a desire to make use of one's sense of instructional mastery by seeking stimulation, new ideas, and challenges to a fear of stagnation. However, the fear of stagnation was stronger for teachers with 11 to 19 years of experience, whereas those with less than 10 years of experience were more likely to seek diversification and variation from established routines. Experimentation and diversification are characterized by

> . . . the consolidation of an instructional repertoire [that] leads naturally to attempts to increase one's effectiveness in the classroom. There then follow a series of modest, largely private experiences, during which one experiments with new materials, different pupil groupings, new assignments, different combinations of lesson and exercises. In a sense, these attempts compensate for the uncertainties of the first years of teaching. . . . (Huberman, 1989, p. 351)

However, a fairly large subset of Huberman's sample (35%–40% of the 160 teachers he interviewed) appeared to seek a more activist role, which he described in this way:

> *Having "stabilized" one's classroom, one takes aim on the aberrant practices or inadequate resources within the system by joining or mobilizing groups of peers, signing on for reform, lobbying or joining key commissions.* (Huberman, 1989, p. 351)

However, the motives for such activism were not clear and in some cases appeared related to a desire for career advancement.

Stock-taking and interrogation are themes during the midcareer of a teacher's career cycle (12–20 years of experience), especially for men ages 32 to 45. This may be a time of increased vulnerability and reflectiveness, possibly precipitated by a psychological crisis, an unsatisfactory structural change in the teaching context such as a new principal, or family changes. In some cases, this stage follows a period of unsatisfactory attempts at diversification or a *midlife crisis* that causes teachers to rethink their original desire to spend their lives as teachers and a nagging desire to try another profession before it is too late.

The next stage, which Huberman called the *serenity and affective distance stage* in a teacher's career cycle, begins sometime between 44 and 55 years of age, or with 20 to 30 years of experience and often following an active period of self-doubt. Huberman described this phase as a time of reflection and self-acceptance when a teacher's level of ambition and investment in career decreases. However, he also said these themes are balanced by confidence, effectiveness, and serenity, and sometimes by increased distance from pupils due to increasing generational differences.

The last stage of a teacher's life cycle may be marked by *conservatism,* and negativism often marks this stage for many teachers ages 50 to 60 years. Teachers at this stage of the career cycle are often more prudent and quite skeptical of reform, less tolerant of younger teachers and pupils, and generally more dogmatic and rigid in their thoughts and actions. In Huberman's (1989) study, one group of highly conservative teachers bypassed the serenity stage and moved straight to a self-questioning, dissatisfied stage at midcareer into a final disengagement phase.

Disengagement, which can be either serene or bitter, is the end stage in Huberman's scheme of the professional life cycle of teachers with 30 or more years of experience. This period is marked by gradual internalization and withdrawal, in a generally positive way with few regrets, as veteran teachers spend more time on their interests outside of school. Such disengagement sometimes begins in the serenity stage and continues through the conservative phase, when teachers feel marginalized because they disagree with changing school policies and practices. For others, however, this period is bitter and more extreme.

> In all cases, however, there was a disinvestment in concerns outside the classroom. Seniority had brought for them a convenient schedule, favorable class assignments, freedom from unwanted intrusions, and their goal was both to preserve these privileges and to fend off solicitations to increase their level of investment. (Huberman, 1989, p. 355)

Huberman's career stages are useful in thinking about the teachers in this study, especially the three who are still teaching: Sandy, Ralph, and Rick. The career entry stage (Years 1–3) for all of these teachers can be characterized quite well by the survival, discovery, and exploration themes that Huberman (1989) described. Huberman said that the survival and discovery stages often occur in parallel, with the excitement and challenge of the discovery stage serving to pull beginning teachers through the survival stage, which I think is quite true of these teachers. However, it is unlikely that Julie reached the stabilization stage (Years 3–6) before she left the classroom for other opportunities. Nevertheless, after 13 years of teaching, Sandy, Ralph, and Rick appear to currently be in the diversification and change stage, which Huberman said can take two directions. My data indicate that their careers currently fit best with Huberman's experimentation mode, which he described as coming from a desire to make use of one's sense of instructional mastery by seeking stimulation, new ideas, and challenges due to fear of stagnation. However, rather than experimenting in the sense of tinkering with new materials and lessons, these teachers appear to be refining their pedagogical practices as they come closer and closer to achieving personal teaching goals and enacting their vision of teaching from a developmental-constructivist perspective. Rick also seems to be thinking about taking on the more activist role that Huberman talked about as another aspect of the midcareer, diversification, and change stage. Finally, Huberman described the stock-taking and interrogation stage (Years 12–20) as a time of increased vulnerability and reflectiveness, during which change may be precipitated by personal or professional dissatisfaction or crisis. How these teachers will deal this next phase in the life cycle of their careers is unknown at this time.

Kagan's View of Teacher Development

Donna Kagan's (1992) work, based on a review of over 40 empirical research studies in the learning-to-teach literature between 1987 and 1990, yields a model of teachers' professional growth that she constructed from the patterns of findings she discerned in the studies she selected to review. Kagan concluded from her analysis that the Fuller and Berliner models can be integrated and elaborated on. Kagan's model for teacher development suggests that novice teachers' primary task is to acquire knowledge of students while the novice acquires knowledge of self. Another task of the novice teacher is to form standardized routines for procedures that integrate classroom management and instruction. Kagan suggested that the resolution of these two tasks allows novice teachers to focus on their students' learning. Figure 7.3 represents my own interpretation of Kagan's model of preservice teacher development, including the tasks she suggests for novice teachers and needed changes she suggests for preservice teacher education (Kagan, 1992).
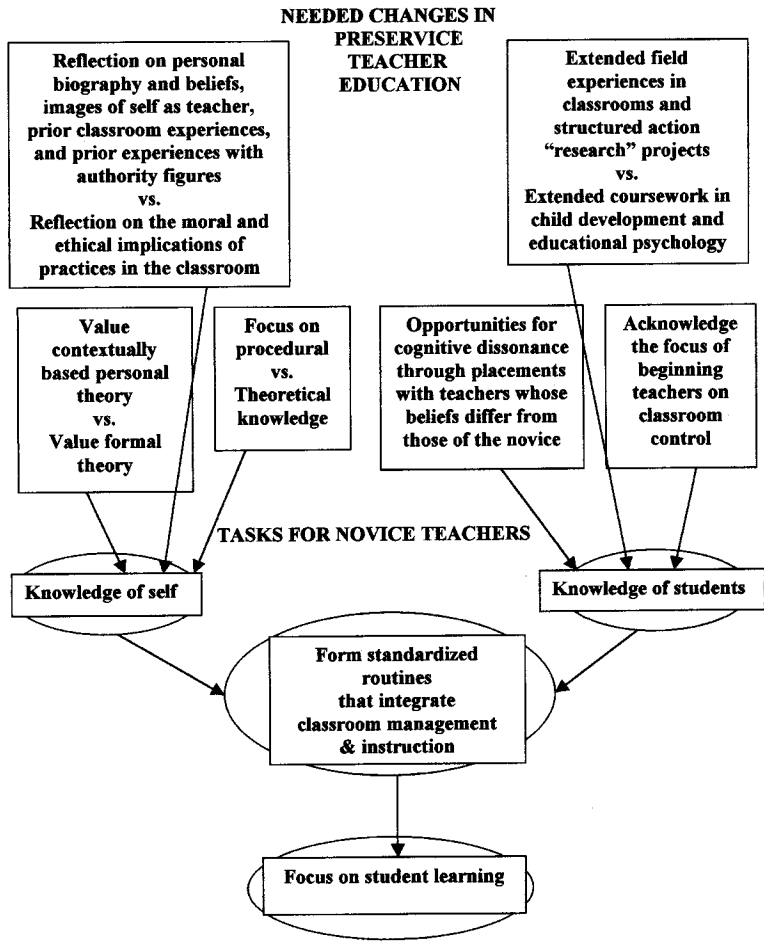
FIG. 7.3. Kagan's (1992) model of preservice and beginning teacher development: Factors affecting professional growth.

Based on her review of learning to teach studies, Kagan (1992) inferred and suggested several changes in preservice teacher education to promote beginning teachers' professional growth. Among these are (a) a focus on procedural over theoretical knowledge; (b) self-reflection on personal biography and beliefs, images of self as teacher, prior classroom experiences, and prior experiences with authority figures over reflection on the moral and ethical implications of practices in the classroom; (c) extended field experiences in classrooms and structured action research projects over extended coursework in child development and educational psychology; (d) opportunities for cognitive dissonance through placements with teachers

whose beliefs differ from those of the novice; (e) acknowledgment of the focus of beginning teachers on classroom control; (f) acknowledgment that some preservice teachers may not be ready to handle a classroom successfully and should be counseled out of the preservice program; and (g) valuing contextually based personal theory over formal theory.

Kagan's work has been criticized for leaving out several major studies of professional growth among preservice teachers (Grossman, 1992) and not distinguishing between teacher beliefs and teachers' pedagogical practices (P. Ammon, personal communication, September 25, 1992). Her suggestions for how to promote teacher development also differ in substantive ways from the recommendations of other models (Black & Ammon, 1989, 1992; Levin & Ammon, 1992; Ryan, 1986). Nevertheless, Kagan's work offers another way to look at the factors that influence the development of teachers' thinking.

Hollingsworth's View of the Process of Learning to Teach

Sandra Hollingsworth and her colleagues (Hollingsworth, 1989, 1994; Lidstone & Hollingsworth, 1992) conducted a 6-year longitudinal study of the learning to teach process, beginning in 1987 with a group of 14 preservice teachers from another teacher education program at UC–Berkeley. Although some of the research goals in Hollingsworth's "Learning to Teach Reading" project were similar to those that guided this study, her research was theoretically grounded in cognitive psychology and information processing. Specifically, Hollingsworth was interested in understanding the process of cognitive change, "the nature of the intellectual growth and identity maintenance while learning to teach" (Hollingsworth, 1989, p. 161), and in determining how teacher education can support preservice teachers as they learn to become good teachers of reading in urban schools. However, as her 6-year longitudinal study progressed, Hollingsworth embraced feminist theoretical perspectives (Harding, 1987) as she began to see her work with 4 of her original 14 teachers as mostly about how collaboration and conversational processes influenced the process of learning to teach (Hollingsworth, 1994, p. 7).

Although the program goals and philosophy of the postbaccalaureate teacher education program at UC–Berkeley that Hollingsworth studied were somewhat different than those of the DTE program, her participating teachers took some of the same courses, including child development courses based on the developmental-constructivist theories of Piaget and Vygotsky. Similar to several earlier studies described before, Hollingsworth (1989) and her colleagues (Lidstone & Hollingsworth, 1992) found that the preprogram or prior beliefs of preservice teachers were a strong influence on how they understood and enacted the content learned in their

teacher education classes and how they applied it to teaching opportunities in urban classrooms. Essentially, teachers' prior beliefs served as a filter for the knowledge about teaching and classrooms that they acquired as pre-service teachers. Lidstone and Hollingsworth (1992) also found that the preservice teachers in their study needed to get classroom management under control before they were able to develop and effectively deliver subject-specific content and pedagogy and before they could begin to focus on children's learning in the classroom. Hollingsworth (1989) also noted that preservice teachers needed to be motivated by an interest in students as individuals and a developing interest in subject pedagogy (in this case, on teaching reading) that comes from their teacher education courses. This had to be in place for teachers to change their understanding of how reading can be taught effectively in urban schools, hence for growth in their pedagogical knowledge. She also found that support factors were necessary for changes in pedagogical and content knowledge to occur. These included permission and encouragement from cooperating teachers to experiment with new methods of teaching reading, expectations from the teacher education program that such experimentation was important, and support from the university supervisors as student teachers experimented with new pedagogical practices for teaching reading and writing.

As a result of analyzing changes in the beliefs, cognitions, and practices of eight of the original teachers in this study, Lidstone and Hollingsworth (1992) offered a model of how teachers' thinking changes and what influences those changes. This model of cognitive and behavioral changes in learning to teach, the *Model of Complexity Reduction*, described shifts and patterns in learning to teach after 4 years in the classroom. It was based on interviews and classroom observations of eight teachers. How cognitive changes occur in this model was summarized by Lidstone and Hollingsworth (1992) in the following way:

> Because learning to teach is extremely complicated and the nature of attentional capacity is selective (Bransford, 1979), new teachers seem to actively attend to only a few concepts and skills at a time As they learn basic conceptual routines and are able to put them on "automatic pilot" (being free of having to devote conscious attention to them), they can concentrate on more advanced concepts and pedagogical practices. Thus, the overall complexity of teaching is gradually reduced to manageable proportions as the teacher develops over time. (pp. 40–41)

The *Model of Complexity Reduction* (Lidstone & Hollingsworth, 1992) focused on three factors that affect the learning to teach process: the role of prior beliefs in learning to teach, three areas of cognitive attention for teachers (classroom management/organization, knowledge of subject/pedagogy, and student learning from academic tasks), and three levels of

cognitive understanding (rote, routine, and comprehensive). Although, Lidstone and Hollingsworth (1992) described two patterns through their model that teachers follow while learning to teach, essentially a teacher's ability to focus on student learning from academic tasks requires that the teacher integrate both classroom management and organization and knowledge of subject matter and pedaogy at least at a routine level.

> This integration usually develops after the beginning teacher has routinized management and subject/pedagogy knowledge separately, although some teachers never integrate the two. Skilled teachers know that management problems do not usually occur in isolation from the lesson being taught. If the subject matter or pedagogy is too easy or too difficult, and/or it the task does not require at least some active construction of knowledge on the part of the learner, behavioral problems will most likely develop. (Lidstone & Hollingsworth, 1992, p. 43)

In this model, prior beliefs affect how deeply teachers are able to master specific skills and concepts. In other words, beliefs affect the level of cognitive processing and behavior of the teacher so that their focus on classroom management, subject matter and pedagogy, and students learning from academic tasks can be at a rote, routine, or comprehensive level, which in turn affects their understanding of classroom management, subject matter and pedagogy, and students learning from academic tasks and how well this knowledge is integrated with their beliefs.

Lidstone and Hollingsworth (1992) concluded their study with a call for support from university supervisors, university instructors, cooperating teachers, principals, other teachers, staff developers, and researchers:

> All beginning teachers need: (1) Support in seeing other perspectives, possibly opportunities to observe in other classrooms, from participating in collaborative groups made up of both types of teachers . . . , or in doing action research projects collaboratively with other teachers; (2) Support from an induction program where other beginning teachers are struggling with similar problems; (3) Support people who have some sense of their particular beginning teachers' beliefs, background knowledge, and biography, and who consider these important variables in teacher education; (4) Support people who have a schema of teacher change, such as the Model of Complexity Reduction (Hollingsworth, 1989) or the Ammon and Hutcheson Model (1989), so that they have in mind the range of beginning teachers' understanding of learning to teach. (p. 56)

The model proposed by Hollingsworth and her colleagues (Hollingsworth, 1989, 1994; Lidstone & Hollingsworth, 1992) is somewhat similar to the description Kagan (1992) gave about the important tasks of novice teachers: acquire knowledge of students while the novice acquires knowl-

edge of self, and form standardized routines for procedures that integrate classroom management and instruction. Perhaps this is due to the use of cognitive information-processing theories by both Kagan and Hollingsworth as they thought about and studied teacher development in the early 1990s. At any rate, the perspectives of both Kagan and Hollingsworth about teacher development are interesting to consider, and the suggestions of how to support teacher development are quite similar to those found as a result of this study.

Robert Bullough's Longitudinal Case Study of Kerrie

Robert Bullough and his colleagues (Bullough & Knowles, 1991; Bullough, Knowles, & Crow, 1991) have written several case studies of first-year teachers in an effort to help beginning teachers think about themselves as developing professionals and elucidate factors that influence beginning teachers' development to help their teacher education programs to better prepare and support developing teachers. In the process of developing and analyzing year-long case studies of six first-year teachers, Bullough, Knowles, and Crow (1991) discovered that teachers' metaphors are powerful predictors of how well beginning teachers may or may not adjust to teaching as a profession. Essentially, when beginning teachers' metaphors are a good match for their teaching context, they usually make a good adjustment to the teaching profession. However, in cases where their metaphors and beliefs about teaching are not a good match, beginning teachers will likely struggle during the induction years unless they are able to adjust their views. Although this is an oversimplification of the extensive work of Bullough and his colleagues in supporting teacher development, as well as of the power and limitations of metaphors, they described their use of metaphors in this way: "Emerging as a teacher is, therefore, a quest for compelling and fitting metaphors that represent who beginning teachers imagine themselves to be as teachers" (Bullough, Knowles & Crow, 1991, p. 8).

Robert Bullough also conducted an in-depth, longitudinal case study of one teacher's development during her first year in the classroom (Bullough, 1989) and the follow-up book that looks at Kerrie's life and career as a teacher across 8 years (Bullough & Baughman, 1997). The depth and breadth of this case study and the inclusion of Kerrie as co-author of the follow-up book is noteworthy for its authenticity, attention to the role of context, and detailed analysis of the influences on her life as a teacher. The juxtaposition of the commonalities and uniqueness of Kerrie's story are helpful because they invite readers to compare and make sense of Kerrie's experiences in light of their own experiences. As we read details of how Kerrie coped with the typical problems that most first-year teachers face, we are able to think about how we faced similar issues or helped others face

them. Furthermore, by reading about Kerrie 8 years later, we are not only able to see changes in Kerrie's life, her thinking, and her practice, but we are also able see how changes in her teaching context affected her and how being the subject of a longitudinal study influenced her as well. In her case, Kerrie felt that she benefited from being able to talk about her teaching on a regular basis with someone interested in listening, and that such talking (and the anticipation of it) influenced her thinking by encouraging her to reflect on herself and her teaching. As Kerrie reported, "Every time I talk to you . . . it's just a catalyst because it makes me think about what I'm doing. It's not necessarily you, it's me thinking about me" (Bullough, 1979, p. 139). In these books, Bullough (1979) and Bullough and Baughman (1987) illuminated the complexity of one teacher's development over time.

This book provides four more in-depth case studies and adds to the teacher development literature by offering a look at these teachers' personal and professional lives, with a special focus on the development of their pedagogical understandings over a 12-year period.

Usefulness of Various Models of Teacher Development

Although the preceding summary of research on teacher development covering the past 30 years is not exhaustive, it does represent attempts to offer research-based models of teacher develop, describe changes in teacher development and how they might occur, and apply various theoretical perspectives to understanding teacher development. Despite any epistemological differences that readers may have with any of these studies or models, and considering the methodological problems with stage theories that may overemphasize quasibiological variables and underemphasize the influence of social conditions and individual differences, I agree with Berliner (1988) and Huberman (1989) that their heuristic value should be honored. Consideration of how each phase in a teacher's career might lay the groundwork for the next phase, and also perhaps limit the range of possibilities for what happens next (Huberman, 1989), helps us think about the variables that might influence the lives and careers of teachers. Furthermore, I also agree with Huberman (1989) that we should not view psychological or developmental stage models as deterministic or insensitive to individual differences. More likely, as Huberman stated, adult development is dialectical, and the goal is to describe and understand the contribution of personal and professional influences on the development of teachers over time.

Furthermore, what Glassberg wrote in 1979—"A major source of difficulty in teacher education has been the lack of coherent theory and practice to promote teacher development." (p. 2)—still seemed to be true in the year 2000. We still do not have comprehensive or agreed on theories of

teacher development that can help guide us in supporting teachers' development. Instead, we have several models that address different aspects of teacher development from different theoretical perspectives. However, we now have various sets of state and national standards—both generic and discipline-based standards that direct teacher education curriculum. Unfortunately, most of these standards are not explicitly grounded in a specific theoretical framework and do not often address how we might help teachers meet these standards. In other words, we have standards and goals for teacher education, but no agreed on theory that would help us understand why and how teachers develop as they do so that we can support them in their development. We need to build on the research and models of teacher development described earlier so that we can promote teachers' development in ways that are theoretically coherent and empirically tested. We also need to apply the lessons learned from each of these studies to help teachers continue to grow and develop.

WHAT LESSONS CAN BE LEARNED FROM LONGITUDINAL CASE STUDIES OF TEACHERS' THINKING?

Based on my analysis of the data collected during this longitudinal study, I believe three major factors were influential in the development of these four teachers' pedagogical understandings throughout their careers. These are three lessons I learned from this study, and I believe they are important ones for educators to consider when thinking about how we can offer scaffolding that promotes teacher development:

- First, teachers need ongoing support in order to continue to develop their pedagogical understandings and to remain in the classroom.
- Second, teachers need opportunities that encourage and allow them to continue to be learners if they are going to develop their pedagogical understandings. Ultimately, teachers need to be learners to continue to develop their pedagogical understandings over time.
- Third, teachers need to be reflective if they are to continue to develop. They also need to develop the ability to think metacognitively about teaching and learning, and about behavior and development.

Based on this study, these three elements appear to be fundamental in influencing the development of pedagogical understanding over time: support system, opportunities for ongoing professional development, and propensity for reflection and metacognitive thinking. In fact, based on this study, I would go so far as to say that the lack of any one of these three fac-

tors could be detrimental to the development of a teacher's pedagogical understanding, although this is an empirical question that needs further assessment beyond these four cases. I also believe that these three factors lead directly to a major lesson that can be learned from this study: We can and should provide the foundation for these factors (support, professional development, reflection, and metacognitive thinking) during initial teacher preparation and continue to support them throughout a teacher's career by the kinds of policy initiatives that we generate at school, district, and state levels. What follows is a more thorough explanation of the three elements that were major influences on the development of teachers' pedagogical understandings during this longitudinal study.

1. Having a Support System Influences Teachers' Pedagogical Development. Teachers can continue to develop their thinking about pedagogy when they interact with others to get needed support. This includes support from family, friends, colleagues, or mentors. Support is something that these teachers experienced during their careers, especially Sandy, Ralph, and Rick. However, I do not mean that support is just having the encouragement of people in their personal lives who are supportive of what they do because all of these teachers have family members who support their career choice. Rather, what Sandy, Ralph, and Rick have are multiple forms of support in their personal and professional lives from people who they can talk with about their teaching. For example, Rick has strong support in both areas from his wife, principal, other teachers, best friend from childhood, mentor Dave, and student teachers. In fact, he engages regularly with these people in conversations about his teaching, his students, things he is trying to learn more about, and works they have read together, including books about educational theory. Ralph has his partner, teachers at the various schools where he has worked, student teachers over the years, and, more recently, his students and colleagues in the DTE program. All of these people engage with him as he reflects on his teaching and tries to understand what his students are thinking and how they are learning from his lessons. Sandy has several colleagues and teaching partners, including other teachers who also graduated from the DTE program, her principal for many years, and student teachers over the years whom she talks with about teaching ideas. She has also participated in several formal and informal teacher collaboratives where the focus was on discussing curriculum and pedagogy. In contrast, Julie felt she had little support during her 5 years in the classroom. She did not feel supported by her three principals or her colleagues early on. In fact, it was not until her last year in the classroom that she found teachers in her school who regularly engaged with her in curriculum development or problem solving. Julie did have a few student teachers from the DTE program, but she did not feel enough support at her school, nor did

she have support at home because she was single at the time. Unfortunately, Julie apparently lacked the support she needed to remain in the classroom, although it should be noted that lack of support is only one of the reasons that Julie left teaching after just 5 years.

By *connections* I mean maintaining connections with colleagues, as well as having other professional connections. For the teachers in this study, this included staying connected to the DTE program over the years by mentoring student teachers in their classrooms or, in Ralph's case, serving as a supervisor for the DTE program for 3 years. For example, Sandy talked about the importance of support at Time 4 in 1993:

> *Having people available to talk to, a support group, is great. I think I had a lot of ideas when I was first teaching but I was by myself and nobody was doing what I was doing. Then I moved from Washington to here. I feel there is a lot more support. I have a lot more friends and people that think the same way whom I can to talk to. Yes, there's another woman here, this is her first year here, and there is another teacher here who went through the California Literacy Project last summer. There's Tracy [another DTE grad] and Cindy [the Vice Principal], and without Jim's support [the Principal] from the very beginning, it would have been impossible—just their confidence that we are going to do the best for the kids, even though they don't always understand what you're doing.*

Every one of these four teachers stayed connected with the DTE program by having student teachers regularly in their classrooms. Rick took student teachers during a particular placement most every fall semester. This was a time when the student teacher would be there all semester and when he felt they were experienced enough to benefit from what he was doing in his room. He had eight student teachers in the years between 1987 and 1999. Both Sandy and Ralph took student teachers from the DTE program any time they were asked, often in both the fall and spring semesters. Sandy mentored eight student teachers during the 10 years she taught in the public schools. In addition to the 15 student teachers he mentored between 1987 and 1995, Ralph also observed and coached another 40 student teachers during his 3 years as a supervisor in the DTE program. Julie had four student teachers during her 5 years at Marin School, taking her first one during her second year teaching there.

Although it may seem unusual for a beginning teacher who is still struggling to become proficient and comfortable with her own teaching, it is the policy of the DTE program to place their student teachers with as many program graduates as possible. The goal is for the preservice teachers to see in practice what the DTE program is advocating in their courses at the university. The DTE program faculty have no qualms about using beginning teachers who are graduates of their program as cooperating teachers. They feel that they are well able to articulate their thinking and believe that the questions student teachers ask, and the ensuing conversations, are helpful

in pushing both the preservice teachers and the slightly more experienced (but still beginning) teachers to continue to think about why they teach the way they do. They also feel that the pedagogical thoughts and actions of recent program graduates are not yet automatized, hence they are readily available for both teachers to continue to examine. Serving as master teachers, which is what the DTE program calls all their cooperating teachers, therefore offers a form of support for their program graduates.

As Sandy reported at Time 3 in 1990 and then at Time 4 in 1993, having student teachers from the DTE program makes you accountable for your thoughts and actions, but also provides help for the students in the class.

> *So I have student teachers from DTE . . . The teachers just talk to us about how much work it is, and how the kids need to spend their time with just us, but I think it is important for the kids to have another teacher in the room to interact with and to help them. For me, a student teacher is better than an aide because, coming from the DTE program, they already share the same philosophy that I have. (Time 3, additional interview, 1990)*
>
> *It makes you think about what you did and why you did it. And they also ask you questions about what you're doing . . . in class, or why are you doing this. And you have to be more responsible for what you're doing. (Time 4, Clinical interview probe, 1993)*

2. Ongoing Professional Development Influences Teachers' Pedagogical Development.
Teachers can continue to be learners and develop their pedagogical understandings by engaging in ongoing professional development opportunities. A clear influence on the pedagogical development of the teachers in this study came through maintaining ongoing professional connections and engaging in opportunities for professional development. While this included staying connected to the DTE program over the years, maintaining professional connections that offer both professional development and support also means keeping connected professionally to various organizations for teachers, such as the Bay Area Writing Project (Julie, Ralph, Rick, and Sandy), the California Reading and Literacy Project (Sandy), or the Developmental Studies Center (Rick). Professional development and support also occurs through regularly attending conferences such as the one sponsored annually by the California Math Council at Asilomar (Julie, Ralph, Rick, and Sandy) or by attending CUE (California Computer Using Educators) conferences (Ralph, Sandy). Support and ongoing professional development, opportunities to interact with colleagues at conferences or workshops, and time to learn about current best practices are vital forms of professional development and support, which all four of these teachers have had throughout their careers.

Although there was no specific question in the clinical interview protocol that asked about professional development opportunities, each of these

teachers referred to learning opportunities they had from time to time during their interviews. They also described some of their professional development activities in response to a question I asked about what they see as their greatest resources or sources of information in their own development as teachers. Toward the end of this study, they provided me with a list of the professional development opportunities they had engaged in over the years that they felt were especially influential. Appendix E is a list of the professional development experiences recommended by these teachers, and Appendix F is a list of books that these teachers found particularly influential and valuable to their ongoing development over the years.

As Julie mentioned at Time 6, in thinking back about the resources she was drawing on to answer my questions and the sources of information she relies on,

And then I've always enjoyed reading professional material, journals and things, "Mathematics Teacher" or whatever, "Teaching Children Mathematics" magazines that are put out by various professional organizations. I've always enjoyed going to staff development opportunities so those are all great resources and I think that that's probably something that really kept me motivated and learning new things was trying other things and exposing myself to new ideas and talking with other teachers and continually trying new things. . . .

Julie was also an active member of the California Math Council and the Bay Area Writing Project during her tenure as a classroom teacher. She also mentioned using several books to help her develop her math curriculum while she was teaching: Mary Baratta-Lorton's *Math Their Way, Family Math* from the Lawrence Hall of Science, Kathy Richardson's *Number Concepts,* and Marilyn Burns' *Math Solutions.* She also participated in a math leadership group during her first few years in the classroom, and then later she took a job developing mathematics curriculum for a textbook company and then a software company. During that time, she continued her own professional development by attending meetings of the National Council of Teachers of Mathematics (NCTM), as well as the California Math Council's annual meeting at Asilomar, and by rereading books by Piaget and Constance Kamii, as well as Vanderwall's *Mathematics: Teaching Developmentally,* which she used to help her in her job as a math specialist.

Throughout her career, Sandy sought out professional development opportunities related to her interest in emergent literacy, as well as to learn more about teaching specific subject areas and instructional strategies in general. For example, as classroom teacher and then as a Title 1 Literacy Facilitator, Sandy was involved with the Emergent Literacy Institute and the California Literacy Project, and she regularly attended the Bay Area Writing Project and the California Reading Conference. Sandy attended the California Math Council's annual meeting at Asilomar and the Computer

Using Educator's (CUE) conference on a fairly regular basis throughout her teaching career. She also attended a summer institute in New Hampshire in 1999 at her own expense to learn more about teaching writing. This experience provided Sandy with both support and new insights into how she could and should teach writing. In addition, Sandy is a voracious consumer of educational literature and particularly likes the books published by Heinemann and Stenhouse. Some of her favorite authors are Nancy Atwell, Lucy McCormick Calkins, Anne Haas Dyson, Donald Graves, Shelley Harwayne, and Reggie Routman. Basically, Sandy approaches curriculum development by reading the latest books on whatever area she is working on, and she continuously reads children's literature. For example, she wrote in her final reflection for this book during the summer of 2000,

Right now I'm struggling with how to teach spelling. I've gone from not touching it at all to giving weekly spelling lists to appease the parents. This summer I've read many books and articles about spelling and am coming to a better understanding of what I can do to help students improve their spelling.

Sandy also commented in 1999 that she needs the support of both books and people when she is trying to figure something out.

I have a lot of books and I can read them, but I don't think that they give you the full picture. So I can try to do what they say that they have done, but I think that going and actually hearing someone talk about it and practicing is really important for me. Talking about how things work with other teachers, so those are my resources . . . I can do a lot of learning by myself, but only up to a certain point. Then I need to go and practice with somebody else guiding me, saying, "Try it this way" or "Have you thought about this?"

Ralph also reads and attends to his professional development by going to workshops and attending conferences. He is a regular attendee at the Bay Area Writing Project, the California Math Council's annual conference at Asilomar, the California Reading Conference, and the CUE conference for computer-using educators. In addition, he remembers attending presentations and reading books by Marilyn Burns, Donald Graves, and Vivian Paley. A personal favorite of Ralph's is an early childhood expert, Bev Bos.

Rick also learns from reading on his own, attending conferences, and his involvement with other professional development opportunities, such as the Developmental Study Center.

I guess the biggest thing that's changed is that our school got a grant to work with the Developmental Study Center, so they came out here. And I've been incorporating a lot of what happens in Developmental Study Center and a lot of the reading, that along with the cooperative adventures stuff that I've always done . . . and that's probably the biggest change.

Books by authors like William Glasser, James Comer, Howard Gardner, and Alfie Kohn are among those that Rick mentioned to me, at Time 6 in 1999, as having a big influence on his thinking.

And then, just books. Books, books, always books. I'll get one author and then that author will lead me to some other author. Just some new take always on how to present this, how to think about it, how to frame it, make it easier for kids, or make it easier for me to understand and make it part of a life.

3. Reflection and Metacognition Can Influence Teachers' Pedagogical Development. The third factor that influenced development of pedagogical understandings of the teachers in this study was their propensity to regularly reflect on their teaching experiences and to think metacognitively about teaching and learning, and about children's behavior and development. My analysis of data collected from these four teachers across 15 years indicates that the ability to reflect and think metacognitively about one's thoughts and actions as a teacher is a key factor in being able to resolve problems and dilemmas that arise daily in teaching. It is the resolution of problems of practice, and the resolution of cognitive dissonance that arises when things do not go as planned in the classroom or with a student, that helps teachers continue to develop their pedagogical understandings.

All four of these teachers are reflective to a greater or lesser degree, and certainly all are capable of being reflective and thinking metacognitively. However, the level and degree to which teachers consciously engage in this kind of thinking appears to make a difference in their pedagogical development. Furthermore, the focus of one's reflection and metacognitive thinking also makes a difference. For example, because Julie has not taught in a classroom for over 8 years, we would not expect that her pedagogical understanding would continue to develop uniformly because she was not focused on teaching or on children's behavior in the classroom after she left teaching in 1993. Conversely, we would expect that the pedagogical understandings of Ralph, Rick, and Sandy should continue to develop if they focus their reflection and metacognitive thinking on resolving the problems, issues, and dilemmas that come up in their daily lives as teachers. In fact, data from the longitudinal study indicate that these three teachers have continued to develop their thinking about behavior, development, learning, and teaching over time, whereas Julie's understanding of these four areas within the pedagogical domain has not developed at the same rate.

A corollary to this factor (reflection and metacognitive thinking) has to do with teachers' intentions and actions. That is, if teachers do not have good intentions and a disposition to act on their reflections and metacognitive thinking, then they are not likely to develop more complex ways of thinking about pedagogy. In the case of these teachers, their intentions and dispositions to act on their reflections have remained important to them throughout their careers in the classroom as is evidenced in their own reflective writing found at the end of each of their case studies.

SUMMARY AND CONCLUSIONS

So what? So what have we learned from this study? First, I believe that the longitudinal case studies of four teachers from 1985 to 2000 provide information and offer insights into how these teachers' thinking about pedagogy—about children's behaviors and development, and about teaching and learning—changed over time. Essentially, their pedagogical understandings continued to develop from initial thinking that was quite global, and sometimes vague or confused, to increasingly better articulated understandings, which indicated better differentiated and eventually more integrated understandings of behavior, development, learning, and teaching. Furthermore, as their thinking about pedagogy becomes more sophisticated and complex, their thinking and actions become more congruent, as can be seen in observations of their classroom teaching. However, we also see throughout their case studies that each teacher's developmental trajectory is unique, and that their personal lives and professional contexts influenced how their pedagogical thoughts and actions develop. Second, I also believe, based on these four cases, that what they learned in their teacher education program did not wash out. It may not have been used much in their first few years of teaching when they were focusing mainly on their teaching, but their deep understanding of children's development continued to be foundational to their thinking and their classroom practice throughout their careers. This is evident in both the language they use to express their understandings of pedagogy and in the instructional strategies they use in their classrooms today. In all cases, their thoughts and actions convey a deep understanding of developmental and constructivist perspectives. Third, the way these teachers' pedagogical understandings changed over time was due to their efforts to solve and resolve the problems they perceived and the disequilibrium they experienced when their thoughts and actions were in conflict. In their various contexts, their resolution of the cognitive conflicts they experienced took place on both internal and external levels as they reflected on their problems and as they sought input from other sources about their problems.

Finally, as a result of this study, three rather obvious but important lessons emerged that those of us engaged in teacher education must remember: (a) Teachers need ongoing support if they are going to continue to develop, (b) teachers need ongoing professional development opportunities—they really do need to be lifelong learners—if they are going to continue to develop, and (c) teachers need to reflect and be able to think metacognitively if they are going to continue to develop.