1998

Courting Serendipity: Constructivist Theory and Classroom Practice

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Courting Serendipity: Constructivist Theory and Classroom Practice

by

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A dissertation submitted to the Department of Educational Leadership in partial fulfillment of the requirements for the degree of

Education Doctorate in Educational Leadership

UNIVERSITY OF NORTH FLORIDA

COLLEGE OF EDUCATION

October, 1998

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Dedication

This dissertation is dedicated to the teachers in the study and to the principal and staff of their school. Without their openness and professionalism this dissertation would not have been possible. Mere words are inadequate to express my appreciation for them.
Acknowledgments

Sitting down to write acknowledgments has made me realize that when undertaking a task as enormous as writing a dissertation, I have many individuals to thank for its completion.

First, I would like to acknowledge my parents, Marcella and Bill Duckworth, for being the first to teach me the importance of trying to understand life from the point of view of others, and my husband and daughter, Kurt and Rachel Jensen, for their continual support, love, and understanding. Without them in my life, all accomplishments would diminish. I also thank Kurt for using his skills as an architect to create from my rough sketches the finished classroom drawings which appear in my dissertation as Figures 1, 2, 3, and 4.

I thank Valerie Dellas for providing me a "cabin in the woods" during a crucial stage in the writing of this dissertation and acknowledge the constant inspiration which her professional friendship provides me.

I thank the members of my committee for serving with such graciousness and for bringing their special talents to the process and the task. I thank Dr. Katherine Kasten, my director, for her gentle guidance, her intelligence tempered with compassion, and her unfailing editorial abilities. I thank Dr. Bruce Gutknecht for being the exemplar of goodness that he is and for allowing me to pilot test my questionnaire in one of his master’s level classes. I thank
Dr. Joyce Jones for her enthusiastic support at a timely moment and for the hope and inspiration that her courageous and generous spirit provide to all who know her. I thank Dr. Minor Chamblin for kindly agreeing to be the outside member of the committee.

I thank Dr. Ken Wilburn for introducing me to the Accelerated Schools coaches' committee, headed by Dr. Sally Hague, and Dr. Hague for introducing me to DWOK. I thank Dr. Elinor Scheirer for teaching me so well how to do qualitative research. (Ellie, I wrote a two-page acknowledgment just for you, but . . . .)

I thank Dr. Robert Drummond for reminding me what is truly important in life: being a good person. I thank Laura Lane, A.B.D., and Bronwyn McLemore, A.B.D., for joining with me in the "Dissertation Mutual Aid and Comfort Society," and Dr. Madelaine Cosgrove for adding her seasoned advice to the mix. I thank Drs. Virginia Duff, Janette Martin, David Fenner, Gary Harmon, Brian Striar, Eddie Collins, Tom Leonard, and Ms. Jeanette Berger for their collegial friendship and support. I thank Drs. Yiping Wan and Cheryl Fountain for serving as my advisors in the Ed.D. program, and Drs. Henry Thomas, Marcelle Lovett, and Tom Healy for the very special mentorship they have provided me. I thank Dr. Mark Workman for being a supportive department head and mentor, and Ms. Maxine Muschamp, department office manager, for her understanding, patience, and friendship throughout this stressful time. I also thank Ms. Sandra v
Walter, Ms. Phyllis Haeseler, and Dr. Tom Sewartka, Dean Kasten’s support staff, for their friendly encouragement. Finally, I offer a special thank you to Dr. Paul Eggen for suggesting that I limit my study to one school site.

I am reminded of Maureen Stapleton’s Academy Award acceptance speech: "I’d like to thank everyone I’ve ever known." I hope I have not forgotten to acknowledge and thank anyone, and I hope Ms. Stapleton’s words might serve as an apology if I have.
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Abstract

This dissertation is a cross-case study and analysis of four teachers in a school involved in two reform initiatives which promote constructivist approaches to teaching and learning. The study describes the teachers' understandings of the learning theory and their interpretations of it in their classroom practice. The study found that three of the four teachers were practicing in ways consistent with constructivism while one was not because her need for control took precedence. The study found that although teachers are very aware of their students as individuals with different ways of learning and constructing an understanding, they are not much interested in learning theory. Teachers are, therefore, more likely to practice in ways consistent with constructivist learning theory if they see that such practice can help them meet the diverse learning needs of the individuals in their classes and if they are shown the "how-to's" in their professional development.

The study also found that classroom management needs and the need for control of student behavior inhibit practice consistent with constructivism and concluded that teachers are more likely to practice in ways consistent with constructivism if complimentary classroom management techniques can be found and if teachers are comfortable giving students choice and control. The study uncovered the four C's of impediments to constructivist practice:
classroom management, control, "coverage," and custodial care.
Chapter 1: Introduction

I came to constructivist learning theory through practice. To find an epistemology consistent with my evolution as a teacher over fifteen years of classroom practice was a happy discovery. That evolution has been based on continually looking for answers to one simple question: how do students learn? Constructivist learning theory, reduced to its current catch phrase, answers that question with the explanation that learners construct their own knowledge and understanding. This explanation makes sense to me in relation to what I have seen in my own classroom practice in the teaching of writing, reading, and speaking of English and in relation to what I observed of the classroom practice of the teachers in this study.

This dissertation was inspired by a desire to connect with other teachers who may be practicing and evolving in the same mode, to explore other teachers' views and interpretations of constructivist learning theory, and to understand their attempts to teach in ways consistent with constructivist theory. Because I have spent so much time at the secondary and post-secondary levels of education, I was particularly interested in exploring constructivist approaches that would work across grade levels and across disciplines. I hope my attempts at connections,
explorations, and understandings will inform how we prepare and develop teachers.

I also wanted to chart the on-going challenges and struggles that teachers face in their attempts to implement such practice in factory-model schools, organized according to 19th century concepts of education, and in relation to the equally outdated concept of the teacher as transmitter of information. In the face of such technological advances as the Internet, CD-ROM databases, and distance learning, which can transmit information faster, more efficiently, and in greater quantity than any individual, the role of the teacher in the classroom should be changing dramatically, yet many teachers continue to "teach as they were taught" (Cuban, 1984; Fosnot, 1989, 1996; Goodlad, 1987; Jones, 1975; O'Loughlin, 1990; Taylor, 1990; Zeichner & Liston, 1987).

Because most teachers were taught in classrooms where they were lectured to and expected to be the passive receivers of information, they have constructed a view of learning as the memorization and regurgitation of facts and concepts and of teaching as the transmission of the right facts and concepts. Constructivism holds great promise for moving us away from such an outdated model of teaching and learning and for promoting the kind of "critical-thinking, problem-solving, higher-order thinking" that our information-age economy requires. However, programs, initiatives, and reforms that promote it will never be seen
as anything more than "reforms de jour" unless classroom teachers embrace their efficacy. They will hardly be able to do so if they do not see a different model for teaching and learning in their own undergraduate preparation and on-going professional development.

The State of Missouri, Department of Elementary and Secondary Education, working with the University of Missouri-Columbia, has changed state education policy as a result of belief in constructivist learning theory. State policy with regard to the screening, testing, and assessing of pre-school and primary-age children has been completely reversed. Changes have been made in the evaluation of early-elementary teachers, and a continuing early-childhood teacher education program has been set up to support teachers in their conversion to constructivist theory and practice (Baker, 1993). Southern Connecticut State University founded the Center for Constructivist Teaching to promote teacher education that links constructivist theory to teacher preparation and development (Fosnot, 1996). Teacher development projects across the United States are encouraging teachers to explore constructivist approaches (Grouws & Schultz, 1996). Two reform initiatives involving over 1100 schools, Accelerated Schools from Stanford University and Different Ways of Knowing from the Galef Institute in Los Angeles, promote constructivism as a component of their agendas for reform. But what is happening on the classroom level?
Purpose of the Study

The National Commission on Teaching and America's Future in its 1996 report, which resulted from two years of study, identified the recruitment, preparation, development, and support of excellent teachers as the "single most important strategy for achieving America's education goals" (p. 7). The Commission went on to add that "student learning in this country will improve only when we focus our efforts on improving teaching" (p. 6). Likewise, a 1994 Public Agenda survey of 1100 Americans, 550 with children in public schools, reported that "Americans think good teachers are the single most important ingredient in sound education and good schools" (p. 23).

The experts and the general public seem to be in agreement on the necessity of good teaching in improving education. These studies also highlight the idea that no real change will occur in schools without the support of teachers.

The National Commission report also recommends "five interlocking changes" to improve teaching:

1. Get serious about standards, for both students and teachers.
2. Reinvent teacher preparation and development.
3. Overhaul teacher recruitment and put qualified teachers in every classroom.
4. Encourage and reward teaching knowledge and skill.
5. Create schools that are organized for student and
It is the second recommended change that this dissertation will most immediately address.

If we are to "reinvent teacher preparation and development," as the National Commission suggests, indeed, their report urges a "complete overhaul in the systems of teacher preparation and professional development to reflect and act upon the most current available knowledge and practice" (p. 16), then the first question we must answer is along what lines should this "complete overhaul" take place? Exactly how should teacher preparation and development be reinvented?

If the experts and the general public think good teaching is the most important factor in successful education, then perhaps the place to begin is with teachers' views. As Eisner (1991) states, "It does not seem particularly revolutionary to say that it is important to try to understand how teachers and classrooms function before handing out recommendations for change. Yet so much of what is suggested to teachers is said independent of context and often by those ignorant of the practices they wish to improve" (p. 11). To avoid such ignorance, we should begin any exploration of teaching practice with teachers' views.

This is exactly what the Council for Basic Education did in 1996 with regard to the issue of teacher preparation. The Council surveyed 600 teachers (320 in high school, 141
in middle school, and 129 in elementary school) to gain their perspectives on what goes on in teacher education programs and how they would advise improving them. Teachers surveyed recommended three major changes in teacher preparation:

1. Require all teachers to know the content of the subjects they teach.
2. Teach pedagogy together with academic content.

The overwhelming majority of teachers surveyed by the Council for Basic Education also indicate that they think college of education programs dwell too much on theory and not enough on preparing teachers for the practice of teaching. They see college of education faculty as operating in a "rarefied world remote from the day-to-day realities of K-12 classrooms" (Rigden, p. 8).

Lest constructivist theory be seen as rarefied and divorced from classroom practice, we should first be clear about teachers' understanding of this learning theory and how they see it as beneficial and applicable to their classroom practice. We should also be clear on what the basic principles of this theory are, what most constructivists agree on, and how these points of agreement
inform classroom practice. While theorists debate the definitions and limitations of constructivism (Osborne, 1996; Phillips 1995; von Glasersfeld, 1995, 1996), the classroom teacher is likely to be left in the dust.

The purpose of this study, therefore, is to bring teachers' perspectives to discussions of constructivist theory and its implications for classroom practice and to inform teacher preparation and development with an understanding of their perspectives. I share the concern of Airasian and Walsh (1997) over "the rush to turn constructivist theory into instructional practice with little concern for the pitfalls that are likely to ensue" (p. 445), but my concern is somewhat different. I am concerned about how teachers interpret constructivism and how they turn theory into practice. As Airasian and Walsh also point out, "There is considerably less discussion about the role and activities of the teacher in constructivist education than there is about the role and activities of the students" (p. 448). Gergen (1995) identifies a need to "explore the kinds of practices that would be favored by the perspective" (p. 174). This dissertation is such an exploration.

Significance of the Study

Much that has been written about constructivism is theoretical and prescriptive. Research studies connecting constructivism with teacher practice and teacher education tend to be qualitative, with case studies, observation and

These research studies and self-descriptions present disparate accounts of teachers' attempts to translate constructivist theory into practice and are not definitive, as I will establish in the literature review section of this dissertation. These studies present a limited picture. Therefore, I believe we need additional data, and it would be beneficial if this research were done by someone who does not have a vested interest in the success or failure of a particular teacher, program, or reform initiative.

The over-arching question which I believe should drive current research in this field is what goes on in classrooms where teachers are attempting to put constructivist theory into practice? Other closely related questions follow. What are teachers' understandings and interpretations of constructivism? How do these play out in teachers' attempts to implement practices consistent with constructivist principles? What challenges, struggles, and barriers do teachers face in their attempts? What goes on in their schools to either enhance or inhibit constructivist
What causes teachers to change their classroom practice? Some answers to these questions will, I hope, lead to answers to another question: how does this knowledge inform teacher preparation and development?

Other related questions can be answered, at least initially, through a review of the current literature on constructivist theory and practice. Exactly how does the role of the teacher change in the constructivist paradigm? Is there agreement among constructivists as to basic principles and as to what practice consistent with constructivist principles should look like? Are descriptors of constructivist practice compatible with other descriptors for attributes of good teaching? How might both sets of descriptors taken together inform teacher preparation and development as we move into a new century, a new millennium, and a new age?

We live in a post-modern world, where even scientists in quantum physics are telling us that perspective is all. When physicists attempt to measure elementary matter, it changes form--from particle to wave and back again--in the very act of measurement. Constructivist learning theory is highly post-modern in that it assumes that truth is not absolute and fixed but subject to the "constructions" that each individual makes from experience that is unique and personal. Truth is a matter of personal interpretation and shared truth a matter of negotiation, in the world at large and in the classroom.
Constructivism also seems a perfect theoretical framework from which to reflect on what contributes to best practice in teaching in this post-modern world. However, teaching in ways consistent with the basic principles of constructivism is highly complex. It requires that a teacher focus on students, and not only just focus on students, but focus on each individual student’s knowledge constructions and needs. It requires that teachers create the kind of environment in their classrooms where students feel free to share their thoughts and beliefs and are not worried about making mistakes or wondering out loud. It requires a complex set of questioning techniques and the ability to foster continual, active inquiry among students and between teacher and student. It requires the ability to manage social interaction that facilitates learning. It requires the ability to individualize curriculum and instruction. It requires overcoming years of conditioning in the transmission model of education.

As the title of this dissertation suggests, teaching that is consistent with constructivist theory requires a teacher to court serendipity, that aptitude for making important and desirable discoveries as if by accident. What is no accident is the classroom environment which the teacher creates. In the constructivist paradigm, that environment is an empowering one. It is one in which classroom experiences grow from students’ current knowledge and beliefs, students’ needs, and students’ questions.
Teaching consistent with constructivism requires giving up the starring role in the teacher-centered classroom. Given the difficulties inherent in even attempting to transform oneself, why would any teacher give up such a role? Why would teachers try to implement practice consistent with constructivist learning theory? How well are they doing in their attempts? And what are their struggles? Only teachers themselves can tell us.

This chapter establishes the importance and significance of bringing teachers’ perspectives to discussions of constructivist learning theory and classroom practice. Chapter 2, through a review of research that links constructivist learning theory with teacher education and development and classroom practice, shows that no study to date has brought to this field of research descriptions of how experienced American classroom teachers, steeped in reform initiatives which promote constructivist approaches to teaching and learning, interpret constructivism in their classroom practice. Additionally, Chapter 2, through reviewing theoretical and prescriptive literature, provides an overview of what teaching consistent with constructivist learning theory might or should look like, and by comparing descriptors of effective teaching in the constructivist paradigm with current standards of effective teaching, this chapter shows how extensively constructivist learning theory is informing and influencing our current definitions of good teaching. Chapter 3 delineates the fit between the over-
arching research question of what goes on in classrooms where teachers are attempting to practice in ways consistent with constructivism and the qualitative methodology used in the study. Furthermore, it delineates why the case study method is especially appropriate to understanding crucial matters of classroom practice. Chapter 4 reports the results of the survey used to gauge teachers' understanding of constructivism and to identify teachers for observation and interview. It describes the four cases and traces five themes which emerged across cases from observations and interviews. Chapter 5 offers conclusions and recommendations for teacher preparation and development in relation to these five themes.
Chapter 2: Review of the Literature

An Overview of Constructivist Theory

As Airasian and Walsh (1997) point out, "Constructivism is not a unitary viewpoint" (p. 445). However, there are significant points on which most constructivists agree, and these points of agreement have numerous implications for classroom practice. In this dissertation I focus on these points of agreement because these are what we see influencing and informing teacher education across grade levels and disciplines.

First, most constructivists agree on the fundamental principle that people create knowledge from the interaction between their existing knowledge or beliefs and the new ideas, information, or situations they encounter, and secondly, most constructivists also consequently agree on the need to foster interactions between students' existing knowledge and new knowledge and experiences (Airasian & Walsh, 1997; Brophy, 1992; Duckworth, 1987; Eggen, 1997; Fosnot, 1989, 1996; Gurney, 1989; MacKinnon, 1989).

These two points of agreement alone offer numerous implications for teachers' practice and lead to other areas of agreement among most constructivists: the importance of social interaction in the learning process and the
importance of authentic learning tasks from which learners can construct an understanding (Airasian & Walsh, 1997; Duckworth, 1987; Eggen, 1997; Fosnot, 1989, 1996; Gurney, 1989; MacKinnon, 1989). These points taken together indicate that constructivism stands in contrast to the transmission model of education, in which the teacher’s primary job is to convey information to students, and students are seen as passive receptacles to be filled.

It is also important to delineate two distinct "schools" of constructivism. That distinction is between developmental constructivism and social constructivism. Essentially, developmental constructivism follows the theories of Piaget and is concerned with the influence of stages of cognitive development on learning and with internal, individual cognition. Social constructivism, also called sociocultural or situated social constructivism, with Vygotsky often cited as the "father," stresses the influence of a social and/or cultural milieu on individuals' constructions of knowledge and understanding (Airasian & Walsh, 1997; Eggen, 1997; Gergen, 1995; Vygotsky, 1978).

This distinction has crucial implications for classroom practice, particularly in defining the role of the teacher. Developmental constructivism is what we see informing many early childhood and early elementary education programs today and is perhaps best demonstrated in the Montessori model in which the teacher sets out activities and materials with which students work individually to gain an
understanding of a concept. For example, students in Montessori classrooms spend a great deal of time pouring, measuring, and weighing substances to construct an understanding of concepts such as volume, and the teacher talks with and questions students individually to gauge their understanding. It is essential in the developmental constructivist paradigm for a teacher to know stages of cognitive development and to be able to teach according to the cognition of which students are capable at various stages.

It is essential for the teacher in the social constructivist version to be aware of the social and cultural influences on learning. Knowledge in this view is presumed to have a social or cultural component, so part of the job of the teacher is to generate dialogue and to create activities that foster interactions that bring out a recognition of the social or cultural influence on knowledge and that allow students to examine their ideas and understandings in relation to social or cultural influence. Social constructivists also believe that social interaction facilitates learning, or as stated by von Glasersfeld (1996), "learning is a social process involving negotiation" (p. 3).

This distinction is important to know in terms of implications for classroom practice and the role of the teacher. However, the interwoven principles on which most constructivists agree, that learners actively construct
knowledge and understanding by building on their existing knowledge and beliefs, is what we see most influencing our current definitions of best practice in teaching.

**Implications for Classroom Practice**

Principles which one might expect to see in classrooms where teacher practice is consistent with constructivist theory are also consistent with features of good instruction that have emerged from the findings of groups concerned with identifying the attributes of good teaching: the National Commission on Teaching and America’s Future, the Council for Basic Education, the American Psychological Association (APA), the National Board for Professional Teaching Standards (NBPTS), and the Interstate New Teacher Assessment and Support Consortium (INTASC). Not surprisingly, they are also consistent with the findings of individual educational researchers whose work has contributed to the recommendations of some of these groups (Darling-Hammond 1986, 1989, 1994a, 1994b, 1996; Darling-Hammond, Wise & Pease, 1983; Schon 1983, 1987; Shulman, 1987; Wise, 1996; Wise & Leibbrand, 1996; Zeichner & Liston, 1987).

The basic principles of constructivism provide a conceptual framework for attributes of good teaching. If one believes that the learner constructs his or her own understanding, then the focus in the classroom shifts from the teacher to the learner, and the learner is viewed as taking a highly active role in the learning process. Expressions like "learner-centered," "student-centered,"
"active," "interactive," "actively engaged,"
"investigative," "hands-on activities," and "discovery
learning" begin to appear among the descriptors of what goes
on in classrooms where instructional approaches are
consistent with constructivist theory and also in the
literature on attributes of good teaching.

If one believes that new knowledge and understanding
are built upon existing knowledge, beliefs, and/or schema,
then finding out what students currently know and believe
becomes a crucial aspect of the teacher's job. Expressions
like "elicitation," "inquiry," "reflection," "sharing
ideas," "discourse," and "dialogue" appear as descriptors of
what goes on in classrooms. Here, too, we see features that
constructivists would agree on as being attributes of good
teaching that are compatible with the findings of those
attempting to define good teaching.

The National Commission on Teaching and America's
Future, for example, identifies the best teachers as those
who "know how young people learn . . . can plan and teach
for understanding, and connect their lessons to students'
prior knowledge and experiences" (p. 12 & 19). Attributes
of good teaching identified by the Interstate New Teacher
Assessment and Support Consortium (INTASC), as model
standards for beginning teacher licensing and development,
are also consistent with constructivist thought:

The teacher understands the concepts and tools of
inquiry . . . understands how children learn and
develop . . . understands how students differ in their approaches to learning . . . and can create learning experiences that make the subject matter meaningful for students, encourage positive social interaction and active engagement in learning, and foster active inquiry, collaboration, and supportive interaction in the classroom (Ambach, 1996, p. 208).

Both the National Commission’s and INTASC’s descriptors emphasize the basic constructivist principle that students actively construct understanding in individual ways. Both sets of descriptors emphasize the need to build upon students’ existing knowledge and beliefs. The INTASC standards also reflect a social constructivist principle that social interaction facilitates learning.

Descriptors of the teacher’s role in a constructivist classroom are also highly consistent with the APA learner-centered principles, notably that learning is a process of discovering and constructing meaning from information and experience, filtered through the learner’s unique perceptions, thoughts, and feelings; the learner links new information to existing and future-oriented knowledge, and personal beliefs, thoughts, and understandings result from prior learning and become the individual’s basis for constructing reality (American Psychological Association, 1993, p. 6-8).
student-centered or learner-centered.

When the focus in the classroom shifts from the teacher, as possessing all the right knowledge to transfer to the students by telling and showing, to the student, as actively constructing knowledge and understanding, the role of the teacher changes tremendously, as does what goes on in the classroom. If the teacher believes that student constructions are based on their existing knowledge, then the first task is to find out what students already know or believe with regard to a particular topic, subject, or theme. A primary role of the teacher is to gauge students' existing knowledge or understanding in relation to any new material to be introduced. The teacher questions and listens, trying to bring out ideas and beliefs, which are as "unique, personal, and varied" as the experiences from which they are constructed. The teacher uses other diagnostic measures to gauge students' existing knowledge and beliefs. As Gurney (1989) points out, "The identification of preconceptions is, of course, central to the constructivist perspective in view of our belief that existing ideas influence the interpretation of new ones" (p. 3).

In order for this kind of elicitation and exchange of students' ideas and beliefs to take place in classrooms, teachers must first create the kind of environments in which students feel free to express their ideas and beliefs (Cheung, 1990; Duckworth, 1987; Fosnot, 1989, 1996; Gurney 1989; MacKinnon, 1989). Gurney (1989) describes this well:
The student must sense a safe, low-risk environment free from evaluation by either teacher or peers. A safe environment is one where students are free to wonder out loud, where the asking of questions is encouraged, where there is the freedom to offer opinions and ideas and to voice agreements or disagreements with those of others (p. 5).

In such a classroom the teacher models inquiry and fosters shared inquiry. Teachers can develop an understanding of how to encourage inquiry with their students only if their own approach to teaching and learning includes inquiry. This approach suggests the "teacher as researcher" model, as recommended by Duckworth (1987) and described by Fosnot (1989):

When prospective teachers are continuously engaged in inquiry about children's understanding and about pedagogy, they develop the ability to probe astutely children's thinking and to understand and appreciate developmental differences, and they become keenly aware of the need for active investigation by learners themselves (p. 13).

These descriptors of inquiry in the constructivist approach to teaching mirror the recommendation of the teachers surveyed by the Council for Basic Education that courses in learning theory and child development be taught in conjunction with school-based observations of students. They also reflect the standards of INTASC and NBPTS that
teachers understand the concepts and tools of inquiry.

Likewise, these descriptors are compatible with INTASC and NBPTS standards that encourage teachers to focus on student learning and understanding and to realize that student learning and understanding differ from one student to the next. They are also highly consistent with APA descriptors of learner-centered instruction. They suggest "active engagement . . . inquiry . . . collaboration . . . and positive, supportive interaction" (Ambach, 1996, p. 8) that both constructivists and "standards-bearers" might wish to see in practice in classrooms.

However, activity alone is not a benchmark. Just to see students active in a classroom does not indicate practice that is consistent with constructivist theory, or reflective of good teaching, for that matter. It might indicate a classroom in which the teacher is not even present!

What we do want to study closely are the qualities and features of the activity or interaction in the classroom, both teacher to student and student to student. What we would expect to see in practice consistent with constructivist theory would be teachers modeling inquiry and promoting shared inquiry. We would see teachers asking questions to bring out students' current knowledge, beliefs, and understandings. We would see teachers listening carefully to students' expressions of their ideas, trying to understand their current thinking, and incorporating it into
the introduction of new material. We would see students communicating their ideas freely and openly with each other and with the teacher. We would expect to see teachers and students identifying and highlighting multiple and discrepant views and concepts. We would expect to see dialogue and debate. We would expect to see brainstorming, generation of alternate hypotheses, testing and re-testing of ideas and hypotheses, and reformulation of ideas and hypotheses as new knowledge becomes incorporated with preconceptions.

While some instructional strategies (cooperative learning, hands-on learning, discovery learning, concept mapping, dialogue, de-briefing) are said to be consistent with constructivism because they foster active student participation and inquiry and the exchange of ideas, we would not expect to see one strategy used to the exclusion of all others because the teacher would recognize that students construct knowledge and understanding in different ways and with different meanings. We would expect, therefore, to see a variety of methodologies that achieve these ends.

Above all, we would expect to see classrooms in which teachers see themselves as relentless investigators of the teaching/learning process. It would be this spirit of continual inquiry and the flexibility to follow where it leads that I would look for first and foremost in a classroom where teacher practice is consistent with
constructivist theory.

This extensive comparison of teacher practice consistent with constructivism and standards and descriptors of effective teaching shows how much constructivist learning theory is informing and influencing our current definitions of effective teaching. We can say a great deal about best practice in teaching in terms of constructivist descriptors of good teaching... at least in theory. What is the case for the actual practice of classroom teachers?

Review of the Research Literature

Overview

Research linking constructivist learning theory to teacher preparation and development and to classroom practice has been rather limited; this is a relatively new field. Qualitative case studies or studies using the qualitative methods of observation and interview predominate (Cheung, 1990; Daniel, 1996; Fosnot, 1989; Gee & Gabel, 1996; Grisham, 1992; Gurney, 1989; Hand & Treagust, 1997; MacKinnon, 1989; Morocco et al., 1991; Whitworth, 1996). Most research studies in this field were designed to evaluate the effectiveness of a particular intervention or program (Cheung, 1990; Daniel, 1996; Fosnot, 1989; Gee & Gabel, 1996; Gurney, 1989; Hague & Walker, in press; Hand & Treagust, 1997; MacKinnon, 1989; Whitworth, 1996). Self-descriptions of teachers’ attempts to translate theory into practice in their own classrooms (Cowey, 1996; Fosnot, 1989;
Lester, 1996; O’Loughlin, 1990) provide interesting insights although some would argue that these are not really even research, however interesting the insights into practice they might provide. The less problematic research studies reveal areas of common concern: classroom management and control of student behavior, curricular and pedagogical decisions based on teachers’ needs rather than students’, and the importance of supportive, collaborative coaching and modeling.

Concern with Classroom Management

Three studies (Gee & Gabel, 1996; Hand & Tregast, 1997; Whitworth, 1996) establish a link between classroom management needs and teachers’ ability to practice in ways consistent with constructivism: classroom management needs and concerns appear to mitigate against the use of constructivist approaches. Gee and Gabel (1996) conducted a cross-case study of four beginning elementary teachers; two had participated in an elementary education science program designed to promote science as inquiry, and two had not. They found that all four beginning teachers "supported the notion of science as inquiry during interviews and in their survey responses but only one showed any true evidence of its practice in the classroom" (p. 19). They found that classroom management needs tended to determine what went on in the classroom and that pedagogical decisions were dictated by the amount of control over students that the teachers felt they needed.
Whitworth (1996) studied two student teachers in reform sites that advocate constructivist approaches in middle school science classes. In interviews prior to their student teaching experience the two preservice teachers expressed belief in focusing on how students learn and in fostering student involvement, but both shifted to traditional teacher-centered practice over the course of the practicum to gain control of and manage students.

Hand and Treagust (1997) studied eight science teachers who had participated in an 18-month inservice to initiate the implementation of constructivist teaching and learning in an Australian junior high school. They found that "classroom management was one of the major areas of deconstruction required by teachers in order to adopt and implement constructivist approaches" (p. 190).

For beginning teachers and student teachers classroom management needs appear to inhibit their ability to practice in ways consistent with constructivism (Gee & Gabel, 1996; Whitworth, 1996). However, for five of the eight inservice teachers in the Hand and Treagust study (1997), as they were able to change their perceptions of themselves from "managerial roles with an emphasis on didactic transmission of information" (p. 183) and "authority figures whose major role was controlling the classroom to facilitators of learning and sharers of knowledge" (p. 188), they were also able to implement more constructivist practices. Through classroom observations Hand and Treagust found changes in
the practice of these five teachers that were consistent with their metaphorical descriptions of changes they perceived in themselves.

It appears that there is a crucial link between teachers' ability to practice in ways consistent with constructivism and classroom management concerns and needs. It also appears that there may be a need for teachers to change their perceptions of their role in the classroom before they can practice in ways consistent with constructivist learning theory. Teachers may need to shift their focus as well.

Curricular and Pedagogical Decisions Based on Teachers' Needs

As established previously in this dissertation, practice consistent with constructivism is very student-centered. Several studies (Cheung, 1990; Fosnot, 1989; Grisham, 1992; Morocco, Gordon, & Riley, 1991) indicate that teachers may need to change their focus to be able to shift to this student-centered classroom.

Cheung (1990) and Morocco et al. (1991) found that both preservice and inservice teachers tend to focus on tasks and activities. Cheung studied two student teachers in a constructivist practicum model while Morocco et al. used cross-case study and analysis to examine the work of third and fourth-grade teachers in Massachusetts school districts attempting to implement language arts programs consistent with constructivist views of learning. In addition to
teachers' tendency to focus on activities, Morocco et al. also found that "teachers do not refer much to individual student needs and abilities" (p. 6) in their planning of language arts activities and that the teachers in their study tended to use "collective templates" of children in their planning. Cheung recommended better articulation of teacher roles while Morocco et al. recommended exploring approaches that will help teachers become more constructivist in their design and practice and the kind of support teachers need to reflect a more constructivist approach in practice.

Grisham (1992) in a cross-case study of two fourth-grade teachers identified by district administrators as "exemplars" in their implementation of the whole language approach, which is widely thought to be consistent with constructivist theory, found that the practice of both teachers was very teacher-centered. Grisham found that while some classroom activities were consistent with constructivism, such as collaborative learning and the sharing of ideas, both teachers relied heavily on traditional methods and teacher-centered practices, such as lecture, recitation, and rote work, and both teachers held "deficit" views of students as needing to be "fixed" (p. 26).

Fosnot (1989) in a single-case study of a second-grade teacher who was attempting to implement constructivist approaches in the teaching of math in a very supportive
environment noted that initially the teacher thought in terms of changing her teaching style and adding new activities, making "curriculum decisions based on her needs and interests rather than the conceptual needs of the learners" (p. 103). After mentoring from Fosnot, the classroom teacher began to focus on specific learners and their needs and to make decisions based on analysis of those needs. Fosnot concluded that the transformational model, which emphasizes collaboration between student teacher and supervising teacher, was quite helpful in shifting a teacher's focus from concerns about teaching style and activities to a focus on the specific needs of learners.

If we look at Fosnot's study (1989) in relation to the above mentioned studies and in relation to additional findings of Cheung's (1990) and Whitworth's (1996), another concern emerges. The student teachers in Cheung's study were able to move beyond their focus on activities when they sensed a low-risk environment in which teachers learn from their mistakes through reflection on them. Both Cheung and Whitworth found that cooperating teachers can be obstacles in promoting constructivist practice. Obviously, as Fosnot's study indicates, the quality of modeling and coaching which preservice and inservice teachers receive can be very influential in shifting their focus from their needs to students' needs.

The Importance of Supportive, Collaborative Coaching and Modeling
In addition to Fosnot's study (1989), the studies of Daniel (1996), Gurney (1989), Hague and Walker (in press), Hand and Treagust (1997), and MacKinnon (1989) provide the articulation of teacher roles and the descriptions of the kinds of approaches that will help teachers become more constructivist in their practices that Cheung (1990) and Morocco et al. (1991) called for. Their studies also show that inservice and preservice teachers can change their perceptions about practice.

Gurney (1989), working from audio and video tapes of teacher lessons and student interviews, teacher anecdotes combined with teacher materials and student products, and joint discussions among investigators, evaluated the collaborative development of constructivist teaching strategies by university faculty and secondary science teachers. Gurney's article presents a number of the strategies developed in the program, and he concluded, based on the successful creation of such, that collaborative research holds great promise because it "blurred the distinctions between research and practice" and that "the blurrier the distinctions, the greater the relevance each has for the other" (p. 25-26).

MacKinnon (1989) analyzed transcripts of dialogue between a student teacher and a supervising teacher to "assess the viability of a reflective practicum in which student teachers are systematically inducted into constructivism" (p. 41). The student teacher and the
supervising teacher looked at together and discussed videotapes of the supervising teacher presenting a lesson using the P.O.E. (P=predict, O=observe, E=explain) model for exploring students' ideas. In dialogue with his classroom students and the student teacher the supervising teacher exemplified the type of practice the student teacher was trying to acquire. This technique is what MacKinnon called the "hall of mirrors" model because it sets up parallels between the supervising teacher's practice and the practicum experience of the student teacher. The coaching and questioning of the student teacher by the supervising teacher resembled the practice to be learned.

MacKinnon found the model useful in nurturing a capacity for seeing the world from students' views and a capacity for shifting perspectives. He concluded that the "hall of mirrors" model is a "promising way of conceptualizing a practicum as well as the notion of modeling in teacher education" (p. 59). He recommended further investigation into and analysis of features of the model, particularly features that showed in the student teacher's teaching but that had not been articulated in dialogue.

Daniel (1996) used pre-post program interviews and observations of students to report on the effectiveness of an interactive multimedia environment, Classroom with a View (CView). Teacher-education students explored a videotape database of classroom teachers using constructivist
approaches in the Atlanta Math Project and the Georgia Initiative in Mathematics and Science, and then the students were asked to work in similar ways as the teachers they had viewed.

Daniel found that the interactive multimedia environment, by connecting preservice teachers with inservice teachers whose practice aligns with national standards, allowed the students to see that strategies their professor talked about could be done in schools. Seeing classroom teachers enact such strategies changed the students’ perceptions about the viability of constructivist approaches. Daniel concluded that a multimedia environment using videotapes is effective in teacher education. Preservice teachers were able to see school-based applications for their education courses and were able to anchor theory about learning in the concrete practice of teaching.

Hague and Walker (in press), while serving as coaches in a reform initiative rooted in constructivism and in which constructivist approaches to teaching and learning are promoted as Powerful Learning, used three interventions to help teachers move toward constructivist practices: Powerful Learning Checklist, Seminars, and Partners. They found that the "self-assessment checklist was not the way to quantify teacher growth and change" (p. 19) that they had hoped it would be.

However, they did find that the other two interventions
used in their study, Powerful Learning Seminars and Partners, were successful in moving teachers from a deficit model of students to a strengths model and for changing traditional methods to Powerful Learning approaches. They measured success through strengths and challenges lists which the teachers compiled prior to and after the interventions. Teachers were able to define areas needing attention and to describe their progress toward Powerful Learning through these strengths and challenges compendiums. Hague and Walker recommended further investigation into the inflated self-assessments and peer observations or observations by research assistants to further corroborate their findings.

Programs and models for teacher education and development, such as Daniel's CView, Fosnot's transformational mentoring, Gurney's collaborations between university and secondary teachers, Hague and Walker's Powerful Learning Partners and Seminars, and MacKinnon's "hall of mirrors," that provide interactive, collaborative models for development, appear to be successful in helping preservice and inservice teachers change their perceptions about practice as well as the practice itself. Videotapes of classroom teachers' practice, such as those described in use by Daniel, Gurney, and MacKinnon in their programs, appear to be an effective learning tool for preservice, inservice, and student teachers. Programs that provide models for preservice or student teachers in both videotapes
and in classrooms or practicum experiences, such as Daniel’s and MacKinnon’s, or that allow inservice teachers to collaborate in the creation of models, methods, and strategies, such as Fosnot’s, Gurney’s, and Hague and Walker’s, appear to be effective.

All of these studies also show the importance of reflection on practice in teacher preparation and development. For preservice teachers reflection on practice with supervising or cooperating teachers or college professors through the use of video and audio tapes and/or in conjunction with classroom or practicum experiences was effective (Daniel, 1996; MacKinnon, 1989). For inservice teachers reflection on practice with peers and coaches or mentors was effective in changing their perceptions and practice (Fosnot, 1989; Gurney, 1989; Hague & Walker, in press). Programs and models that provide supportive, collaborative coaching and modeling in reflection on practice appear to hold great promise for teacher preparation and development (Daniel, 1996; Fosnot, 1989; Gurney, 1989; Hague & Walker, in press; MacKinnon, 1989).

Because all of these researchers recommended additional investigation of or exploration into the use of such programs, I believe this field could benefit from additional data collection and analysis and articulation. I believe we need additional, detailed particulars of what practice consistent with constructivism looks like for classroom teachers and how teachers at all levels can achieve it.
Because most researchers in this field have had a vested interest in the success of a particular program or teacher (Cheung, 1990; Daniel, 1996; Fosnot, 1989; Gurney, 1989; Hague and Walker, in press; MacKinnon, 1989), it would also be useful to this field for some of this research to be done by an outside observer who does not have a vested interest in any particular program, model, initiative, teacher, or group of teachers.

Additionally, the work of Gee and Gabel (1996), Hand and Tregust (1997), and Whitworth (1996) establishes that for student teachers, beginning teachers, and experienced teachers there is a crucial link between classroom management and control issues and the ability to practice in ways consistent with constructivism. I believe additional research into this connection would be helpful as well.

Self-descriptions of teachers' attempts to practice in ways consistent with constructivist learning theory highlight another important consideration for research. These descriptions range from O'Loughlin's (1990) genuine expressions of frustration over his lack of success in changing inservice teachers' attitudes about how students learn, to Cowey's (1996) and Lester's (1996) glowing accounts of their successes. Cowey, as a first-year teacher, implemented and reported on language arts practice consistent with constructivist theory. Lester (1996) gave an equally positive account of her successes using constructivist teaching approaches to teach math to second-
graders.

Both Cowey and Lester were proteges of Fosnot, who used a transformational rather than mimetic model of mentoring with them. Cowey's and Lester's accounts appear in Fosnot's text (1996) and corroborate Fosnot's findings (1989). Both Cowey and Lester were immersed in education programs that promote constructivist beliefs: Cowey through her undergraduate education in the Center for Constructivist Teaching Project at Southern Connecticut State University and Lester through the SummerMath for Teachers program at Mount Holyoke College.

O'Loughlin (1990), however, found resistance among inservice teachers in a college course he designed with a decidedly constructivist basis. In order to model the notion that students possessing a sense of agency can be empowered to take responsibility for constructing their own understanding, O'Loughlin invited the teachers in the course to set up with him a collaborative learning environment in which they would take joint responsibility for the direction of their studies. From "listening to students' voices in journals, autobiographies, and in class" (p. 1) and from reflecting on class experiences in his own journal, which he wrote immediately after each class session, O'Loughlin concluded that this resistance comes from a "fundamental conflict of visions between the possibility of education as empowering that I hold forth and the way my students know education to be from their immersion as students in the
culture of schooling" (p. 1).

O'Loughlin concluded that teachers' beliefs about knowing, teaching, and learning are a result of "complex subjective and cultural processes" and that these beliefs influence their teaching more than the formal socialization into the profession that they receive in teacher education programs. O'Loughlin recommended attempts to illustrate and understand these processes as a way to "develop pedagogical strategies that enable teachers to become reflective empowered knowers who can experience a sense of agency and possibility, and as a result, engage their students in similar processes of coming to know for themselves" (p. 2).

Fosnot, Lester, and Cowey appear to be describing a "best of all possible worlds" scenario in which undergraduate teacher preparation, on-going professional development, collaborative mentoring, and school climate conspire to produce the desired constructivist approaches to teaching and learning. O'Loughlin seems to be confronting the realities of classroom teachers who experience some of the same problems with control of student behavior and classroom management as the student teachers in Whitworth's study (1996) and the beginning teachers in Gee and Gabel's (1996) and who also hold the same "deficit views" of students as the teachers in Grisham's study (1992) and the same "collective templates" of children as the teachers in Morocco's (1991).

I believe we need additional data here, too. What are
the realities for classroom teachers in public schools attempting to change from traditional to more constructivist approaches to teaching? There seems to be a need for further observation of experienced teachers in American public schools, particularly those involved in reform initiatives that promote constructivist teaching and learning, and their attempts to translate constructivist theory into practice.

I believe I can make a contribution to this field of research by conducting a cross-case observational study, which will also include interviews, of teachers in such reform initiatives. It seems paramount that we gain a more in-depth understanding of teachers' attempts to translate theory into practice within the confines of today's schools and to look at the influence that the coaching and modeling that they are receiving as a result of involvement with reform initiatives is having on their practice. Qualitative research describing these teachers' realities might provide insights into the discrepancies among self-descriptions (Cowey, 1996; Fosnot, 1989; Lester, 1996; O'Loughlin, 1990), as well as additional data regarding influences on teacher practice.

Finally, since Gee and Gabel (1996) and Hague and Walker (in press) point directly to the shortcomings of self-assessment through checklists and surveys as a way to measure teacher change and growth in moving from traditional transmission model practices to more constructivist
approaches, I believe observations of classroom teachers steeped in reform initiatives that promote constructivism would be extremely valuable to this field. Hague and Walker recommend such observations. Hand and Treagust (1997) in their study demonstrate the efficacy of combining teachers' self-descriptions with observations by researchers to determine if the teachers' actual practice has, indeed, changed to match their perceptions.

When scientists use and recommend the poet's tool of metaphor as an effective way to measure and document teacher change (Hand and Treagust, 1997), the future for collaboration across disciplines looks bright as we continue to try to describe and understand constructivist approaches to teaching that might be applied across grade levels and disciplines. The case study is a methodology which is used and understood across disciplines and provides well for illustrating and understanding practice. I will discuss why the case study is appropriate for researching matters of practice in the next chapter.
Chapter 3: Research Methodology

Overview of the Methodology

A novice in educational research learns early that the quantitative/qualitative war is still on. Lacking the fervor of a holy crusade, it might best be characterized as guerilla action, from which occasional sniper fire is heard. Peacemakers (Borg & Gall, 1989; Howe & Eisenhart, 1990; Reichardt & Cook, 1979) hold out the olive branch: there is no need for conflict over methodology because each is ideally suited for exploring some research questions but not others.

No researcher would argue with the tenet that the research process should begin with the formulation of research questions, which in turn drive all other decisions that the researcher makes. Howe and Eisenhart (1990) suggest that a standard for judging all research, both quantitative and qualitative, is the fit between the research question and the methodology: Is this the best method or procedure for what the researcher wants to know? Is the methodology grounded in the nature of the question or questions?

In focusing on the nature of the research question, an essential difference between qualitative and quantitative research emerges. Qualitative research questions stem from a desire to understand how something looks from another’s
perspective, rather than a desire to test a hypothesis, which is the impetus in quantitative research. In qualitative research we give up trying to prove or disprove the "truth" to concentrate on trying to understand "truth" from the perspective of those in the environment we are studying. In qualitative research we seek the "truth" of "multiple realities" (Borg & Gall, 1989; Merriam, 1988). In this cross-case study, my attempt has been to understand "truth" from the perspective of classroom teachers who have been steeped in reform initiatives which promote constructivist approaches to teaching and learning and who also work within the confines of today's public schools.

Because my overarching research question has been "What goes on in classrooms where teachers are attempting to teach in ways consistent with constructivist learning theory?," the qualitative case study seemed the best choice of methods. The case study approach is highly appropriate to my research question, according to Merriam (1988): "The qualitative case study is a particularly suitable methodology for dealing with critical problems of practice in which understanding is sought in order to improve practice" (p. xiii). Merriam's commentary reflects my intent for this study.

Inextricably linked to my desire to understand teachers' interpretations of constructivist learning theory is a desire to understand how they translate theory into practice within the confines of today's public schools.
This suggests two other features important in the qualitative paradigm: the need to understand individuals within their natural setting and the need to give these individuals a voice within these settings, which they know more intimately than anyone else. Nowhere do these needs seem more important than in looking at teachers’ attempts to translate theory into practice within reform initiatives that depend heavily for their success on teachers’ classroom practice.

If we want teachers to find ways of teaching that are consistent with constructivist learning theory and to implement these in today’s schools, we need to begin by looking closely at and listening closely to those classroom teachers who see some merit in both the theory and reform initiatives that promote it and who are at least making attempts to translate theory into practice in their current classroom settings. We especially need to know what enhances and what inhibits their ability to do so.

Role of the Observer

Because qualitative research calls for the researcher to observe, interview, record, describe, and appraise situations and settings as they are, this methodology seemed highly appropriate to answering my research questions. Patton (1980) underscores this need to "understand the nature of the setting--what it means for participants to be in that setting, what their lives are like, what's going on for them, what their meanings are, what the world looks like
Merriam (1988) recommends that the qualitative researcher observe and record the specifics of setting, participants, activities, interactions, and frequency and duration of activities and interactions. Borg and Gall (1989) suggest that during observations we seek answers to the standard reporters’ questions of who, what, when, where, how, and why. These were the tasks of the observational portion of my study and served to provide the details of teachers’ understanding of constructivism, their attempts to translate it into practice, and the challenges, struggles, and barriers they face in their attempts within current school settings.

My study employed the type of ethnography described by Borg and Gall (1989) as "an in-depth analytical description of an intact cultural scene in which the observer uses continuous observation, trying to record virtually everything that occurs in the setting being studied" (p. 387). Borg and Gall further describe three basic positions the ethnographer can take: complete participant, primarily participant, primarily observer (p. 391).

My role was primarily the observer on the scene, participating enough to establish rapport and to develop understanding, but with the guideline that my role as observer superceded all others. However, I was called upon on three occasions in two classrooms to "take over the class" for the teacher, and because I felt comfortable with
this charge and had told all the teachers I observed that if I could ever help them with anything, they should feel free to call on me to do so, I didn't hesitate to "jump right in." Also, in more social settings, like lunching with teachers in the teachers' lounge, I put away my notepad and simply sat in on conversations with teachers as a participant, albeit a more reticent participant than I might normally have been.

On these occasions where I was called upon to play more of a participant role, I made notes as soon after as possible. Often this was just a matter of minutes later, like returning to the classroom after lunch or after a playground conversation. I followed here the advice of Merriam (1988), who urges the recording of impressions either while observing, or if that is impossible, as soon as possible afterwards, to better achieve accuracy and immediacy. Our memories do tend to fade with time.

Borg and Gall (1989) cite two major advantages of the participant observer role: "the researcher is less obtrusive and less likely to become emotionally involved" (p. 396). It was primarily for the first of these advantages that I aimed for the participant observer role. I did not want the spotlight to be on me. I wanted to get as close to the proverbial "fly on the wall" as I could. Unobtrusive was my ideal.

Borg and Gall (1989) also describe the technique of the participant observer, who keeps "accurate minute by minute
accounts of what the subjects do or say," called "protocols" or "stream-of-behavior chronicles" (p. 396). I also aimed for this "stream of behavior" quality in my observational field notes.

The Interviews

As to the interview portion of my study, it served several purposes. First, it allowed me to triangulate data from both the survey and my observations. Secondly, it allowed me to clarify and expand upon my observations. Additionally, it served to give teachers a voice in discussions of constructivist theory and its translation into practice in current school settings, and in relation to reform initiatives and the training, development and coaching concomitant with them. As Cuban (1984) has pointed out, "Teachers too often remain voiceless in setting reform agendas" (p. 37).

In the interviews with teachers I tried to achieve a balance between what Merriam (1988) calls the semi-structured and the informal interview and what Patton (1980) identifies as the interview guide approach and the informal conversational interview. Merriam (1988) identifies three basic types of interviews: "the highly structured questionnaire-driven interview, the semi-structured interview in which certain information is desired from all respondents, and the informal interview" (p. 73-74). Patton (1980) identifies four: "closed quantitative interview, standardized but open-ended interview, interview guide
approach, and informal conversational interview" (p. 206).

In my interviews with teachers, blending the semi-structured or interview guide approach with the informal or conversational interview gave me several advantages and strengthened my study. The informal conversational interview had the distinct advantage of building upon observations, which I very much wanted, but data organization and analysis can be difficult with this technique because it is less likely to be systematic. With the semi-structured or interview guide approach specific topics, questions, or issues are determined in advance, and the researcher decides which questions to ask, and in what sequence, during the interview. Incorporating elements of this type interview made data management a bit easier, increased the comparability of responses, and allowed for more comprehensive and systematic data collection. Overall, the interviews stayed conversational and informal with most of my questions derived from the specifics of observations. However, there were questions I thought relevant to informing teacher preparation and development that I had prepared in advance and asked of all teachers.

Along with considerations as to interview type, decisions about the relationship between interviewer and interviewee go hand in hand. Highly structured interviews provide the greatest objectivity and neutrality. Informal interviews tend to provide the greatest candor. Semi-structured interviews try to strike a balance between the
two. Rubin and Rubin (1995) point out that "unlike survey interviews, in which those giving information are relatively passive and are not allowed the opportunity to elaborate, interviewees in qualitative research share in the work and are treated as partners rather than the objects of research" (p. 10). Rubin and Rubin use the term "conversational partners" to denote the relationship between researcher and participant and describe it as "a congenial and cooperative experience, as both interviewer and interviewee work together to achieve the shared goal of understanding" (p. 11). Since my goal was understanding of teachers and their classroom practice, I aspired to this "conversational partnership" in my interviews.

The Preliminary Survey: Standardized but Open-Ended

I began my study with a survey of teachers in two school sites that have been extensively involved in reform initiatives that promote constructivism. The survey was designed to gauge teachers' understanding of the learning theory and to begin to determine its influence on their classroom practice but, more importantly, to identify teachers for observation and interview. My survey of all teachers in both sites selected for this study functioned much like what Merriam (1988) calls the highly structured questionnaire-driven interview and what Patton (1980) calls the standardized but open-ended interview because all participants answered the same questions in the same order, but with the questions being open-ended.
I used the descriptors and guidelines established in the literature review section of this dissertation from which to create the questionnaire (Appendix A). I conducted my survey of teachers in two schools in a large urban school district in the southeastern United States. I selected these two schools as sites for my study because both have been involved in reform initiatives which promote constructivism and in which teachers have had training and development and coaching expressly consistent with constructivism. These two initiatives are the Accelerated Schools program from Stanford University and Different Ways of Knowing (DWOK) from the Galef Institute.

The Accelerated Schools program was begun first in both of these schools: the initiative has been in place for five years at one school and three years at the other. The Different Ways of Knowing (DWOK) program was implemented in the 1996-97 school year at both schools, so it had been in place for approximately a year and a half when I began my study. Both initiatives were begun in both schools to create magnet programs with which to attract students across the district.

The Accelerated Schools program is based on the premise that transforming a school's culture and governance structure through the use of an inquiry model that develops teachers as empowered problem-solvers will then transform these teachers' classroom practice. School level changes are described as "big wheel" and classroom level changes are
described as "little wheel" (Levin, 1992). The Accelerated Schools approach has three underlying principles:

1. Unity of purpose
2. Empowerment with responsibility
3. An effort to build on the strengths of the entire school community. (Keller, 1995, p. 11-12)

Additionally, the program promotes "powerful learning," a descriptor for what goes on in the classroom that is based in constructivist learning theory: "Powerful learning is a philosophy and process that focuses on an integrated and constructivist approach to learning" (Keller, 1995, p.10). This emphasis on constructivist classroom practice was the component I was most interested in investigating in this study.

The Different Ways of Knowing (DWOK) approach shares common features with the Accelerated Schools program:

1. constructivist approach to teaching and learning
2. coaching and collaboration among teachers
3. emphasis on unity of purpose
4. emphasis on thematic, interdisciplinary units
5. integration of multiple intelligences theory, tied to arts infusion in DWOK
6. community involvement, in DWOK the effort is to involve the arts community in particular.

DWOK doesn’t address school governance or provide for it in any way but does stress the importance of creating an empowering environment in the classroom.
Teachers in the selected sites have had training and development and coaching in the inquiry model and in "powerful learning" through the Accelerated Schools initiative and training and development in constructivist teaching approaches through the workshops presented by the Galef Institute, which are advanced as highly constructivist. Teachers in both schools, therefore, should be conversant with constructivism and how it might be interpreted in classroom practice.

However, Hague and Walker (in press), in a study of two other schools in the same district also included in the Accelerated Schools initiative, warn that "while a project school is given a concrete process to follow in order to transform itself into an 'accelerated school,' we have found that the process does not automatically transfer to the classroom level" (p. 4-5). Hague and Walker used three interventions to help teachers implement theory into practice: Powerful Learning Seminars, Powerful Learning Partners, and the creation of a checklist (Appendix B).

The seminars "included both formal and informal opportunities to learn about student-centered, constructivist teaching practices" (p. 7), and the partnerships provided a means for teachers to share ideas about their efforts to create "powerful learning" activities. The checklist was "developed collaboratively by teachers at both schools as a part of their second year training activities" (p. 6).
While acknowledging that the development of a checklist might at first glance be "heretical" since "powerful learning is not a checklist or formula but rather a philosophy and process" (p. 6), Hague and Walker concluded that the checklist "honored constructivist learning principles" (p. 6). The checklist (Appendix B) was "developed collaboratively" by the teachers and, therefore, represents their understanding or "constructions" of "powerful learning."

Because the teachers at the sites of my study have also been involved in the same initiative as the teachers in the Hague and Walker study, as well as the training and development and coaching that are a part of it, I incorporated some of the features identified in their teacher-developed checklist (Appendix B) into my questionnaire. Features listed on the checklist that are consistent with features identified in the literature review section of this dissertation are the following: activities are developed to encourage risk-taking, to promote exploration and experimentation, and to use students' prior knowledge and real-life experiences; the teacher uses a variety of questioning techniques, which promote interaction, collaboration, cooperation; strengths and needs of students are identified; the teacher models himself/herself as a learner; students feel free to express themselves in a variety of ways; the teacher encourages risk-taking; the teacher is a facilitator of learning.
Also, I intended to follow up on certain findings and conclusions of Hague and Walker's study: first, their finding that "teachers tended to rate themselves high on the pre-test [using the checklist], leaving little room to demonstrate an increase in the use of powerful learning on the interim assessment taken midway through the year" (p. 12). Hague and Walker recommend "further exploration" as to why this happened and why the checklist did not turn out to be "the way to quantitatively describe teacher growth during participation in the powerful learning project" (p. 11).

I suspect that self-reporting using a checklist tends to be inflated generally and that teacher growth is very difficult to quantify. Therefore, my study was needed to provide an alternative to self-reporting on a checklist and to provide the qualitative "particulars" as to how teachers attempt to transform their practice, what influences them to do so, and how well they are succeeding.

From the results of the survey, I selected four teachers for observation and interview. I looked for teachers whose responses to the questionnaire indicated that they were most knowledgable about constructivist theory and whose classroom practice seemed to be most influenced by it. Another dimension I added to this study to eliminate the influence of other variables on teachers' classroom practice was to limit observations and interviews to teachers at one school because I found a large enough sample group at one site.
I triangulated this data by interviewing the school principal and a university faculty member who has been the Accelerated Schools coach for this school for five years. The four teachers selected for observation and interview showed up on all three lists of teachers whose practice is consistent with constructivist learning theory.

After conducting a pilot test of my questionnaire (Appendix A) in a master’s level education course, in which all participants except one were classroom teachers, I concluded that the questionnaire worked well in terms of both gauging teachers’ knowledge of constructivism and identifying teachers whose practice is consistent with it. Questions 1 and 5 on the questionnaire allowed me to distinguish rather quickly between teachers whose practice is consistent with constructivism or not. Items 2, 3, and 4 on the questionnaire then gave me details of the teachers’ classroom practice, which correlated highly to how teachers identified themselves in their responses to items 1 and 5.

Important Considerations with Regard to Methodology

My questionnaire worked equally well in allowing me to identify teachers for my cross-case study and analysis. I observed each teacher for a minimum of three school days to get a picture of what each one’s practice is like. I tried to avoid observation on days prior to holidays or breaks because such days do not tend to be representative. My interview questions evolved from observations and were
phrased in ways that allowed teachers to tell me what influences them to do what they do in the classroom. For example, "Why did you structure . . . [a particular activity or interaction] the way you did?" would be the type of question I asked. Observations gave me the details of teachers' classroom practice. Interviews told me what influences their decisions with regard to these details. Of course, I tried to gauge how much constructivism influences their decision making and what other factors intervene.

I expected to see very learner-centered classrooms, where teachers question and probe for understanding of students' current knowledge and thinking on a particular subject, where activities, curriculum, and instructional design are based on students' needs, where teachers and students question, explore, and collaborate with each other, and where students take responsibility for their own learning needs.

However, in qualitative research an important feature is to begin a study without preconceived ideas about what the observations and interviews will reveal. I tried to let the details and particulars of teachers' classroom practice show whether or not they were practicing in ways consistent with constructivist theory and to allow teachers to tell me in their own voices what influence constructivist theory and their interpretations of it have had on their practice.
I transcribed all field notes of observations and audiotapes of interviews in chronological order as soon as I could get to my computer after observations and interviews. I stored all data on the hard-drive of my computer and backed it up with copies on discs as well as hard copy. Transcribing my own field notes and audiotapes was extremely tedious but allowed for the simultaneous collection and analysis of data that Merriam (1988) recommends. As I transcribed my field notes, and read and re-read these, I began to notice patterns across cases that I wanted to investigate more closely.

It was precisely to increase the potential for generalizing across cases that I chose the multiple case study method. Therefore, in analyzing my data throughout the study, I sought to look for explanations that fit all cases and to build theory across cases. I consistently looked for categories, patterns, and themes that all four cases had in common and also how they were different. I employed what Yin (1989) calls a "pattern-matching to explanation building strategy." In analyzing the data, I also tried to use some of the twelve tactics recommended by Miles and Huberman (1984): counting, noting patterns and themes, seeing plausibility, clustering, making metaphors, splitting variables, subsuming particulars in the general, factoring, noting relations between variables, finding intervening variables, building a logical chain of evidence, making theoretical coherence (p. 215-228).
Ethical considerations were also very important to me, so I was very attentive to these throughout my study as well. One of the most profound influences of my undergraduate education was reading the philosophy of Immanuel Kant: "Act so that you could will your maxim to become universal law" and "the greatest harm comes from using another person as a means to an end, rather than as an end." I swore in my youth to be guided by Kant's words, so I heartily agree with Locke, Spirduso & Silverman (1993) when they stress in research to be guided by an ethical benchmark and suggest the following: "Every human has the right not to be used by other people" (p. 29). For Locke et al. this "begins with the right of free and informed choice" (p. 29).

I ensured this right in every step of the process. I submitted my research proposal to the UNF Institutional Review Board for approval. I submitted a summary of my research proposal and copies of my questionnaire to the school principals for their approval. I was guided in writing the introductory commentary in my questionnaire and in an informed consent letter (Appendix C) for teachers whom I observed and interviewed by the protocols given by Locke et al. (p. 31), their samples (p. 245, 308-312), and their checklist (p. 309). The questionnaire contained, for example, statements informing those who completed it that they would be contributing to a doctoral dissertation study of constructivism and classroom practice and letting them

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know that by completing the questionnaire they were giving me consent to use the information collected. I also informed participants that I would protect their anonymity and asked teachers to identify themselves by name only so that I could gain access later to those I wished to observe or interview. I stressed to teachers that their participation in both completing the questionnaire and allowing me to observe and interview them was strictly voluntary.

I created an informed consent letter (Appendix C), along the lines of the models given in Locke et al. and Marshall and Rossman (p. 69) for the teachers I observed and interviewed and had them read and sign it with me. I coded all references to these teachers under pseudonyms known only to me.

A Final Consideration: Subjectivity

All of the above considerations led to a final concern for the qualitative researcher: subjectivity. Since the researcher is the primary instrument of data collection, the person doing the research is central to the process. The question for the qualitative researcher becomes what part of myself is pertinent to the research and should, therefore, be delineated? Peshkin (1988) points out that in qualitative research subjectivity is the basis for the researcher's distinctive contribution, which comes from joining personal interpretation with the data collected. It is a matter of making one's subjectivity explicit, or as
Peshkin (1988) says, "We must actively attend to subjectivity in a meaningful way" (p. 17). Allow me now to attend to mine, to tell of my personal experiences and practices that are pertinent to my research and that shaped my research design.

I see at least two sides to everything . . . at least two. I possess what Merriam (1988) calls a certain "schizophrenic" quality necessary to the participant/observer: "At the same time one is participating, one is trying to stay sufficiently detached to observe and analyze" (p. 94). I am analytical to a fault and an observer. Someone once told me that if one wants to be a writer, one must first be an observer. I have wanted to be a writer since I was eight, and although I have been paid to write (I even had a monthly column for about a year), I feel that I have just begun to hit my stride as a writer. I do like the observer/listener role; I get so many good ideas that way.

"But what about teaching?," one may well ask. Anyone who knows me even a little bit knows how much of myself I have invested in being a teacher. In fact, lately I have asked myself, "If you couldn't call yourself a teacher or a writer, what term would you use to define yourself?" The word explorer has come to mind, and I like to think I bring a certain spirit of exploration and discovery to the classes I teach. I know I actively try to promote inquiry in my classes. A qualitative researcher, too, is an explorer,
seeking to discover and chart new territory and going forth
open to the possibilities, without maps or preconceptions
about what she will find.

While I have no difficulty imagining myself as an
explorer, I do have a hard time, sometimes, imagining my
life without being a classroom teacher. I have been a
classroom teacher for 15 years full time, five at the
secondary level and ten at the post-secondary. "How do
students learn?" is a question I continually ask. Trying to
answer that question has led me to constructivist learning
theory, as I stated in the first paragraph of this
dissertation. I truly believe that each learner constructs
his or her own understanding of the subject.

I remember my first year of teaching when I thought the
art and science of the profession was "telling it well." I
was told often enough in high school and college that I
could speak well that I had begun to believe it; I had
participated in enough speech and debate competitions that I
had begun to believe it. I had, on a number of occasions,
been selected to moderate discussions, and I remember one of
my college professors telling me, "I want you to be the
moderator because you always see things from several angles
and you summarize so well." I thought my ability to
communicate effectively would carry me through a career in
teaching. Wrong . . . wrong . . . wrong!

I also remember the first test I gave. Even in the
early 1970's we knew that open-ended, short-answer and
short-essay tests were preferable to multiple choice/multiple guess, or even worse true/false, tests, especially in English classes where we were trying to develop students' writing abilities. I constructed a short-answer, short-essay test over what we had covered in the first few weeks of my 10th grade English classes.

What a shock the results of that test were. I can remember to this day. I thought I had done such a careful job of explaining and re-explaining and reviewing and re-reading the material for them. A handful of students in each of my five classes got the "right" answers. Many of the other students' responses were unintelligible; many made me wonder, "Whose class have they been in for the past few weeks because it certainly wasn't mine." The A and B students had learned and regurgitated what I had given them. All the rest, about 65-75%, I recall, were somewhere else.

"This is not working!," I remember saying to myself upon seeing the results of that test; "I can continue to teach to the A and B students, or I must try something different." I immediately hit upon the idea of putting students into groups and giving them a group assignment. "At least maybe they will all be engaged," I remember thinking at the time. I also remember having some vague notion that students needed to be more engaged, rather than being treated as passive receptacles. Our 10th grade English text contained Julius Caesar, so I divided the students in each of my five English classes into five groups.
and assigned each group one act from this five-act play to present to the rest of the class.

What a difference! What a success story! And this was in 1971-72 . . . before anyone had even heard of cooperative learning. Back then we just called it group work, and I remembered from my undergraduate education courses that a few people were just beginning to try cooperative learning strategies, mostly in experimental, laboratory schools, usually affiliated with university teacher education programs.

I also remember to this day the excitement that this Julius Caesar project generated among many of the students. They actually went on their own to our classroom set of dictionaries in their efforts to translate Shakespeare’s English into their own for presentation to their peers. They made togas, swords and daggers, fake blood, and laurel wreaths. One group did such a theatrical presentation that we insisted that they perform their act in the school auditorium for another English class that met at the same time period as ours.

I don’t remember how my students did on their test over Julius Caesar, but I can clearly visualize students, their desks in a cluster, pouring over dictionaries to get the meaning right. I can also see in my mind’s eye a student playing Brutus and wearing a Richard Nixon mask, this from the group that had decided to "translate" their act into a modern setting. It was the early 1970’s, and "the times
they were a‘changin’.

I have often been told what a creative teacher I am. I don’t really think of myself that way. I think I do provide opportunities for my students to be creative, and they rarely disappoint me. My students tell me, both in informal conversation during and outside of class and in the formative evaluations of my teaching that I ask them to complete around midterm every semester, that they are alternately stimulated, challenged, and frustrated by my teaching approaches. They tell me that they are sometimes frustrated by my answering a question with a question, by my probing to get at what their thinking is, and by my saying, "There are many questions in life for which there are no quick and easy right answers."

I see students who have been successful with the transmission model of education struggling with my constructivist approaches to curriculum and instruction. Because these students have been so successful at taking notes, memorizing and regurgitating, and doing well on "objective" tests, they seem to chafe at being asked to think, solve problems, make decisions, and take greater responsibility for their learning. In short, they seem reluctant to "construct their own understanding," and some have even said to me, "Just give me the right answer." I have seen, especially, the English education majors in my Adolescent Literature classes struggle with constructivist approaches to teaching and learning, and I have been very
concerned about the way some of them consistently fall back on and embrace the transmission model of teaching when they are called upon to teach the class.

I have often thought that if they had experienced teaching different from this model in their own elementary and secondary education, they would be more comfortable with other approaches at the college level. They tell me that most of their education at all levels has been in the transmission model. My concern for prospective teachers, especially, has greatly contributed to my doing this dissertation as I have.

I recently attended the Association for Constructivist Teaching Conference at City College in New York. Most of those attending are currently in elementary education or early childhood education or in teacher education programs in these areas. What I heard and saw were presenters promoting constructivist approaches to teaching children but using a transmission model for the adults in their audiences. This troubles me greatly. How can teachers learn to teach in ways consistent with constructivist theory if they do not see it modeled by those who are teaching them? How much faith can they be expected to have in theory alone? Certainly, students who experience constructivist approaches in their early education will be more comfortable with such when they reach the secondary and post-secondary levels, so we must start at the early childhood and elementary levels. However, I think we need a bridge. We
need to connect what is happening at all levels of education in terms of constructivist approaches to teaching and learning. Am I that bridge? Perhaps.

What I know for sure is that I have tried throughout my fifteen years in the classroom to define and describe excellent teaching, to say what it means to me as a teacher to be truly effective. Darling-Hammond, Wise, & Pease (1983) in a review of teacher evaluation literature make three distinctions in the ways that teachers can be evaluated: knowledge (what the teacher knows, as can be measured on a test), competence (what the teacher does in the classroom), and effectiveness (the influence that the teacher has on students). I have always taken as my personal measure of success the long-term effectiveness of what goes on in my classes. I hear from enough students often enough over the years to know that they have carried with them experiences and knowledge that they acquired in my classes into their work and lives.

Exactly what is effective teaching has been the premier question of my career. I am not sure I have found the answer, but I know I am comfortable with my teaching at present. In fact, I would like to have videotapes of many of my classes this semester. I could watch myself on videotape and learn from it. Ultimately, one of the aspects of teaching that I love most is that I never stop learning from it and about it. I believe in the constructivist principle that the teacher is the model learner in the
A Final Note

Spindler (1982), Peshkin (1988), and Scheirer (1990) speak of how predispositions influence the choice of research problems, methods, and field sites. I believe the above commentary delineates mine. However, I believe I need to attend in more detail to how I selected the field sites for this study.

Evolving as a teacher led me to want to find out more about other teachers attempting to practice in ways consistent with constructivist learning theory and to better understand their interpretations of theory. I also wanted to know how constructivist approaches might work across disciplines and grade levels. That curiosity led me to the two reform initiatives previously mentioned, Accelerated Schools and DWOK. I found that both reform initiatives promote constructivist teaching in the elementary grades and both had been implemented in my local school district. I found a professor in my Ed.D. program who was serving as an Accelerated Schools coach in one of the schools involved in this initiative. When I told him of my interest in the initiative, he invited me to sit in on a couple of the Accelerated Schools coaches’ meetings.

From observing at these meetings, I was invited by a district-level administrator to participate in a two-day DWOK workshop for local teachers. From participating in this workshop I was invited by the Galef Institute to
attend a five-day leadership seminar in Los Angeles. I heard teachers and administrators at the coaches’ meetings, the workshop, and the seminar struggle with how teachers might put constructivist theory into practice in schools as they are now. I began to think research in this area might be relevant not only to my own attempts to practice in ways consistent with constructivist learning but also to others who might be faced with some of the same struggles I was confronting in the face of factory-model schools and students long conditioned in the transmission model.

My attempt in this study has been to capture the universal in the particular, or as Wordsworth would say, "to see infinity in a grain of sand." Borg and Gall (1989) describe this well: "the case is viewed as an example of a class of events or a group of individuals" and "data about the single case can provide insights into the class or groups from which the case has been drawn" (p. 402).

Borg and Gall (1989) also point out that "it is rather hazardous to draw any general conclusions from a single case study but this problem can be greatly reduced by multiple case studies" (p. 402). Their cautionary note is precisely why I observed and interviewed four teachers. I looked for patterns that emerged across cases and that were justified by the data collected. Because I have spent so much time teaching at the secondary and post-secondary levels, I particularly wanted to see if there are universals across grade levels. Do teachers at all grade levels face some of
the same problems and struggles in attempts to practice in ways consistent with constructivist theory? Looking to answer this question, I was consistently and continually comparing my own classroom experiences with those of the teachers I observed and interviewed.

Howe and Eisenhart (1990) suggest another criteria for judging the quality of research, both qualitative and quantitative: our conclusions must be justified by the data. I hold myself to this standard. One of the greatest advantages of ethnographic methods is that they provide us a very complete picture of the environment being studied, so if done well, they provide a rich mine of data. My observational field notes ran to 206 pages, typed, single-spaced.

I think it is important to remember, too, that an intention of qualitative research is to provide insights and to generate hypotheses, so it can provide a rich source of these as well. Eisner (1991) talks about the need to create a text that makes vicarious participation possible in the hopes of improving such complex social organizations as schools or so delicate a performance as teaching. I hope to provide insights into this "delicate performance" in the next chapter.
Chapter 4: Results and Findings

Introduction

A comment I overheard while surveying teachers at one of the schools selected for my study stays in my mind. After I passed out questionnaires and pens, one teacher who had briefly left the meeting returned, took a seat near where I was standing, and as I gave her a copy of the questionnaire and a pen, she turned to a colleague and asked, "What are we doing?" The other teacher replied, "We’re filling out a questionnaire on constructivism." The returning teacher said, "Oh, that’s that artsy-fartsy stuff." I was curious as to the associations this teacher was making with constructivism and hoped my study might illuminate her comment for me, and it did, as I will reveal.

In addition to elucidating this teacher’s comment, this chapter will present the results of the survey and describe the four cases. It will also trace five themes which emerged from the data and present a final note based on observation.

Results of the Survey

There were 28 teachers present the day I attended a faculty meeting at one of the schools selected as a site for my study. All 28 teachers present filled out the
questionnaire although completion of it was the last item on
the agenda at the meeting, and I stressed to the teachers
that their participation was strictly voluntary and that
they were free to leave if they wanted. Of the 28
completing the questionnaire, 15 gave their names and phone
numbers, indicating that I could contact them later for
possible observation and interview, and these 15 also
answered almost every question on the questionnaire. I
think this is a significantly high number of teachers
indicating a willingness to be observed and interviewed and
also taking the time to complete the questionnaire in its
 entirety: well over half of the respondents.

Thirteen teachers did not identify themselves. Of
these thirteen, eight completed the questionnaire in its
 entirety, or close to, with most of these giving me the
detailed responses that questions 2, 3, and 4 called for.
Five responded only to questions 1 and 5, which asked only
that they make choices from among predetermined descriptors.

With question 2, "Do you consider your teaching
approach to be consistent with constructivism? If so, why?
If not, how would you describe your approach to teaching?,"
I was trying to get at teachers’ interpretations of
constructivism without asking point blank, "How do you
define constructivism?" I was trying to avoid having the
question read like one on an exam.

I discovered from the 28 responses of teachers at this
school to question 2 that teachers do have a sense of what
constructivism is. They may not define the term, but they can give descriptors, and these are very consistent with those descriptors identified in Chapters 1 and 2 of this dissertation as being consistent with constructivist theory. Teachers at this school think of constructivism as meaning student engagement and involvement. It means "hands-on activities," "cooperative or group learning," "exploration," "experimentation," "discovery," "research and investigation" to many of them. These terms showed up again and again in response to question 2. To some teachers it also means using a variety of methods and techniques based on the needs of the learners. Several teachers also associated it with art, music, and drama and with teaching to multiple modalities and multiple intelligences.

I found one teacher’s response to be close to a working definition of constructivism because she wrote that "children learn in different ways." In my estimation, this is a most crucial point in an understanding of constructivist learning theory. This teacher is, however, making some other curious associations with the term when she says, "Every activity we do can’t be cooperative group, cutesy, etc." As with the overheard comment about constructivism being "artsy-fartsy," I wondered what associations this teacher was making with constructivism and why she used the word "cutesy."

Teachers' commentary on question 3 from the survey, which asked that they list examples of their classroom
practice consistent with constructivism, reinforced comments on question 2 that suggest constructivism to these teachers is about students being highly engaged and actively involved in the classroom. They associate constructivism with music, art, and drama or with "hands-on" or "discovery" learning as ways of engaging and involving students.

As I transcribed teachers' responses to questions 2 and 3, I began to see another pattern emerge. Teachers who identified themselves showed from their responses that they do seem to have a more articulate understanding of constructivism than those who did not identify themselves. I speculate at this point that possibly the teachers who did not identify themselves are unsure about their understanding of constructivism and, therefore, did not want to identify themselves. Some of this group's responses to question 3 were either vague or not necessarily consistent with or relevant to constructivist learning theory: "drill and practice," "exposure to experiences not available at home," "creating things," "doing projects," "class conducted in an orderly fashion."

Overall, I was very pleased with the results of the survey. Based solely on responses to it, I was able to identify eight teachers I could observe and interview at this school because their responses indicated practice highly consistent with constructivist theory. I triangulated this finding with confidential interviews with the school principal and an Accelerated Schools coach who
has been working with these teachers for the five years that
the school has been involved in the Accelerated Schools
initiative. I asked these two individuals to give me their
perceptions as to which teachers' practice is most
consistent with constructivist theory and correlated their
perceptions with the results of my survey. Of the eight
teachers whose responses to the survey indicated practice
consistent with constructivism, four were on both the
principal's and the Accelerated Schools coach's lists of
teachers they see as practicing in ways consistent with
constructivism. These were the four teachers I selected for
observation and interview. A fifth teacher showed up on all
three lists, but she was on alternative assignment during
this time.

And what of the responses to my questionnaire from
teachers at the other school selected as a possible site for
my study? Because the principal at this school did not want
to give me time at a faculty meeting to have teachers
complete my questionnaire, I had no choice but to distribute
them through the teachers' mailboxes at school. This
principal agreed to this procedure and offered to provide me
a "teacher liaison" to help me get a good rate of return.
After doing everything I and several others could think of
to ensure a decent rate of return, it was, in a word,
abysmal: 2 returned, out of 31 distributed.

Why response at this school was so poor is a cause for
concern and a source of speculation. Possibly this poor
return would make for an interesting study, but that is not my study. Since the design of my study called for me to limit observations and interviews to one site in order to better identify variables within one particular setting, the school where I had a large sample population was the obvious choice of a site.

The four teachers I observed and interviewed are all classroom teachers with varying classes and years of experience. All names used herein are pseudonyms. Pat teaches a fourth-grade R.E.I. (Regular Education Initiative) class with 14 "regular" fourth-graders and 9 students classified as having one type of "learning disability" or another. Ann and Zoe both teach "regular" middle elementary classes. Kim teaches an early primary class. All are experienced teachers, with Ann being the veteran, with over twenty years experience in the classroom. The other three teachers' number of years of experience ranges from 5-10 years in the classroom.

The Teachers

Pat

Pat will always occupy a special place in my heart and in my study because she was the first teacher to respond to my letter asking to observe and interview her. I began my observations in Pat's class, and when the other three teachers saw me in their school, they responded to my request to observe and interview by asking me to drop by their rooms to check calendars and arrange dates for
observations. I feel indebted to Pat for getting me started.

Pat’s quick response to my request is typical of her character. She is warm, outgoing, friendly, and talkative, as well as highly organized, efficient, and attentive to detail. On the first day I observed in Pat’s class five students complained to her about not feeling good, and one student, clutching his stomach, ran from the room and returned, explaining that he had thrown up in the restroom. With each one, Pat was kind, caring, and solicitous. She put her arm around their shoulders or stood closely to them with her head bent toward theirs as they described their symptoms. At lunch I commented to Pat on the number of sick children in her room that morning, and she laughed and talked about how teachers have to be doctors and nurses, too.

I will never forget the genuine anguish I heard in Pat’s voice during our interview when she said to me, "I have children in my class who cannot read. They cannot read!" I could hear in her voice and see in her face how much she worries for them. In interviewing Pat, I discovered that she is the type of person who speaks in lengthy paragraphs, and she would go on for pages in response to questions that focused on her work with her students. In fact, the transcript of my interview with Pat was the longest of the four, running to 36 pages. However, nothing she said to me stays with me more than the simple
eloquence of the above comments.

What I also see as a dominant trait of Pat is her passion for order. Her classroom is spare and orderly, with clean, clear, uncluttered surfaces (Figure 1). Her days are highly structured: she covers the same subjects, in the same order, and for approximately the same length of time, every day. When I asked about this structure that I had noticed, Pat explained to me that she is trying to pass along to her students a sense of order to their days because so many of them are disorganized, particularly the students with learning disabilities.

In addition to being highly caring and highly ordered, Pat has a desire for mastery. In our interview she said, "We go to a workshop, and then we are say, well, here’s this technique we would like for you to do. You get started on that, you know, and before you’ve had an opportunity to master it, here comes another one. And then you start doing that, and then you’re on to something else, so before you know it, you’ve got 2, 3, 4 different things going on in the classroom, so rather than take one thing and master it, we’re doing several things. I would prefer to just master the technique that I’m doing, not limit myself, but master this and then add different instructional techniques as I see the children need it, not because this is the trend."

Tall, slim, and attractive, Pat could easily find work
FIGURE 1: "PAT'S CLASSROOM"
as a fashion model or spokesperson for a product line. Fortunately for the profession, Pat prefers to devote herself to teaching, where she has "fallen into" working with special needs children from having done her student teaching with a teacher who did so.

**Ann**

As I mentioned earlier, Ann is the veteran teacher of the group. She has been a classroom teacher for over twenty years, yet she conveys a freshness and youthful exuberance in her work that one might expect to see in someone just getting started. What impressed me most about Ann is the way she is continually looking for new ideas, new techniques, new strategies. She always seems to be asking of herself, "How can I do this better?" I have come to see Ann as an exemplar of what it means to be a teaching professional: she is continually growing and learning and seeking to bring current thought on best practice to her classroom. In our interviews she was the one teacher who volunteered commentary on how she has been influenced by the reform initiatives in her school and how she has incorporated what she has learned from these in her classroom practice.

An outstanding example of Ann's quest to bring innovations to her classroom is her use of technology. In one corner of the room Ann has created a computer center (Figure 2) with five computers always on in this area of the classroom. During S.S.R. (Sustained Silent Reading) time,
FIGURE 2: "ANN'S CLASSROOM"
students may choose to do their silent reading in the form of reading on the computer or doing programs on the computer. Also, when students have other free time in class, they may go to the computer center and work independently.

Ann also has the Accelerated Reader program on all the computers. This program allows her to individualize reading instruction for students and allows students to take charge of their reading. When a student finishes a book, he or she logs into the computer and takes a quiz on the book. The test score then tells the student and Ann what the reading comprehension level of the student was on that book. Ann and the student confer about the next selection the student should make. Students must achieve an 85% reading comprehension rate at one level before they can go to the next higher level, and the hundreds of titles of books included in the Accelerated Reader program are all rated by level of difficulty.

Ann’s use of the Accelerated Reading program reflects her passion for reading and illustrates the emphasis it is given in her class. Next to the computer center, a rocking chair occupies a prominent position in her classroom (Figure 2). She reads to her students almost every day, and when she does, she goes to the rocker while students cluster around her--some on the floor, some at their desks near the rocker, and some on the top of desks. One day while I was observing, as Ann read to the students from a "chapter book"
and they followed along in their copies, I noticed the sound of pages turning. The children were so quiet and so absorbed in the reading that the sound of pages turning was audible in the room!

One wall in Ann’s class is filled with a long, low bookshelf below the windows on this side of the room, and this bookshelf overflows with books (Figure 2). The love of books and reading pervades Ann’s classroom, which, at first glance, appears cluttered. Every inch in the classroom is covered or filled with something (Figure 2). However, after sitting in Ann’s class for no more than a few minutes, I could see that everything is very well organized and easily accessible, it’s just jam-packed!

Ann represents for me an extraordinary blend of the traditional and the modern. She reads to the students in a dramatic yet cozy way that reminds me of the way teachers read to students in my childhood. She dresses every day in the school uniform for teachers of white blouse with navy slacks, skirt, or jumper. However, she embraces and uses technology as a learning tool more than any other teacher in my study. In Ann’s petite person, I see high-tech sophistication, clothed in traditional, conservative uniform attire.

Zoe

I am optimistic for the future of the teaching profession from observing Zoe at work. She is the youngest teacher in my study and is in her fifth year of teaching at
the middle elementary level. From the first day I observed in Zoe’s class I have thought, "She’s put together much of current thought on best practice in teaching in her classroom."

In looking back to Chapter 2 of this dissertation, I see that her practice fits with descriptors identifying practice that is highly consistent with constructivism as well as descriptors for standards of good teaching. For example, I have not seen another teacher use cooperative learning as extensively and effectively as Zoe. Student desks are arranged in clusters of four or five in Zoe’s classroom (Figure 3), and students work in these cooperative groups all day, every day. However, Zoe also provides individual student desks in three areas of the classroom (Figure 3) where students can go if they need isolation to concentrate or where she sends students if they are distracting the rest of the group.

Zoe is energetic (one would have to be to move around a classroom and stay on top of things as much as she does), bright, and peppy (I’d be willing to bet that Zoe was a cheerleader in high school or college). Zoe told me one day that she wants to be like Ann as a teacher. Zoe and Ann have much in common. The physical layout of their classrooms is very similar (Figures 2 and 3). Zoe’s classroom doesn’t appear as cluttered as Ann’s, but I think, "Give her time and she, too, will accumulate as many materials as Ann has." Both Ann and Zoe dress according to
FIGURE 3: "ZOE'S CLASSROOM"
the uniform code for teachers: navy and blue every day. Both use similar approaches to the teaching of writing in their classes. Both give students a great deal of choice, freedom, and responsibility within their classrooms. Both are innovators. Both are petite.

Zoe’s classroom practice, I think, reflects that she is a relatively recent college graduate of a teacher preparation program. In many ways her teaching was the most consistent with constructivism of the four teachers in my study, and I think this is indicative of how constructivism is informing and influencing current teacher preparation and development.

When I think of Zoe, a slang phrase that dates me comes to mind: "She really has it together." Zoe appeared to me to be very relaxed about and confident in her work with students. In fact, during our interview she said to me, "You know, I’ve given up worrying about how my students do on standardized tests. I just try to do the best I can for my students." Ironically, when I interviewed the school principal to identify teachers for my study, she mentioned that she has been impressed by how Zoe’s students consistently do well on standardized tests.

Kim

The first day I observed in Kim’s early elementary class, when we took a break for lunch in the teachers’ lounge, she talked about a workshop she had attended recently. She talked about how some of the teachers there
do not use "centers" in their classrooms. Kim was outraged over early elementary teachers having 25-30 students all doing the same thing all day long: "Whole group all day blows my mind. Can you imagine!"

Kim is impassioned about the need to take into account the developmental differences of children. Her classroom does not even contain any individual student desks (Figure 4). Instead, the room is furnished with sets of tables and chairs, a mini-kitchen, low tables and shelves with toys, a sand table, storage bins and cubbies, beanbags and bookshelves, and a large easel which holds "story books." When Kim reads to the children from these books, they sit in an empty area on the floor in front of the easel (Figure 4).

Kim is also impassioned about the plight of the "throw-away" children in her classroom. She talked with me during lunchtime conversations and on the playground, while we watched the children from a distance, about how some of her students' academic and social skills are lagging because they are not getting what they need at home. She doesn't see the children as deficient but rather the parents as neglectful. She said, "The ones from homes where the parents care will all eventually learn to read, but these throw-away kids are having so much trouble because nobody at home cares about them. Their social skills are so lacking." Kim told me she makes periodic trips to discount stores to buy snack foods cheaply in large quantities so that she can feed the ones in her class whose parents don't provide a
FIGURE 4: "KIM'S CLASSROOM"
snack for snacktime.

Kim sees herself as providing for children on a variety of levels. She said in our interview,

"Kids at this age also need to verbalize. A lot of them don't get talked to at home. They don't get read to at home. They don't even get their social skills at home. We get so many children that don't have any experience interacting. To me, this is just as important as sitting there learning their letters. I put it equally important. And sometimes with children, the free play is even more important. They're using their minds and imaginations. And to me, developing the mind is so important. Are they going to be able to problem solve? Are they going to be able to work in a cooperative group?"

I see Kim as very much developing the total child, and her classroom "centers" reflect this attention (Figure 4).

One of the ways that Kim develops her students is through providing them a multitude of manipulative activities. In addition to working daily in "hands-on" ways at free play, computer, and housekeeping "centers," the children in Kim's class experienced other manipulative activities on a daily basis when I observed. Kim had children working with letters made out of sponges, planting seeds in pots of dirt, making farm animals from clay, and making dough for apple pies.

On the day when children were making dough, I witnessed
one of the most refreshing scenes of my study. Two girls at the "dough table" smeared their faces with dough to the point where they looked like they had masks over their faces. Neither Kim nor her teacher aide under her direction said anything to stop them or stifle them in any way but let them play freely to their hearts' content and then helped them clean themselves up afterwards.

In reference to the housekeeping and free play "centers" in her classroom, Kim said to me during our interview, "That's cooperative grouping all day. And I really get aggravated with the teachers that think that's frivolous because it's not frivolous. That's developing the mind." And she said it with feeling.

The Themes

Lawrence-Lightfoot & Davis (1997) describe the work of the qualitative researcher as "tracing emergent themes." They describe this as "an iterative and generative process" (p. 185) in which the themes "emerge from the data and give the data shape and form" (p. 185). In reading and re-reading my field notes of observations and transcripts of interviews, I did see and hear certain themes emerge. They did so in such a clear and distinct manner that I was able to color code them by highlighting each theme with a different color in both field notes and interview transcripts (blue for theme one, pink for theme two, etc.). The five themes which emerged and which I will discuss in this chapter are the following:
1. classroom teachers focus on students, not theory,
2. matters of student choice, freedom, responsibility, and accessibility within the classroom,
3. classroom teachers perceive "coverage" as an enemy,
4. classroom teachers desire "how-to’s" in their on-going professional development,
5. teachers’ questioning of students.

Lawrence-Lightfoot & Davis (1997) also urge the qualitative researcher to pay attention to differences as well as "repetitive refrains": "In qualitative research, the divergent and dissonant views are themselves a story" (p.209). As I discuss these themes, I will, therefore, point out both the similarities and differences I found across cases.

**Theme 1: Focus on Students, not Theory**

What I learned first from these four teachers is that they are not much interested in or influenced by learning theory. What is of interest to them is their work with students. What they all share is an interest in students as individuals. In fact, what all four teachers seem to have most in common is that they see students as individuals with different needs and different ways of learning.

Kim stressed to me in both passing conversations and in our interview that students develop at different paces. She said, "Children are not all going to learn at the same speed and to test a bunch of six-year-olds on the same test and expect all of them to score in a certain way is ridiculous."
Because I don’t care how hard you try with some kids, if they’re not developmentally ready to read, they’re not going to read, but the thing is, they’re just going to go in their own time.” Kim expressed this idea, in one form or another, over and over in our talk.

In fact, after Kim had made several comments, such as the one above, about students having different developmental needs and going through developmental stages at different times, I asked her if she had read and studied Piaget because her comments were reminiscent of his theories of child development. She first asked, "Who?" and then, after I repeated the name, said, "No, not at all." When I asked what had influenced her thinking, she said, "Just my life experience and my philosophy and I’ve taught for years."

Likewise, Zoe in our interview began talking about the Accelerated Schools program’s emphasis on "powerful learning" as "learning that actively involves the students, uses different techniques to teach, with different modalities involved whether it be auditory or visual or kinesthetic or a combination of all three in a lesson." Her descriptors could almost have come from a text on constructivism. However, when I asked, "What do you know about constructivist learning theory?" she replied, "Not much. Not much at all. I think I did a paper on that in college, but it’s been, you know, a while, so I’m not real up on it right now."

In my interview with Pat, when a comment of hers...
suggested a connection with Gardner’s theory of multiple intelligences, I asked what she knows about it. She replied, "I know some of my students respond to music." When I asked Ann, who told me that reading is her priority, how students learn to read, she said,

"I’ll be real honest with you. Even having taught as many years as I have, I don’t know. Yes, it’s phonics, putting those sounds together. Having taught first and second grade, and one day seeing that kid come in and go, ‘I know how to read this.’ What happened from the day before to the next day? That light bulb finally went on. What was said, I don’t know. I don’t know from one child to the next what it was that turned that light bulb on."

When I said to Ann, "It sounds like you’re saying that each child constructs his or her own understanding of it in some way," she replied,

"Right. Why do some kids read at the age of three? Why do some not learn until seven? I don’t know. I remember when those light bulbs went on, and the kids that had it would go, ‘Yes, I know how to read this,’ and then they’d read the whole sentence where two days before I could go over and over it, and they still wouldn’t get it . . . I don’t know."

Ann’s comments, as well as Pat’s and Kim’s, underscore where their focus is: on students, not theory. All of the teachers in my study see students as individuals who have
different needs and different ways of learning. Their commentary which follows is representative.

In discussing approaches to reading with me Pat said, "Some children learn through the whole language method. Others do well with phonics. I think the best way to learn is a combination. I don't think one is better than the other. One child might do best with whole language; another might need phonics." Pat went on to say, "I ask if I am meeting the needs of the individual child. The E.S.E. teacher and I are working right now, trying to find something else, trying to find methods that will work with them, trying to find something else. We keep trying different things."

In my interview with Ann, she said something similar in describing two student teachers she had supervised. She thought of one as having much more potential than the other because she was more focused on understanding students and their learning. Ann expressed concern over the other student teacher's potential because she felt that she wasn't focused enough on the students, but rather on herself and how well she presented the information: "She said, 'I didn't bring it across correctly.' What she didn't really understand was that it wasn't just a matter of bringing it across correctly, but that these kids weren't really ready, in the way that she presented it, they really weren't ready for that yet." When I asked Ann how she thinks we ought to be preparing student teachers she said, "Involvement."
Involvement in knowing what children are like, finding out about children, and their different ways of learning."

Zoe talked about individual differences as well as class differences:

"Every class is going to be at a different pace. I mean, last year I had a very high class, and we went along very smoothly. This year my class is weaker in some of the areas, a lot weaker than last year’s class, so I feel like I’m going much slower than I did last year. You know, and I pace it based on my class and on my students and their needs. I have some kids this year that are working higher than the rest of my class, so sometimes they do enrichment activities while the rest of the class is doing things, like especially when it comes to writing assignments that we do in the classroom."

Kim returned to this point of individual differences again and again:

"Children are at such different levels developmentally, and to expect an entire group of thirty children to be able to do the same thing or the same worksheet at the same time at the same level is impossible. Whole group all day blows my mind. If you break them into small groups and they sit down at a table with you, you go, ‘Oh, Carol thinks that L has the F sound. Let me make that difference to her. Work with her for just a second on that. And then, okay, she’s all right.’"
Can you imagine if I put all those together at one time and said, 'Okay, we're all going to do the same thing.' I would miss so much. I wouldn't be able to reach so many of the kids that are at different levels."

All four teachers in my study seemed to want to talk with me about students as individuals. The first day I observed in Ann's class, for example, the first time the two of us were alone together was when the children were on the playground and we were watching them. Immediately, she began pointing out individuals to me, telling me their names, describing their families, talking about their talents, strengths, and weaknesses as students. When we returned from the playground, she motioned me over to her desk and shared with me a file that she is keeping of one of her student's drawings because they are so extraordinary.

This type of talk was typical of all four teachers in my study. Again, I offer a representative sample from each.

Zoe: "Now this one here (pointing to an empty student desk where the student would be sitting if he were not outside at P. E. with the rest of the class) is one that definitely likes to rowdy up the bunch."

Kim: "I have a little boy that just now, he can just now hear the sound in the words. I worked with him in phonics over and over and over. Even had him hearing tested 'cause I thought that might be a problem. He
couldn't hear it. And just now he's starting to be able to hear the sounds of words. The difference in them . . . there's nothing wrong with that child. It's just where he is."

Pat: "I found through my questioning one child, who I'm having a lot of problems with now, of trying to get this child to perform academically, and I found that he had talent with the simple machinery. At home he builds things; he does things with his father with his hands. So here was a child who had been failing, but when I realized his interest, and he saw that I was interested in what he knew, it kind of pushed him to put forth a bit more effort in this area, and when he took his science test, which he usually fails, he actually passed, and he did well."

The premier feature that all four teachers in my study share is this awareness of students' differences. They all see students as individuals with individual needs, ways of learning, strengths, weaknesses, talents, and abilities. Their expressions of concern for education that allows for students learning in different ways and at different paces is how the thinking of all four teachers is most consistent with constructivism.

Theme 2: Matters of Student Choice . . . .

Another similarity in the classes of three of the four teachers in my study was that students were asked to make choices and decisions about how to do assignments and how to
use some of their classroom time. Students also had accessibility to materials, supplies, equipment, and resources within these three classes. In Pat's class neither was the case.

Something I observed with Ann's class was typical of this ability to make choices. Every day after lunch while students were lined up in the hall going to the restroom, Ann would go to each student in line and send them to the classroom with the instructions, "Find something to read and a spot to read." My field notes describing this time are, again, representative:

"Students at various spots around the room read silently. Some sit at their desks. Others are on the floor. Some curl up with pillows. Three students are on the computers; two are doing a Math Blasters program and the third is playing a computer game. A fourth student finishes reading his book and comes back to take a test on the book he's just finished, using the Accelerated Reader program. Ann works with the students at the computers, particularly those using the Math Blasters program."

Ann also gave students a choice while they were taking their spelling test one day while I was observing: "If you feel secure about your cursive, you can let go of the manuscript. Now, if you want to write in both, that's okay, but the most important thing is do you know how to spell the word." At this point one student asked Ann, "Would you put
the poster up?" Ann then clipped a poster illustrating cursive capital and lower case letters to the front board for students to see and model.

This matter of choice extended to housekeeping details in Ann's class. When it was time to go to the restroom, Ann said, "Anybody who needs to go, let's go now." I noticed that students who needed or wanted to go lined up at the front of the room and followed Ann down the hall, but several students chose to remain in the room, as my field notes reveal: "Two students remain at their desks in the back of the class reading. Four students are gathered at the front of the class looking through materials together. One student is at his desk at the front of the class reading."

One day in Ann's class when the students were doing an assignment in a workbook, I noticed that when they came to a cut-and-paste activity, they would get up and go to a bin of materials near the center of the classroom, get glue and scissors from the bin, return to their desks, and complete the work. I also noticed from the beginning observation in this class that the student desks are arranged in clusters of four and five with the students in each cluster facing each other (Figure 2). As they worked on the cut-and-paste activity, they would talk and interact with each other while working. Two girls finished this assignment and came over to where I was sitting, showed me a jar of murky liquid, began talking with me about polluted water in Tacuma Lake,
and pointed to a large drawing tacked to the wall above a cabinet where the jar had been sitting. When Ann said, "Okay, look up here at me," the two girls returned to their desks and, along with everyone else, focused on Ann.

Students in Zoe's class were also called upon often to make choices and decisions. As I mentioned previously, student desks in Zoe's class are arranged in clusters of four or five (Figure 3), and each cluster is a cooperative team that works together over a period of four to six weeks. Students did everything in these teams and were frequently called upon to make choices and decisions as a group. An assignment Zoe made the first morning I observed in her class was typical, as were the instructions Zoe gave students: "In your teams this morning you'll come up with a chant or a song or a saying for your spelling words this week. Each team will decide. I'll show you some examples, and then you and your team will decide what to do. Everybody has an opportunity to say what you want, and then as a team talk about it and decide."

I noticed that while students were engaged in this activity, they moved about freely. Some students remained seated at their desks while others stood up and leaned over their desks to talk with those that remained seated. Other students got up and stood near their clusters working on cheers and chants, trying to coordinate such hand and foot movements as stomping and clapping with spelling of their words.
Zoe also gave students choices when working on assignments. While students were doing a math assignment, Zoe said, "If you want to draw a picture, that's fine. I'm a visual learner, so I need pictures. You may, too." I noticed, too, that while working on this assignment, several students got up from their desks, went to a drawer in a storage cupboard near their desks, got rulers, and returned to their desks to work with the rulers. While Zoe circulated among the students, a student at a desk near me used her ruler to make a drawing, showed it to one of the other students in her cluster, and he nodded his head affirmatively.

One day when I arrived in Zoe's class, students were writing in their journals. One student asked, "Are we going to share this?" Zoe responded with, "If you want to." When most students were finished writing, Zoe called on only those who wanted to share to read their journals to the rest of the class. Students who were not finished were told they would have time later to either write in their journals or read. Another day Zoe gave students another choice with regard to journal writing: "If you write in your journal before you give your report, you might feel more comfortable. Some of you may feel you don't need to write in your journal first. You may know exactly what you want to say." Because of the location of Zoe's class with a restroom and water fountain nearby, students are also free to go to the restroom, wash hands, or get water whenever
they need to, so matters of choice extend to these housekeeping details as well in her class.

Even Kim's early elementary students made choices. On the four mornings when I observed in Kim's class, students worked in "centers." Kim assigned students in groups of four to six to either come to her table or go to the teacher aide's table to work on something. When students were not at one of these two tables, they had choices about where to go and how to spend time. Kim told them, "If you are not working with me or Ms. . . . , you may go to either housekeeping, play, or computer." (Figure 4)

When students came up to Kim to ask to go to the restroom (and this happened at least a half a dozen times in a morning), Kim would always ask, "Is it an emergency?" Invariably, the student would say yes, but by asking the question, Kim was saying to each one who asked, "You have a choice. You decide."

Pat's class was very different from these other three with regard to matters of choice and freedom of movement. Most of the time students were told what to do and how to do it. In fact, in reviewing my field notes, I could find only a couple of limited instances of students being given a choice in Pat's class. Students whom she called on to go to the board to work math problems were asked to pick the next students to go to the board, students who had "performed" could pick the next students to "perform," and students could volunteer to go to the board to work problems. Also
in this class, materials and supplies were distributed by Pat to the students. Even in the "hands-on" science activities she developed for them, Pat would create whatever materials were needed in the activity and distribute one set of materials to each group of 7 or 8 students. The computers in her classroom were covered, and I did not see students working on these at any time during my observations.

I did not see students making choices about use of time in this classroom the way they did in the other three. I did not see students moving about the room except to go to the pencil sharpener or to go in one of three groups to the restroom when Pat told them it was time to go or to work in one of three groups for science activities. Student desks in this classroom were arranged in two block U's, facing the front board where Pat spent much of her time in the classroom (Figure 1). Students spent most of their time in this class seated at their desks, facing the front board.

In short, Pat's class was very teacher-centered or teacher-focused while Ann's, Zoe's, and Kim's classes were more student-centered or at least more "user-friendly" for students, with students having access to materials and resources in the classroom, being able to move about freely to get what they needed to work, and having at least some choices about the use of their time and activities to pursue.

Zoe's class was very different from the other three in
some important ways with regard to matters of choice, decisions, freedom, and responsibility. First, her students worked in cooperative learning teams all day. Although Ann had the student desks in her room arranged in clusters and although students talked quietly among themselves while doing individual work at their desks, they did not engage in any cooperative learning activities or tasks in Ann's class in the three days that I observed. In Pat's class, students worked in three large groups of 7 to 8 students for the 45 minutes of "hands-on" science activities that took place each of the three days I observed, and one of the three days they worked in smaller groups of three or four. In Kim's class students interacted at "centers." However, in Zoe's class students worked cooperatively all day long. Everything they did, they did with their teams. Students picked names for their teams. Behavior was monitored by teams. Frequently, Zoe would make such comments as, "I'm looking for the quietest team," or "I like the way the Cowboys are giving us their attention," or "The Steelers just earned a check," or "The Scraffy Dudes just lost a check." Students lined up to go to lunch and out on the playground by teams.

Although students worked individually when writing, reading, taking tests, or completing individual assignments in Zoe's class, all other activities were structured in the cooperative format. When introducing material, Zoe would present the new material or concept, demonstrate an example
or two, ask students as a team to do two or three problems, and then have students work similar problems individually. This constant use of cooperative learning gave students both greater freedom and greater responsibility in the learning activities.

**Theme 3: "Coverage" is the enemy.**

When I interviewed Zoe, I asked her about the inquiry process in the Accelerated Schools initiative. She said, "It is very hard to explain because I’ve been in this program 5 years, and to be honest, there’s a lot of questions for me still, I mean, and most of the teachers here, we have a lot of questions about the whole steps involved, but from what I’ve gotten out of it is that you don’t go and say, ‘Here’s a problem, what can we do to solve it. It’s here’s a problem, why is it a problem?’"

When I asked if the inquiry process had influenced her work with students or if she uses it with students, she replied, "I’m trying to think; I mean I know that is the whole goal. To be honest, you do sometimes, but if we do that with everything we would never finish. Everything is so lengthy that, as it is, I feel so much pressure of getting everything in on time."

The other three teachers I observed and interviewed shared Zoe’s frustration over "coverage" and see "coverage" as a major inhibitor to their teaching as they would like.

Pat: "A lot of time I feel rushed. I feel rushed
right now. I have been so thorough with the subtraction and addition, the meat and potatoes of math. I probably should have been in multiplication earlier, but I don’t think the children would have grasped or had such a concrete background, but then the testing is done so early I haven’t had enough time to really cover the material that I’m required to cover, and so at some point you really just stop giving detailed lessons and then just start giving introductions to things so that when the child sees it on the test, at least they would have seen it.

Kim: "That’s one reason school teaching is such a difficult area right now is because you can’t get to the curriculum and to the point where they are just using their own curiosity because there’s so many social things that get in the way because these children are not brought up to interact and to socialize and then we spend so much time getting them to that point that we waste a lot of time and it is wasted time. But it is wasted time because by the time you get them to where they can work in cooperative groups, that takes a large chunk of your time."

Ann: "By third grade you have got to start getting a really firm grip on reading because by fourth and fifth, if you see their curriculum and what has to be taught and how quickly they have to move through it, without reading you know they can’t do it. You see
students falling by the way side."
Zoe: "It's very hard as far as getting everything, that is probably the worst part of this job. There is so much we're required to cover, and there is just not enough time in the day, when you've got library and P.E. and computer lab and art and music that you've got to squeeze in somewhere in your day."

When I asked Zoe how she prioritizes given this constant of never enough time in the day, she told me that the cooperative learning experiences are most important to her because she sees the students as learning so much from each other. However, she takes them out of cooperative groups right before Christmas break because they are so wild that she feels being in groups hinders rather than helps them at that time of the school year. Like Zoe, the other teachers in my study make concessions to "coverage" and to time and classroom management needs.

Ann, for instance, pointed out to me that her methods change based on organizational and classroom management needs. When I observed in her class from January to March, she was using the inquiry process with students to allow them to determine how they would complete a project for Black History Month. In talking with me about how she uses the inquiry process with students, Ann said that she uses it with some activities but not others because "there are certain things that have to get done no matter what, and they have to get done the way that I know organizationally
it's going to work." Ann also said, "When I first start S.S.R. [Sustained Silent Reading] with them, they all have to be in their seats. Going and relaxing in a corner is a privilege they earn. You have to be so firm with them during those first few early weeks by showing them what you expect from them. The inquiry process doesn't come in here."

For Kim the priority is socializing students to be able to work cooperatively in small and large groups without fighting or arguing. For Pat the priorities are giving her students a sense of order and structure on a daily basis and making sure her students have a good grasp of the "meat and potatoes" of math.

Theme 4: Teachers' Desire for the "How-to's"

When I asked Zoe what had influenced her to use cooperative learning groups to the extent that she does she said, "Workshops, lots of workshops. And most of my education courses in college were taught cooperatively." She also went on to describe a workshop on cooperative learning that she had attended during the summer that had given her the structure of going from whole group to team to individual when introducing new material or concepts or when reviewing what had previously been covered.

When it comes to workshops or training and development, all four of the teachers I observed and interviewed told me very clearly that they want the same thing: someone to give them the "how-to's."
Zoe: "I got a lot of neat things out of that workshop, and they were just doing all kinds of different ways, techniques that you can do in cooperative learning, you know, and just kind of how you can fit it in where everybody gets involved."

Pat: "It would be wonderful if someone could come to the school and show me how to do it with the supplies that I have, show me how to do it in my room, you know. I want to be able to duplicate whatever it is that they teach me. I want to be able to duplicate it in my classroom."

Ann: "They just gave me more of a feel for how to guide children. Now, I had art appreciation in college and probably some other art class besides that, but they never taught me how to teach art to children."

This comment of Ann’s was in reference to the training and development she received as part of the DWOK (Different Ways of Knowing) initiative, and from her comment we, as T. S. Eliot would have it, "Return to the point from which we began and know it for the first time." I began this chapter with wondering about the association of constructivism with the arts and promised to reveal its source.

After interviewing and observing the four teachers in this study, I see it as the influence of the training and development in the DWOK initiative. Three of the four teachers commented explicitly on its influence when I asked them about certain activities or techniques I had seen them
use in their classes.

Ann: "I learned it in DWOK, in one of their music workshops. The man who taught us some of these methods is from the University of Kentucky, and he told us that you can use it both as a management technique, you know, focusing the students where you want them, and you're also teaching them music. I couldn't have done this without the training because I haven't had that kind of training, but I immediately understood the value of it for my class. In fact, I couldn't wait to get to the classroom and try this, and the kids love it."

Zoe: "This is my first year in DWOK where I've been going to the training, and the last couple of training things we've been to had examples of how to bring drama into the classroom, and how to bring music into the classroom, and how to bring art into the classroom, and all different kinds of things that you wouldn't normally think to use, 'cause I know I probably haven't done much, except for maybe some music and art, but like the drama and dance and stuff like that has been all new for me this year, and this is kind of where I got the idea."

Kim: "I use a lot of the DWOK philosophies and that's pulling art into all of the curriculum. I infuse arts from my DWOK training."

The fourth teacher, Pat, mentioned that she had not been
involved in any of the DWOK training and development, but even without being involved she makes a similar association: "Right now the teachers at our school are participating in DWOK. I’m not, I haven’t gone to any of those workshops, but I want to kind of do what I’m doing now, with just simply doing things with a lot more hands-on, and DWOK does all of that, but I don’t know all of the details, but I know they do more things with music and more things with...you know."

For the teachers in my study constructivism seems almost synonymous with art infusion and/or art integration. I found this to be a result of the DWOK influence, and it seems to me that the initiative was influential because it provided teachers with some of the "how-to’s."

Theme 5: Teachers’ Questioning

While I did not see as much experimentation or exploration or as much building upon students’ existing knowledge or experiences as I had anticipated in all the classes I observed, I did find that the classroom practice of all teachers in my study is in some ways consistent with constructivist learning theory with regard to how they questioned students or guided students through questions to construct their own understandings.

Ann, for instance, keeps a chart attached to the bottom left corner of her front board, and that chart gives proofreading marks and their meanings and usages. When a student was called upon to correct a faulty sentence on the
board, she said, "I don’t know how to change a capital to a lower case." Ann asked her, "Did you look at your proofreading marks?" and pointed to the chart. The student took a few minutes to read the chart, then went back to the sentence on the board, and corrected it using the appropriate proofreading symbol. Ann set this up in such a way that the student had to construct her own understanding.

Students in Pat’s class one day were completing a worksheet on timelines. Several students had trouble answering the questions, and when each one came to Pat for help, she said, "The information you need to solve this problem is right there on your worksheet. How do you find the information? What information do you need to solve this problem?" By asking questions to force the students to look more closely or to think a bit more, rather than telling students how to figure the answer or giving them the answer, Pat was using questioning techniques consistent with constructivist approaches.

On the second day I arrived for observation in Zoe’s class, she had a group of sentences on the board that all needed quotation and end marks. Next to these she had a flip chart giving rules for using quotation marks and for punctuating correctly within them. The students were to use the chart to fix the sentences on the board. When students called Zoe over for help, she would ask questions: "What exactly is the speaker saying?" "What are the exact words coming out of the speaker’s mouth?" "What is missing?"
"Where do we put the quote marks?" "Where do we put the comma?" "Where does the end punctuation go?" "What else is wrong?" "Are there any other mistakes?" By structuring the activity in this fashion and by giving the students questions to think about, rather than showing them how to correct the faulty sentences, Zoe presented a lesson very consistent with constructivism: each student had to construct his or her own understanding to do the exercise.

One day Kim's students were looking at a story book with her and talking about the illustrations in it. She asked, "Is the mouse in this picture a real or make-believe mouse?" When the children responded, "Real," she asked, "What tells us? How would we know if it was make-believe." This open-ended question brought forth a variety of student responses and allowed each student to show his or her understanding: "If it had a hat on." "If it had clothes on." "Lipstick." "If it was sitting in a car." "If it was playing rock and roll music."

When I asked the teachers why they structured these activities in this way, the answer was the same in all four cases: "To make the students think" or "To make the students think for themselves." However, not all these teachers' questions were as open-ended or probing as the ones in the examples above; in fact, the above examples were more uncommon than common.

In following a suggestion of Miles and Huberman (1984), I decided to review my field notes and simply count the
number and type of questions that all of the teachers in my study asked. I had noted in bracketed comments to myself, after transcribing my notes from my first day of observation, that many questions Pat asked that day called for one right answer, and the one right answer that she had in mind. I also noted that within the first two hours of observation in Pat’s class, certain students had been called on for answers so often that I knew them by names. I had made a note to myself at this point to pay close attention throughout my observations to the kinds of questions teachers asked. When I asked Pat in our interview why she called on certain students so much, she told me she frequently calls on students who will know the answers to give them a chance to shine and so as not to embarrass the ones she thinks won’t know the answers. She sees herself as playing to students’ strengths when questioning.

In reviewing my field notes specifically for the number and kinds of questions that teachers asked, I found that all four teachers in my study asked dozens of questions of students in a day’s time. However, closed-ended questions, questions that called for one answer, and frequently a yes/no answer or a one-word response or definition, predominated. Questions that asked for recall of facts or information or that asked who, what, when, where, how many, or how much outnumbered open-ended questions about ten to one. However, it was not so much the amount of certain types of question that caught my attention when going
through this counting exercise. It was, instead, that most of the questions the teachers asked called for one right answer that the teacher was looking for. Frequently, teachers would ask and then answer their own questions. Very few questions were asked to find out what students' knowledge, thinking, or experience might be.

While working through a chapter in their social studies book one day, Pat went through the following sequence of questions with students:

Pat: "What kind of name is St. Augustine, Katie?"

Katie: "Uh ... V-I-C . . . ." She began to spell a boy's name used in this chapter of the social studies book.

Pat: "Jarretta?"

Jarretta: "Spanish name?"

Pat: "The Spanish Build a Community, so judging from the chapter title what people settled here?"

Five students raise their hands.

Pat: "Okay, Virginia, help her out."

Virginia: "Spanish."

Pat: "Raise your hand if you've been to St. Augustine. Raise your hand if you knew that St. Augustine is the oldest city."

A student: "I used to live there."

Pat: "How long?"

Student: "About a year."

Pat: "In the fourth grade you'll go on a field trip to
St. Augustine, so you’ll know a little bit about it when you go."

Something similar happened in Ann’s class. Students had read a story, and Ann asked them about what they’d read. Ann: "Patrick was punished for telling the truth. How would you feel?"

Students: "Bad."

Ann: "Has that ever happened to you? Can you give an example for you?"

Ann then called on 3 or 4 students to relate personal stories of times they got in trouble for telling the truth.

Ann: "What will the effect of Mom finding out that Patrick was telling the truth be?"

Several students responded in a flurry with different answers. Their responses came so fast I couldn’t get any down. None gave the answer that Ann was looking for.

Ann: "Do you think she’ll probably say she’s sorry?"

In both of these episodes the teachers were looking for specific answers to their questions. When Ann did not get the answer she was looking for to the question, "What will the effect of Mom finding out that Patrick was telling the truth be?," she embedded the answer she wanted in her following question, "Do you think she’ll probably say she’s sorry?" What was different in the two exchanges was that Ann did ask one question within the series which allowed the
students to relate their experience to the experience of the character in the story. Pat did not ask the student who had lived in St. Augustine to share his experiences of the city with the class on an occasion when they were trying to learn about St. Augustine.

I selected these two questioning episodes as typical and because what was atypical was the question, "Has that ever happened to you?" Rarely were such questions asked in any of the classes I observed. The majority of questions teachers asked were testing for recall of facts or information or were probing for a specific answer the teacher wanted. Rarely were students asked questions that explored their thinking.

However, I did find a spirit of open and free inquiry in Zoe’s class that I did not find to as great an extent in any of the other classes I observed. Zoe encouraged the students to ask questions, and the students seemed to feel free to question. I became aware of a difference in this class on the second day of observation with them, as my field notes indicate:

"Her students have asked me questions about myself and what I am doing. In Pat’s class certain students pointedly made eye contact with me. In Ann’s class several students have talked with me or made comments to me in passing. However, I don’t recall students in any other class asking me questions. If I write down every question I can remember being asked by a student
in this class since 9:00 a.m. Monday, perhaps this will be meaningful in some way. I don’t know yet, but I do know that students asking questions is distinctive and noticeable in this class."

What follows are these students’ questions: "What’s your name?" "Are you taking notes?" "Why are you taking notes?" "Can I see your notes?" "Are you writing about us?" "Are you training to be a teacher?" "Are you training to be a substitute?" "Are you going out to recess with us?" As of midday on my second day of observation in this class, I had had about half a dozen questions from about as many students. In retrospect, and upon re-reading my field notes, I see that this is significant and is part of a pattern I found in Zoe’s class.

My field notes reveal that every day that I observed in Zoe’s class began with questions. On each of the three days when I arrived, students were working at their desks on either an assignment that was on the board or they were writing in their journals. As they worked, Zoe circulated among them, asking questions of the students and answering theirs. On my first day of observation, in addition to this daily activity, Zoe also asked everyone in class to tell her, as she called their names while they worked, what they would be bringing for the "Friends around the World" luncheon on Friday. She also asked the students, "How many of you have done your research on your country? How many have done everything but your recipe?"
An interchange from my field notes on this first morning of observation is typical. After students completed the assignment on the board, which asked them to match words with definitions and to give a sentence for each word, the following occurred:

Zoe: "How many got all 5 right?"
Most hands go up.
Zoe: "How many have questions on any?"
A student: "I have another sentence."
Zoe: "Tell us."
Student: "The San Francisco earthquake was unexpected."
Zoe: "Good one. Any questions?"
A student: "Will we be doing this some more?"
Zoe: "Yes. Now, I need volunteers to work math problems on the board for us."

After every activity in this class, like the one cited above, Zoe would ask, "Are there any questions?" or "Who has questions?" or "How many have questions?"

The math activity that students engaged in on this first day of my observations in Zoe’s class specifically called for students to use questioning as a problem-solving strategy. Zoe said to the class as an introduction to the activity,

"We’re going to do some math where you really have to guess to get the answer. I’ll give you an example. I’m thinking of a 2 digit number. You have to think of questions to ask me to figure out the number, but
the questions must have a yes or no answer. I will only answer yes or no questions. Who can think of a good question to ask me to figure out the answer?"

A student responded, "Is it in the teens?" Zoe replied, "Good. That's the type of question to ask. No, so you can eliminate all the teens. Who has another one?"

After students went through a series of questions and guessed the 2 digit number, Zoe said, "Now, how did we get that? How did you go about that? We took questioning techniques to figure it out. We guessed and we eliminated by asking good questions. Let's try one more together. I'm thinking of a 3 digit number." After this and one more example of this questioning procedure, Zoe assigned some "guess, test, revise" problems in their math text for students to do in their teams. While students worked in their teams, Zoe circulated among them encouraging students to explore and experiment: "Try different things. Try different combinations of nickels and dimes. Just make a guess and see if it works." These were the suggestions she made to students.

This particular math activity may have been selected for my benefit because I asked the teachers I observed to pick the days that would be most convenient for them for my observations; however, the pattern of encouraging students to ask questions in this class still holds true. After introducing new material, concepts, or strategies, Zoe would always ask, "Who has questions?" or "How many have
questions?" or "Are there any questions?"

What happened on the last day I observed in this class was, again, representative. Students were preparing to report to the class on the countries they had researched for "Friends around the World" day. Zoe told the students that she did not want them to read their reports to their classmates but rather to pick what was most interesting to them about the country and to share that with the rest of the class. She suggested to students that they might take a few minutes during journal writing time to write down what they found most interesting or important in preparation for giving their reports: "Write what’s important to you . . . or interesting or neat. What you want to share." During the time allowed for this, a few students asked logistical questions: "What if you are the only person reporting on a country?" "Can we use the board to write on when we give our report?" "Can I pass around money and pictures?"

Zoe also told the students that as other students reported, she wanted them to take notes about each student’s report. She said, "Listen carefully, and then jot down what was interesting or important to you about that country." This led to one student asking, "Will we take notes like she is?" and pointing to me. This student’s observation and inquiry led to my explaining to the class how my notes were different from the type of notes that Zoe was asking her students to take. My explanation about different note-taking techniques led to Zoe’s asking the class if they
wanted to ask me questions about my work. We then took about 5 to 10 minutes for students to ask questions of me. Just about every student had one, and my favorite was, "Does your hand get tired from all that writing?"

After each student gave a report, Zoe then asked, "Who has questions?" and allowed the student who had just reported to call on classmates to ask questions. A couple of students had a hard time getting started with their reports; they seemed at a loss for words when they got up in front of the class. To these students Zoe asked, "Would it help if we asked questions first?" When these students nodded yes, Zoe then asked them to pick some of their classmates to ask them questions.

A Final Finding

In trying to avoid the pitfall myself of looking for an answer that I want from this cross-case study, I am reminded again of the dilemma of sub-atomic physicists. When matter at its smallest, most elementary level shows us particles when we seek to measure particles, and waves when seek to measure waves, can complex human matter do no less . . . or no more? In analyzing my data, I have endeavored diligently in this chapter to show patterns and themes that actually exist within the data.

In addition to the five themes which emerged from the data, there is one other finding I wish to highlight here. Lawrence-Lightfoot & Davis (1997) suggest paying attention to the rituals in the setting because they often reflect the
values and purposes of an organization. While they refer to rituals of a ceremonial nature, I believe I can apply this concept to a ritual of a non-ceremonial nature that I discovered in the elementary school day: the restroom ritual.

Every day, five days a week, three times a day--morning, midday, and afternoon--the teachers in my study lined up the 21 to 28 students in their classes to go to the restroom. This need was ameliorated in Zoe's class somewhat because of her classroom location, but she, too, lined up students for lunch, and they all stopped off, both coming and going to lunch, at the main school restroom near the cafeteria.

So much time in the school day is spent taking care of such "housekeeping" needs. Between restroom time, lunch time, and playground time about two hours of the school day are spent in such activities that take care of the basic physical needs of children. Overseeing their health, welfare, and safety needs consumes an inordinate amount of a classroom teacher's day, and regimented ritual provides an efficient way of dealing with the custodial care which teachers must provide.

In the next chapter I will discuss the relationship of regimented ritual to the themes, particularly the theme of "coverage," as inhibitors of teacher practice consistent with constructivism. I will also discuss other conclusions and recommendations relevant to constructivism and teacher
preparation and development that I have come to as a result of doing this study.
Chapter 5: Conclusions and Recommendations

Introduction

As I drove away from the school after my final observation, I thought, "I really would like to spend one more day in Ann’s class... or Zoe’s or Kim’s or Pat’s... or in the class of one of the other wonderful teachers I discovered through the course of my study." I took some comfort in Merriam’s (1988) acknowledgment that a problem all qualitative researchers inevitably share is never feeling as if one has done enough. Usually time and money dictate when a study must stop (Merriam, 1988), and for me the limiting factor was time. Because I had done everything I set out to do in my study and as the teachers in my study were feeling the pressures of impending annual standardized tests and end-of-school craziness, I thought the time had come to stop. Nevertheless, I feel my study would be strengthened with additional observation and interview.

An additional limitation of my study is that it may not apply to other teachers in other schools that have not been steeped in the reform initiatives, or very similar ones, in which these four teachers participated. Borg and Gall (1989) point out that generalizing from a single case study is dangerous but using the multiple case study greatly
reduces risks and increases the potential for generalizability. While my use of the multiple case study has increased generalizability, I still caution against generalizing too much from this study to other teachers in other schools who have not been involved in initiatives or programs that promote constructivist learning theory in practice.

However, after spending three months observing and interviewing, and transcribing and analyzing field notes and interviews as I went along, and devoting the past two months to pouring over my data again and again, I believe I can safely say that my conclusions are not hastily drawn, nor are the recommendations which accompany them. Qualitative research, rather than testing hypotheses, is often more useful in generating hypotheses (Borg & Gall, 1989; Merriam, 1988). Here are the testable hypotheses I put forward as a result of completing this cross-case study and analysis. I offer these as both hypotheses for future testing and conclusions.

1. Teachers will use more constructivist approaches if they know more about how to teach to students' different ways of constructing an understanding.

2. Teachers will use more constructivist approaches if they know classroom management techniques and strategies that compliment constructivist approaches to teaching and learning.

3. Teachers’ need for control inhibits their ability to...
practice in ways consistent with constructivism and to give students greater choice in the classroom.

4. The demands of "coverage" inhibit teacher practice consistent with constructivism.

5. Teachers need collaborative reflection on, coaching in, and modeling of ways that we question students and a better understanding of the art of classroom inquiry.

6. The need to provide custodial care to large numbers of children inhibits teacher practice consistent with constructivism.

These six conclusions relate to the five themes and the final finding discussed in Chapter 4. I will discuss each of these six conclusions in the sections which follow.

Promoting Constructivist Practice by Building on Teachers’ Focus on Students as Individuals

As my finding in Chapter 4 indicates, even after five years of involvement in the Accelerated Schools initiative and close to two years involvement in the Different Ways of Knowing initiative, the four teachers in my study did not seem to show much interest in or see much relevance to constructivist learning theory. However, all four teachers in my study did very much see students as individuals with individual needs and ways of learning; in fact, their focus on and awareness of students as individuals was what all four teachers had most in common and how their thinking is most consistent with constructivism.
Not only were these four teachers cited by their principal as practicing in ways consistent with constructivism, but they were also cited for their effectiveness. Certainly, their awareness of students' individual ways of learning is how all four meet current standards of teacher effectiveness as influenced by constructivism. For the four teachers in my study an appreciation for individuals and an appreciation for differences seem to go hand in hand with constructivism.

Because these four teachers were not much interested in learning theory for its own sake but showed an understanding of learning theory as it explains what they have learned from working with students, I have come to the conclusion that to teach learning theory to classroom teachers, disconnected from work with students, is next to useless. This brings up the much discussed theory-practice problem in education (Cuban, 1984; Schon, 1983, 1987, 1989; Shulman, 1987).

Because the four teachers in my study did adopt and adapt from both the Accelerated Schools and Different Ways of Knowing programs what was relevant to them in terms of their practice with students as individuals, this, I believe, is the place to connect theory with practice for classroom teachers. Teachers will be more likely to practice in ways consistent with constructivism, or to adopt and adapt theory, if they are shown in teacher development how knowing theory can help them meet the diverse learning
needs of the individuals in their classrooms. For example, the teachers in my study would be interested, I believe, in knowing about practical applications of Gardner’s theory of multiple intelligences because knowing this theory would give them ideas about meeting the diverse learning needs of the individuals in their classes.

As I established in the literature review of this dissertation, practice consistent with constructivism is very student-centered. This is not the same as being student-focused. In the student-centered class, experiences and activities are built upon students’ current knowledge and beliefs and upon students’ questions. Students are encouraged to direct their own learning. In the student-focused class, teachers may be aware of, attentive to, and concerned about students and their individual learning needs, but much activity is still teacher-directed or centered on the teacher. I believe that we can build upon teachers’ focus on students as individuals to promote practice consistent with constructivist learning theory and to create more student-centered classes.

Therefore, I have also come to see the trend toward extensive field experience in teacher preparation as a good one because I think it will help prospective teachers learn what the teachers in my study seem to know, that students are individuals with different ways of constructing their understanding of whatever it is we are trying to teach them. I believe preservice teachers would benefit from Ann’s
advice about their development. They need, as Ann recommended, "Involvement in knowing what children are like and finding out about children and their different ways of learning."

Field experience should help prospective teachers become aware that students do not all learn in the same way or at the same pace. Working in this direction, from field experience with students to theory, should also make theory more relevant as a conceptual framework for them as teachers. I believe we should show how knowing theory can help teachers meet the diverse learning needs of individuals and thereby connect theory with practice in both teacher preparation and development. In addition to incorporating field experience into the undergraduate education curriculum as often as possible and as much as possible throughout the program of study, I also support the recommendation of Daniel (1996) that we use videotapes of actual classroom teachers engaged in the kinds of practice that we are urging prospective teachers in education courses to acquire. Videotapes could be used as both an alternative to and in conjunction with field experience for anchoring theory in practice.

It is the responsibility of those who both prepare and develop teachers to connect field experience with theory, so that theory can begin to make sense to teachers in relation to what they see from working with students and so that knowing theory helps them work more effectively with
My study also supports a conclusion that can be drawn from the studies of MacKinnon (1989) and Whitworth (1996): it is absolutely imperative that when placing student teachers we make every effort to place them with teachers who are truly modeling the practice to be acquired. When thinking in terms of appropriate models for student teachers, I can’t help but ask the question, "If I were placing student teachers, which of the teachers in my study would I recommend as practicing effectively in ways consistent with constructivism?"

While the thinking of all four teachers reflects the constructivist ideal of instruction that is very student-focused or student-centered, their actual practice did not always reflect this ideal. Three of the teachers, Ann, Zoe, and Kim, achieved a high level of practice consistent with constructivism because it was not only student-focused but student-centered. As my findings in Chapter 4 reveal, these three teachers were attempting to build upon students' current needs and levels of understanding by individualizing instruction, using a variety of instructional strategies, and giving students choice and control in the learning process.

Ann, for instance, as I described at length in Chapter 4, uses computers and computer programs to individualize a reading program for each student in her class. She combines this instructional strategy with more traditional approaches
to reading such as reading aloud to students and having them read aloud to her.

Kim creates a student-centered class through her use of "centers" and by working with students in small groups, and questioning them individually while she does so, to see who is understanding whatever material she is presenting. She creates manipulative activities for the students in her class based on her understanding of their current needs. She, too, combines such activities with more traditional techniques such as reading aloud to the children and having them call words as she points to them in their "storybooks."

Zoe's use of cooperative learning strategies would make any constructivist happy, but particularly a social constructivist because such strategies provide the social interaction that social constructivist see as essential to the learning process. Zoe combines her use of cooperative learning approaches with other instructional strategies such as teacher explanation or demonstration. When she introduces new material to students, invariably, she will assign some exercises or problems for them to do in their cooperative learning teams and some for them to do individually. While they work in teams and individually, she circulates among them, working with students individually to see who "got it" and who needs additional help from her.

I would recommend Ann, Zoe, and Kim as models of practice to be acquired because they are trying to make use
of a variety of instructional strategies to take each student where he or she is and build upon current understanding. Pat’s classroom practice, however, was still very teacher-centered and teacher-focused, with students spending most of their time in the classroom seated at their desks, focused on and listening to the teacher, who spent a great deal of instructional time in lecture, explanation, repetition, and recitation. The needs of kinesthetic learners were especially ignored in Pat’s class. Why her class is so teacher-centered and why all four teachers fall short of the student-centered ideal on occasion became clear to me as a result of seeing the factors and variables which emerged in relation to the other four themes of this study.

Classroom Management Must Compliment Constructivist Teaching and Learning

Classroom management needs cannot be ignored or neglected in any approach to teaching that is being promoted or advocated. Eisner (1991) calls teaching a "delicate performance." I concur but also see it as a delicate balancing act. To teach in a highly constructivist way, a teacher has to be comfortable with giving up total control of student behavior at all times yet be able to take control immediately when the need arises. Teachers must strike a balance between managing the behavior of the 25-30 students in their classes well enough to allow this number of individuals to live and work together daily but not over-managing to the point where students’ abilities to move
about within the classroom, make choices, take responsibility, experiment and explore are stifled.

Teachers can't worry about total control of students and teach in a manner consistent with constructivist theory because to teach in this manner means giving up at least some of the control. My study connects here with the research of Gee and Gabel (1996) and Whitworth (1996), who found that among beginning teachers and student teachers, the need for control of students and classroom management concerns dictate pedagogical decisions. It also connects with the research of Hand and Treagust (1997) who found in an 18-month inservice to promote constructivist teaching, five of eight teachers in an Australian junior high changed their perceptions of themselves from classroom managers and authority figures to facilitators of learning and sharers of knowledge.

The three teachers in my study whose practice was most consistent with constructivism, Ann, Zoe, and Kim, seemed to have internalized the Accelerated Schools' principle of empowerment with responsibility and were passing it along to their students. My study thus indicates that for these three teachers a basic premise of the Accelerated Schools' program is working. That premise is that teachers who have been taught to question and construct their own solutions to problems will be empowered and will then be able to facilitate such empowerment of children. These three teachers all seemed comfortable with giving students more
control and had found ways of managing students which allowed them to do so while the teacher in my study whose practice was least consistent with constructivism was also least comfortable with giving students control.

All four teachers have been teaching at this school since the inception of the Accelerated Schools initiative, so they have all had the same amount of involvement in and exposure to the program. Why three internalized a key principle and put it into practice in their classrooms and one did not bears additional investigation. I hypothesize at this point that Pat’s need for control, reflected in her concern for order and structure, inhibits her from using more constructivist approaches and giving students more control.

The studies of Fosnot (1989), Gurney (1989), Hague and Walker (in press), and MacKinnon (1989) suggest that Pat might benefit from collaborative coaching and mentoring. However, she has had access to this through the two reform initiatives in her school. I do not know about the coaching she has received through the Accelerated Schools program, but Pat told me in our interview that she has chosen not to participate in the DWOK program, which provides coaching. I suspect that other needs take precedence for Pat.

What needs intervene for other teachers in trying to transform their practice from traditional to more constructivist approaches would be an excellent area for further research. Other areas for future research would be
why teachers are influenced to change their practice as a result of reform initiatives and why some teachers are able to give students greater choice and control. Cuban (1984) argues that control is the overriding issue in all attempts at school reform.

Because three of the four teachers in my study gave students choice and control and allowed them to take greater responsibility for their learning, I have also come to see how important it is for all students to have choice and control within the classroom to begin to learn how to handle both freedom and responsibility and to learn that these go hand in hand. Without the freedom to make choices and decisions, without accessibility to materials, supplies, and resources within the classroom, students remain powerless to take responsibility for themselves and their learning.

Ann’s commentary is pertinent here:

... when I was first teaching, I felt like the teacher was the person in charge who had to be the one to berate the students for bad behavior, and if I didn’t, then I would feel responsible if they did it again. This time, I think, this way we’re really putting it on the students, more so than on yourself. When I asked those boys about their behavior and how they could handle it the next time, I think it’s no longer that I feel like I have to be the one in charge all the time. I really put it upon the kids themselves: I am responsible for my behavior.
I heard Ann stress over and over to her students their responsibilities, along with their right to choose.

I highly recommend also such computer programs as the Accelerated Reader that I saw Ann use so effectively in her class because they allow students to take charge of their learning, to have greater choice and at the same time to learn to take greater responsibility. To me this is one of the great promises of technology in the classroom. It is a wonderful tool for individualizing instruction and for giving students choices about and control over their own learning.

In teacher preparation programs we simply must teach classroom management. We need to teach prospective teachers how to manage students well enough to feel comfortable with classroom management, to feel in control of the classroom, so that these concerns don’t dictate pedagogical decisions. Beginning teachers need to know ways that they can quickly gain control when they need to. We also need to find innovative ways to manage students that compliment innovations in the teaching/learning process, such as the technique, which Ann learned from a University of Kentucky professor, that allows teachers to focus student attention and gain control but also teaches students something other than blind obedience to authority.

All teachers need to concentrate on teaching and learning, rather than on controlling student behavior, so when working with experienced teachers in professional
development programs, we need to show that what we are advocating or promoting will enhance or contribute to their classroom management, not hinder it. As a result of doing this study, I have come to the conclusion that traditional teaching practices are difficult to change because they give teachers a high degree of control and make classroom management easier. The transmission model of education is perpetuated for these reasons. My study also supports the conclusion of Hand and Treagust (1997) that teachers need to change their perceptions of themselves from classroom managers and authority figures to facilitators and guides in order to change to more constructivist approaches to practice.

I recommend collaborative research and development by university faculty, classroom teachers, and student teachers into the creation of innovative management techniques that will compliment constructivist approaches to teaching and learning. Unless and until schools, school systems, and the public’s expectations of teachers change, teachers bear the responsibility of managing large numbers of students on a daily basis. My second and third conclusions converge here as impediments to practice consistent with constructivism. Because teachers must manage large numbers of students on a daily basis, they will be more likely to practice in ways consistent with constructivism if complimentary classroom management techniques and strategies can be found, and a teacher’s level of need for control may impede practice
consistent with constructivism. Classroom management issues and concerns about "coverage" also converge here as inhibitors of practice consistent with constructivism.

"Coverage" Conflicts with Constructivism

As established in the literature review of this dissertation, constructivism places greater emphasis on depth of student understanding rather than on coverage of material. For the constructivist it is more important for students to truly understand major concepts or principles than to know a great many facts. All four teachers in my study, in their responses to my initial survey, indicated that depth of understanding is generally more important to them than coverage of material. However, in my interviews with them, all four conceded that school district emphasis on "coverage" inhibits their ability to practice in ways consistent with constructivism. All four teachers in my study cited "coverage" as the major factor which keeps them from providing as much of the constructivist ideals of individualized instruction, depth of understanding, experimentation, exploration, and inquiry as they would like to do. All of these ideals take time which they don't have.

It seems that politicians, policy makers, and the general public are convinced that covering lots of material means real learning is taking place. Until this perception changes, teachers are expected to ensure both depth of understanding and breadth of coverage concurrently, an obvious conflict of needs.
The efforts of two states are notable here. Both Missouri and Kentucky are making attempts to move away from this emphasis on "coverage" in early elementary education. Missouri has eliminated all standardized testing of students in grades K-3, and both states have implemented non-graded K-3 classrooms to allow teachers to individualize instruction and students to develop at their own pace. It will be interesting to see what research about these programs in these states reveals, and my study, I believe, very much supports such research.

Schools and school systems must change to support teacher practice consistent with constructivism. As long as the public perception remains that covering lots of material means real learning is taking place, we must expect teachers to acquiesce to the demands of "coverage."

What Teachers Need from Professional Development

In addition to telling me quite explicitly that "coverage" keeps them from practicing in ways they would like, the four teachers in my study also told me quite explicitly that in teacher development, in addition to showing them that whatever we are advocating and promoting will help them meet the diverse learning needs of the students in their classrooms, teachers want "how-to's." Workshops do work for teachers when "how-to's" are included.

The Galef Institute’s DWOK (Different Ways of Knowing) program was influential in changing the practice of the three teachers in my study who had participated in its
training and development because coaches provided "how-to" demonstrations to teachers in their classrooms and at workshops; the Accelerated Schools program appears to have had a more limited influence on their classroom practice because it did not include much practical application. Because the Galef Institute provided these on-going "how-to" demonstrations by coaches over a two-year period, this model suggests another important consideration for teacher development. We cannot expect "quick fixes" from professional development workshops. "How-to" demonstrations must be a part of longer term professional development plans.

The studies of Fosnot (1989), Gurney (1989), Hague and Walker (in press), and MacKinnon (1989) show that supportive, collaborative coaching and modeling are effective in changing the practice of classroom teachers. Three of the four teachers in my study had been influenced by the coaching and modeling of the Accelerated Schools initiative to create more empowering environments for their students. The three teachers in my study who had participated in the coaching and modeling in the DWOK initiative had been influenced to integrate the arts into all areas of curriculum and instruction as a way of actively engaging students in the construction of their understanding of different subjects and materials. However, for all four teachers in my study the constructivist principle of building upon students' prior knowledge and experience was
largely absent although Ann, Zoe, and Kim did attempt to
gauge students' current understanding of material as they
covered it. Therefore, in terms of the long-range
development of the teachers in my study, I would recommend
that for them the next step is revealed in their need for a
better understanding of the art of classroom inquiry.

As my finding in Chapter 4 shows, all four teachers in
my study used questioning techniques on occasion in a highly
constructivist manner, and one teacher actively encouraged
inquiry among students; however, all four teachers would
benefit from further development of their questioning
techniques, particularly the questioning of students'
current thinking and beliefs upon which to build new
knowledge and understanding. As I described in Chapter 4,
very little questioning to get at students' current thinking
went on in any of the four teachers' classes.

Teachers Need to Examine and Study How We Question Students

Inquiry is a major component of constructivist
practice, as I established in the literature review of this
dissertation, and it appears to have been ignored in the
training and development provided by the Different Ways of
Knowing initiative. This is the area in which the practice
of all four teachers in my study was least constructivist.
All four teachers asked many more questions which called for
one "right" answer than they did questions which
investigated students' current thinking and/or prior
understandings and experiences or that guided students to
construct "right" answers for themselves.

The premise of the Accelerated Schools program that as teacher development becomes based in inquiry, they develop an understanding of how to encourage inquiry in children does not seem to be working as well for these teachers as the empowerment with responsibility premise discussed in relation to theme three. Zoe was the only teacher in the study who actively encouraged inquiry among students, and she, too, asked many more questions that called for one "right" answer than that probed students' thinking.

In terms of long-range development of all four teachers, I would encourage them, therefore, to examine and study the ways that they question students. I would like to engage in supportive and collaborative inquiry, coaching, and modeling with them regarding the ways that we question students. We need to stress that questioning is a way to approach learning across disciplines and levels. After doing this study, I now know why my college students try so hard to anticipate the answers that I want to questions, rather than telling me what they think. They have been so conditioned by teachers looking for one "right" answer to a question that they are skeptical of my attempts to find out what their current thinking on a particular subject might be. Why should I be surprised when one of my students asks me, "What is the answer that you want?"

It is not that one type of question is better than another. As cited earlier in this dissertation, closed-
ended questions can be used very effectively to lead students to construct knowledge and understanding. However, what we need to be constantly asking ourselves as teachers is what is the purpose of our questioning? Am I asking a question just to see who can recall the information? Am I asking a question for which I already have an answer in mind? Or am I asking a question that will facilitate a student’s thinking or constructing of an understanding or reveal a student’s thinking or understanding to me? If we want to develop the minds of students so that they can be problem solvers and critical thinkers, they must see questioning as a basic posture in and tool of learning and not as merely a way of finding out who has the "right" information or "right" answer.

An unexpected visit from a DWOK coach gives an example of the distinctions I am making here. A part of the training and development that teachers receive in the DWOK initiative is that consultants/coaches drop in to demonstrate or model for teachers the kinds of activities they can try in their classes. One day while I was observing in Ann’s class, a DWOK drama coach dropped in to work with the students for a while. I recorded the following dialogue between the coach and Ann’s students:

Coach: "Tell me what you know about drama."

Students: "Actors!"

Coach: "What do they do?"

Students: "Act."
Coach: "Give me details. What do they do?"

One student: "Read lines."

Coach: "Where do the lines come from?"

A student: "A script."

Coach: "What else do actors do?"

A student: "Play a part."

Coach: "I’m pushing for a word here. What am I going to be as an actor?"

A student: "A star!"

Much laughter from everyone in the room.

Coach: "The word I’m looking for is character."

Listening to and recording this interchange, I couldn’t help but think to myself, "If she is ‘pushing for a word here,’ why doesn’t she just tell the students that she wants to talk with them about how actors develop characters?" Why create this elaborate questioning sequence to get the answer that she wants from students? What is the point in phrasing something in the form of a question if you do not genuinely want to know what a student knows, perceives, or believes? And this from someone who is supposed to be modeling for teachers how to teach in a constructivist way.

I include this episode, although the coach was not one of the four teachers in my study, because her questioning technique was representative, serendipitous, and the unexpected student response hilarious. However, in a serious vein, this example raises an important question: Who’s coaching the coaches?
The drama coach in the above example was effectively modeling how to infuse art into classroom practice but not how to question students effectively. Many of the DWOK coaches are artists, not experienced classroom teachers. I would, therefore, recommend that the Galef Institute employ as coaches classroom teachers who know how to question and probe for student understanding to maximize student learning if they want to go beyond the image of constructivism as "artsy-fartsy" or "cutesy." The program needs coaches who know that it is the job of the teacher to ask the questions that help students to construct the answers for themselves.

The above example of the drama coach also serves to highlight a conclusion that, I believe, cuts across themes that emerged from this study: unless they are highly imaginative, teachers can only teach as well as the examples they have experienced. If we want to provide in teacher development a truly constructivist model for teaching, asking teachers about their existing knowledge and beliefs is the place to start. I believe that because classroom teachers want "how-to's" in their professional development, we must apply the constructivist principle of building on existing knowledge and beliefs by modeling it in the ways we develop teachers. We must devise ways of teaching teachers to use constructivist principles in their own learning. Those doing the coaching and mentoring must provide the "how-to's" if they want credibility with classroom teachers, so the logical thing to do, it seems to me, is to show them...
the "how-to’s" that they want by applying these in their own professional development.

I, therefore, recommend that we continue collaborations across grade levels and disciplines among teachers who are interested in constructivist approaches to teaching and learning, who are interested in refining their questioning techniques, who are interested in promoting continual inquiry in their classrooms, and/or who are interested in collaborative reflection on best practice. I would hope that such work might lead to the collaborative development of methods and strategies across disciplines and grade levels that would encourage the kind of continual inquiry that should be at the heart of learning in all disciplines and at all grade levels.

The Accelerated Schools initiative’s expectation that teachers who are developed to use inquiry to solve their school’s problems will automatically transform their classroom practice to the use of inquiry is unrealistic. Given their interest in students as individuals and their desire for "how-to’s" in professional development, for the teachers in my study a more effective strategy might be to model for them how to build upon their interest in students as individuals to include questioning of students to understand their current thinking.

In the last week or two of my observations, teachers at the school were talking about taking charge of their own professional development for the upcoming school year and of
putting together a cross-grade-level team to coordinate and implement their plans. A study of their collaborative professional development efforts would make a logical, next step for research with these teachers in this school, and I would recommend to them that they include in their plans for their development attention to how teachers question students and for what purposes and reasons.

A contribution which my study makes to the field of research on constructivism and classroom practice is to provide the qualitative particulars of teachers' interpretations of practice consistent with constructivism in public school settings and in relation to reform initiatives intended to improve teaching and learning within public school settings. These qualitative particulars reveal that an area of teacher development which neither reform initiative has effectively influenced is how teachers question students and to what ends.

The teachers in my study are telling us, I believe, what other teachers in their school are also saying in their plans to take charge of their own professional development next year. They are advocating collaboration across grade levels. I would extend this to recommend also collaboration across disciplines. I have previously recommended in this chapter collaboration across grade levels and disciplines on the development of constructivist approaches to teaching and learning and complimentary classroom management strategies and on the development of ways to promote inquiry across
grade levels and disciplines. Like Gurney (1989) I also recommend "blurring the distinctions between practice and research so that each has greater relevance for the other."

Collaborations on practice and research seem a logical, next step to model and promote inquiry across grade levels and disciplines. "Why is the sky blue?" is the cliche we use to reflect the questioning that begins with children almost as soon as they begin to learn language. Schooling seems to do more to stifle the natural inquiry of children than to encourage learning from it. Do we squelch or stifle it because we are more concerned with "covering" information? Ironically, it is more important in the "information age" for students to learn certain questions with regard to information: When do we need it? What information do we need? How do we find it? How do we evaluate it? How do we use it? How do we construct knowledge and understanding from it? These questions were missing from the dozens of questions the teachers in my study asked every day. Also missing were questions which investigated students' thinking.

Providing Custodial Care Inhibits Constructivist Practice

As my final finding with regard to the "restroom ritual" in Chapter 4 indicates, teachers' need to provide custodial care to the 25-30 students in their classes conflicts with teacher practice consistent with constructivism. So much of the school day is needed to deal with the demands of custodial care, and while teachers have
developed regimented rituals to take care of these needs efficiently, much instructional time is still eroded. This is time that could be spent in such constructivist pursuits as careful questioning of individual students to determine their current thinking on a given subject.

School principals can be an important variable here. Something the principal in the school of my study initiated represents a step in the right direction. She employs the same personnel that run the before-and-after school daycare program to monitor and manage students in the cafeteria during lunch time and, thereby, gives the teachers 30 minutes to themselves during the middle of their school day. Ann, Zoe, and Kim, on the days I spent with them, frequently used this time to make phone calls, and all four teachers used it to talk with other teachers about matters of professional concern while they ate lunch. They engaged in discussions and shared ideas about classroom practice and curriculum design, their on-going professional development, and their plans for programs that involve the whole school. I was impressed with how purposeful so much of their talk was. I heard very little "idle banter." The principal is providing the teachers in her school some daily relief from the demands of custodial care.

However, unless and until we can provide teachers more relief from the demands of custodial care, efforts such as this principal's are another "best we can hope for" alternative. School principals, parents, and community
members can, however, relieve teachers as much as possible from the demands of custodial care if they so choose.

I highly recommend that we study the feasibility of alternative means for organizing schools. For example, we might look into, as Darling-Hammond (1994a) suggests, how Japanese schools are organized. Schools in Japan provide teachers 15-20 hours per week in their school-day schedules for collaboration with colleagues on their on-going professional development, the planning and implementation of curriculum, and individualization of instruction (Darling-Hammond, 1994a). While teachers in Japanese schools are thus engaged, students work with resource teachers or engage in independent study, work with counselors or go to P. E. Teachers also provide individual tutoring to students who need it during this time (Darling-Hammond, 1994a). Spending time engaged in such activities is viewed as a daily part of the teacher’s job in Japan.

Until we can provide American teachers such time in their school day, we are left with a simple maxim of the classroom teacher who must manage 25-30 students per day: Restroom time comes before everything else. "Coverage," as discussed previously, and custodial care of large numbers of children, as highlighted here, are two different issues and problems, but they emerge as "co-conspirators" against constructivist practice for the teachers in my study.

Closing Remarks

I can say the following about teacher practice
consistent with constructivist learning theory in relation to the four teachers in my study. Teachers who are paying attention to their students as individuals are aware that students construct their own understanding in different ways. However, this awareness does not always translate into their classroom practice. Even in school settings where teachers have been steeped in reform initiatives that promote constructivist practice, teachers fall short of the mark because of the conflicting needs of classroom management, control of student behavior, "coverage," and custodial care. Schools need to change in these areas to give teachers greater support to practice in ways consistent with constructivism. Supportive, collaborative coaching and modeling can help teachers change their practice but are only as good as the models provided. If teachers are shown how to apply a particular approach or theory, they will be more likely to put it into practice in their classes. Teachers need coaching and modeling in how to question students in ways that will allow them to construct the "right" answer for themselves.

The greatest contribution my study has made to education is the influence it has had on me as a teacher. I will keep all these points in mind as I go about the work of preparing and developing teachers and sharing my findings and conclusions with those I teach. Finally, I am pleased to have uncovered the "four C’s" of impediments to constructivist practice: classroom management, control,
"coverage," and custodial care.
By taking a few minutes to complete the following questionnaire, you will be helping me with my dissertation on constructivism and classroom practice. Your responses will add to the research in this field. By completing and returning the questionnaire, you will be contributing data to my study. I ask that you give your name because I would like to observe and interview a few teachers at a later date and need to know how to locate you. If you do not wish to be observed or interviewed later, simply leave off your name. Either way, I will protect your anonymity; in fact, the only person who will ever see your responses to the questionnaire will be me, and I will keep your responses confidential. If you have any questions or would like to hear about the results of my study, please feel free to call me. Thank you so much for your time. Being a classroom teacher myself, I know how limited yours is.

Marilyn Jensen
Doctoral student and
Instructor of English
University of North Florida
(904) 620-2273
Supervising Professor:
Dr. Katherine Kasten, Dean
College of Education
University of North Florida
(904) 620-2520
Home phone:

Your name (optional):

Your school:

Grade(s) you teach?:

How long at that grade(s)?:

How many total years teaching?:

How long at this school?:

1. Put an x before four or five of the following statements that best describe you:
   ___ the authority in the classroom
   ___ a risk-taker
   ___ a curriculum designer
   ___ a disciplinarian
   ___ a master communicator
   ___ an investigator/researcher
   ___ a guide
   ___ a careful planner who seldom deviates from plans
   ___ an experimenter
   ___ a judge of student performance
   ___ a good listener
   ___ an expert on elementary education

2. Do you consider yourself to be constructivist in your approach to teaching? If so, why? If not, how would you describe your approach to teaching?
3. List three (3) ways that you think your classroom practice is consistent with constructivism:

4. If you could model only one concept, belief, or idea about learning that you would want your students to gain from your class, what would that be? Please give the relevant details of a time when you modeled that concept, idea, or belief for your students.

5. Although all of the following qualities or features may be important, put an x in front of one (1) item in each of the following pairs which is generally more important to you or more important to you most of the time. (Be honest!)

- ___ having students express themselves openly and honestly
- ___ having students monitor their behavior when they speak
- ___ for a teacher to be an expert in the subject(s) taught
- ___ for a teacher to know and use many questioning techniques
- ___ for a teacher to make sure students know the right answers
- ___ for a teacher to understand student thought processes
- ___ engaging students in activities that facilitate discovery
- ___ preparing students for achievement tests
- ___ covering the district curriculum and ensuring skill mastery
- ___ creating activities to promote exploration & experimentation
- ___ for students to see a teacher as a learner
- ___ for students to see a teacher as an authority figure
- ___ breadth of student coverage of material
- ___ depth of student understanding of material
Appendix B
<table>
<thead>
<tr>
<th>Level of Usage</th>
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<th>Routine</th>
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<tbody>
<tr>
<td>Classroom</td>
<td>0</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>The classroom setting is inviting, comfortable, and attractive.</td>
<td>0</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>The classroom is organized and maintained.</td>
<td>0</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>The classroom is enhanced by displays of current powerful learning activities.</td>
<td>0</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>The classroom arrangement allows for powerful learning activities to be completed.</td>
<td>0</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>The classroom is designed by both students and teachers to accommodate their needs and develop a sense of ownership.</td>
<td>0</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Materials which promote exploration and experimentation are accessible.</td>
<td>0</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Materials</td>
<td>0</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Varied materials address all learning styles (visual, auditory, and kinesthetic).</td>
<td>0</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Materials are appropriate and relevant to the activity.</td>
<td>0</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Materials are used to promote active, hands-on involvement in learning.</td>
<td>0</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Materials enhance/expand thematic units.</td>
<td>0</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Materials reflect a varied level of abilities.</td>
<td>0</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Students</td>
<td>0</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Students exhibit a sense of ownership in their classroom.</td>
<td>0</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Students take ownership of the learning process.</td>
<td>0</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Students have responsibilities and choices in their learning.</td>
<td>0</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Facial expressions and body language of the students reflect their enthusiasm.</td>
<td>0</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Students are on task and learning.</td>
<td>0</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Students are developing cooperative skills.</td>
<td>0</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Students see themselves as thinkers and problem solvers.</td>
<td>0</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Students openly express their opinions during problem solving activities.</td>
<td>0</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Mastery of objectives is evident by the students' ability to relate or transfer the information which has been learned.</td>
<td>0</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Curriculum</td>
<td>0</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Activities are developed around thematic units.</td>
<td>0</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Subject areas are integrated throughout the thematic-based curriculum.</td>
<td>0</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>All resources (art, music, PE, library) facilitate a thematic/integrated curriculum.</td>
<td>0</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>A whole language approach is used.</td>
<td>0</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Activities are developed to encourage risk-taking.</td>
<td>0</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Activities are developed to promote exploration and experimentation.</td>
<td>0</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Activities are developed which foster role-playing.</td>
<td>0</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>A multi-modality (sensory) approach to teaching is used.</td>
<td>0</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>A variety of questioning techniques is used.</td>
<td>0</td>
<td>1 2 3 4</td>
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</tbody>
</table>
Curriculum cont'd
Activities incorporate a hierarchy of questions.  
Techniques (interaction/collaboration) which promote cooperative learning are used. 
Activities focus on the concept and processes of learning than on finding solutions. 
Activities are designed so that all students (regardless of ability level) can and will be actively involved. 
Activities are designed to require students to expand/increase their abilities. 
Activities are developed around that which has intense meaning for the student (prior knowledge, interests, real-life experiences). 
Activities are developed based on the identified strengths of the students.

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<td>Routine</td>
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Teacher
The strengths of the students are identified. 
High, positive expectations are held for the achievement of all students. 
Students are motivated to realize the teacher's high expectations for them. 
The teacher models himself/herself as a learner. 
The teacher acknowledges that he/she does not know all the answers and is also a learner. 
The teacher is knowledgeable of all modalities of learning. 
A variety of teaching strategies and materials are used to address these modalities. 
The teacher functions as a facilitator of learning. 
The teacher encourages risk-taking. 
The teacher develops an environment where students feel free to express themselves in a variety of ways. 
The teacher designs and maintains a physically safe and secure environment. 
Those qualities (respect, kindness, compassion, etc.) associated with a powerful learning environment are modeled and cultivated. 
Management techniques are employed that allow for the effective, efficient delivery of powerful learning activities. 
The teacher identifies and fosters the resources/strengths of parents, staff, students, and community. 
All persons involved in educating the children are kept informed.

<table>
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<td>None</td>
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</tbody>
</table>

Three Strengths of This Classroom:

Three Challenges for This Classroom:
Appendix C
Constructivism and Classroom Practice: A Dissertation Study
Marilyn Jensen
University of North Florida

Dear Teacher:

I would like to enlist your help and cooperation in a study of constructivism and classroom practice for my dissertation. I am working toward my Ed.D. in Educational Leadership at the University of North Florida. Your participation will be crucial to my study because I want to know about teachers’ views of constructivism and classroom practice. You will be contributing to this field of research by allowing me to observe your class and interview you. You were selected for observation and interview because of your responses to my questionnaire. Your school was selected as a site for my study because of its involvement in reform initiatives that incorporate constructivist theory into their agendas.

If you decide to participate, I would like to observe in your class for at least three days during the 1997-98 school year, possibly longer should you and I decide together that more time is needed. You and I will work out a schedule for observations at your convenience. I would also like to do an audiotaped interview with you, and that should take about two hours. Except for the interview time, no other time or preparation outside of your normal school activity will be required. Possible risk factors from your participation are no greater than your normal school activity.

I will keep all information gathered from the survey and observations and interviews strictly confidential. I will be observing and interviewing several teachers, and I will refer to each and identify each by a coded pseudonym (known only to me) throughout all phases of the study, including any and all publications of the results.

Your decision as to whether to participate is completely voluntary and will not influence your relationship with the University of North Florida or its College of Education. You may withdraw from the study at any time, simply by telling me you wish to do so, and you should feel free to ask me questions at any time or find out the results of my study. By signing this form, you are agreeing to participate in my study. Should you need to contact me, I am available at either (904) 620-2273 (UNF) or . My supervising professor is Dr. Kathe Kasten, and she may be reached at the College of Education, Dean’s Office, 620-2520. You may keep a copy of this form.

Participant’s signature: Date:

Principal investigator’s signature: Date:
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Sage.


higher psychological processes. Cambridge, MA: Harvard University Press.


Vita

Marilyn Jensen holds an Ed.D. in Educational Leadership from the University of North Florida and both the M.A. and B.A. in English from the University of Georgia. She has been teaching for more years than she cares to say, but the official count is fifteen years of documentable, full-time classroom teaching at the secondary and post-secondary levels. She is currently a Visiting Assistant Professor of Education at Chatham College in Pittsburgh. She is preparing prospective teachers through teaching education courses, supervising student teachers, and contributing to the development of the teacher education program. She is on leave of absence from the University of North Florida where for eight years she taught undergraduate writing and literature and courses in adolescent and children’s literature for education majors. She has designed and delivered training and development for schools, colleges and universities, businesses, and professional and community organizations. In 1994 she was honored as a UNF Presidential Fellow for her leadership potential and has been cited for outstanding teaching.

Her teaching areas are constructivist theory and practice, educational leadership, language arts curriculum and instruction, secondary methodologies, introduction to education, adolescent and children’s literature, feminism, multiculturalism, problem solving and critical thinking, and writing and writing pedagogy. She is a published writer who
would one day like to teach a course in qualitative research writing. She is currently designing a course in interdisciplinary inquiry.

She was born in