Researching Pedagogy in a Professional Development School

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ABSTRACT: Six primary classrooms in an elementary professional development school were involved in this research, each characterized by high mobility and a diverse student population from economically disadvantaged families. Questions included the following: First, what approaches are found in a professional development school with diverse learners? Second, what are the outcomes for children based on their achievement? Data collection involved a 1-day observation of six classrooms (first through third grade) with the Early Childhood Classroom Observation Measure. Class achievement data were collected, as based on the Criterion-Referenced Competency Test, a standardized test measuring specific skills in the state's core curriculum. Findings include (1) the pedagogy used in the six classrooms, as measured by scale items from the Early Childhood Classroom Observation Measure; (2) the identification of high-achieving classrooms based on Criterion-Referenced Competency Test scores; and (3) a vignette based on these classrooms. Finally, recommendations are provided for teachers and teacher educators.

Researchers suggest the importance of research in primary classrooms (Kuhn, 2007; Pianta, 2006), the important role of teachers in student performance (Darling-Hammond, 2000), and the increased emphasis on young children's academic achievement. Recent literature also recommends professional development schools (PDSs) as exemplars of teaching practice (Darling-Hammond, 2005). If research, teachers, teaching practice, and student achievement are important, then teachers' work in PDSs needs to be studied as related to student achievement. Each body of literature provides important information and proposes multiple questions that collectively have the potential to inform pedagogy in PDSs. The purpose of this study is to investigate (1) pedagogy in primary classrooms in a PDS and (2) the relationship of instruction, social climate, and classroom management to children's academic achievement. *Pedagogy* is defined as the "art and science of teaching based upon a philosophy or set of beliefs" (Goodman, 2008, p. 13); a theoretical framework (Cronjé, 2006) and the current literature were used to inform the work.

Theoretical Framework

Various models and theories are proposed to explain pedagogical approaches. Two common approaches are based on constructivist and behaviorist theories. According to Brooks and Brooks (1999), in a constructivist approach students interact with their peers, their teacher, primary sources, and authentic materials to construct meaning. In a collaborative environment, students develop their understanding of a topic through group activities, discussions, and projects. The curriculum is focused on conceptual understanding, and

students are encouraged to question and discuss their thinking. Through observations and other formative assessments, teachers facilitate subsequent instruction. Brooks and Brooks described a behaviorist or didactic approach as systematically presenting information for students to remember and transfer to new situations. With an emphasis on basic skills, students are taught small pieces of information to help them build an understanding of concepts. The teacher and textbooks are identified as authorities in the classroom. Students develop their individual knowledge of a topic and often work alone. Formative and summative assessments verify student learning.

Cronjé (2006) provides a framework for examining pedagogy that moves beyond the traditional practice of labeling approaches as behaviorist or constructivist (see Figure 1). His right-angle, or quadrant, model characterizes pedagogy without the limitations of a continuum. The quadrant model is formed by placing constructivism and objectivism (a term used by Cronjé for approaches based on behavioral psychology and didactic instruction) as axes plotted against one another forming four quadrants: injection, construction, immersion, and integration. According to Cronjé, the injection quadrant includes predominantly behaviorist learning that emphasizes transferring predetermined knowledge, much like a medical injection. The construction quadrant focuses on learners who construct meaning by building on prior knowledge. Learning in the immersion quadrant is low in behaviorist and constructivist elements and was described by Cronjé as the "chaos" quadrant (p. 397), where there is no evidence of efforts to facilitate or direct instruction. The integration quadrant includes a "combination of instruction and construction in appropriate conditions" (p. 398). In this approach, instructional practice is based on learning goals.

Selected Literature

The literature on PDSs grounds our study, as specific to pedagogy and teaching practices in elementary schools and the effects of these practices on child outcomes. PDSs are "partnerships formed by teacher education programs and PreK–12 schools intent on sharing responsibility" for learning and improving practice (Levine, 2002, p. 65). Drawing on the work of the Holmes Group and the literature on restructuring schools, Zimpher (1990) discussed best practice in PDSs and suggested that models of teaching in PDSs should foster a contemporary view of schools as "places where knowledge is constructed and children contribute to that construction" (p. 46). Ross,

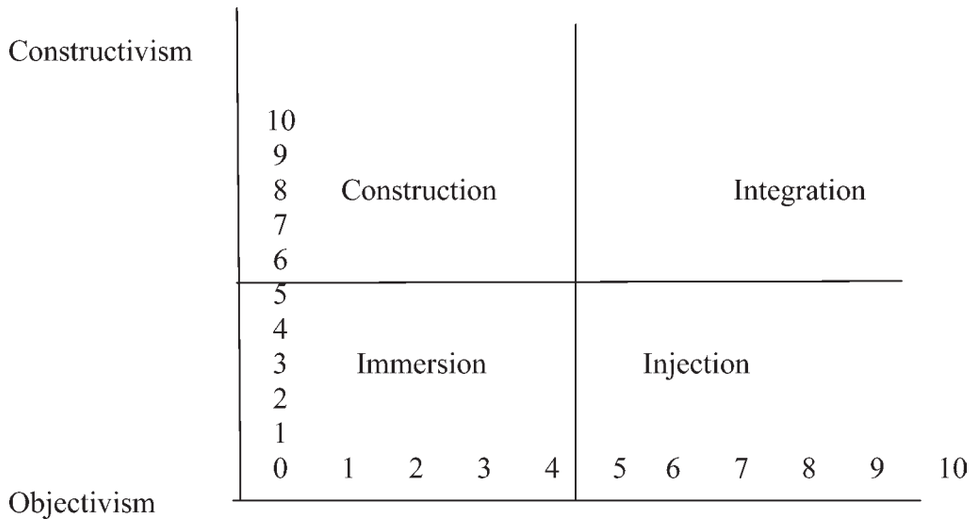

Figure 1. Quadrant model for examining pedagogy.
Source. Cronjé (2006).

Brownell, Sindelar, and Vandiver (1999) suggested that PDSs invite inquiry on K–12 teaching and indicated that there is evidence that instruction in PDSs is "more constructivist, more child-centered, and more cooperative than instruction in traditional schools"; however, they argued that "less attention has been paid to the element of improved classroom practice and student learning" (p. 211).

Studies outside the context of PDSs indicated that schools matter (Schmidt et al., 2001) and that teachers matter (Organization for Economic Cooperation and Development, 2005), yet there is "exceptional variability in the nature and quality of learning experiences offered to children in the early grades" (Pianta, 2006, p. 7). Work by Stipek (2004) suggests a range of practices, particularly for diverse learners, including constructivist approaches, behavioral approaches, laissez-faire approaches, or a combination of these. These findings lead to the first question: What approaches are found in primary classrooms in a PDS with diverse learners?

Researchers suggested that certain experiences in classrooms are important for child outcomes—specifically, the kinds of instruction and interactions with adults that have reliable effects on children's achievement and social competence (Barnett, 1995; Kontos & Wilcox-Herzog, 1997; Pianta, 2006; Rowan, Correnti, & Miller, 2002), motivation (Stipek, Feiler, Daniels & Milburn, 1995), literacy engagement (Bogner, Rapael, & Pressley, 2002), and functioning in schools (Dolezal, Welsh, Pressley, & Vincent, 2003). Other researchers argued that a constructivist approach was helpful in developing children's cognitive abilities. For example, in a classroom observation study of 669 classrooms in 34 schools, Abbot and Fouts (2003) identified the extent of constructivist teaching activity and its relationship to student achievement, and they found (1) a large positive correlation between constructivist teaching and student achievement and (2) a negative correlation between constructivist teaching and student family income. In other words, students in schools with low levels of family income receive less constructivist teaching. Other researchers (Siraj-Blatchford & Sylva, 2004) suggested that effective instruction includes a balanced integration of explicit instruction and immersion in literate environments. In a qualitative study of literacy instruction, Wharton-McDonald and colleagues (Wharton-McDonald, Pressley, & Hampston, 1998) observed nine classrooms and concluded, "Excellent teachers seem to be proposing a 'radical middle' position" with "neither extreme leading to maximum student achievement in literacy" (p. 122). These studies lead to the second question: Based on the approaches to teaching in a PDS, what are the outcomes for children in terms of achievement?

Method

This qualitative study was conducted in the tradition of interpretive research (Borko, Liston, & Whitcomb, 2007) and sought "to describe, analyze, and interpret features of a specific situation, preserving its complexity" (p. 4). It was situated in six classrooms (first, second, and third grade) in a PDS in the Southeastern United States. Two standardized instruments were used to augment observations in classrooms and provide information on student achievement, and two questions guided the study: First, what approaches are found in primary classrooms in a PDS school with diverse learners? Second, based on the approaches to teaching, what are the outcomes for children in terms of achievement?

The PDS School

Meadows Elementary School (a pseudonym) is a public elementary school in its 4th year of a partnership effort with a local university. The partnership focuses on the four goals identified by Teitel (2003): improving student learning, preparing teachers, engaging in professional development, and inquiring to improve practice. Meadows Elementary is part of a large school system with more than 88,000 students. As a Title I school, it serves a population of approximately 65% economically disadvantaged families. The school's nearly 850 students are diverse: Approximately 50%

Table 1. Demographics of Classroom Teachers

Teacher	*Grade*	*Children (n)*	*Experience*[a]	*Ethnicity*
Ms. Rose	1	17	4	Caucasian
Ms. Green	1	18	14	African American
Ms. White	2	17	4	African American
Ms. Brown	2	18	7	African American
Ms. Gray	3	17	8	Caucasian
Ms. Black	3	15	3	Caucasian

[a]Years.

of the students are African American; 24%, Hispanic; 17%, White; and 9%, multiracial. Mobility rates hover around 45%.

The Teachers

The six teachers in the study represent a variety of years of experience; three teachers have less than 5 years of experience, and three have 7 or more years of experience. Three teachers are Caucasian and three are African American. Table 1 provides details. All teachers were volunteers, and this research was conducted under the auspices of the Institutional Review Board to guarantee the rights of all participants. We appreciate their participation and their opening their classrooms to us.

Classroom Observations

Observations of the six classrooms occurred in the spring, beginning at the start of the school day and continuing until math and literacy instruction were complete, usually 4 to 5 hours. One author, the university PDS liaison familiar with the school, conducted all observations to ensure consistency; this was a nonparticipatory role. Relationships and rapport with the teachers provided a level of trust and afforded authentic access to the classrooms. The observer noted instructional activities, groupings of children, teacher–child interactions, management strategies, classroom materials, items on the wall, and, when possible, scripted quotes from teachers and children.

After each observation, the researcher rated each classroom using the Early Childhood Classroom Observation Measure (ECCOM) (Stipek & Byler, 2004) and noted behaviors that support the ratings. The ECCOM assesses observable components of primary classrooms (students aged 4 to 7 years), including the nature of instruction, the social climate, and classroom management and instruction (see Table 2). According to Stipek and Byler (2004), the ECCOM is appropriate for use as a research tool to examine the effects of classroom practices on child outcomes. It "assesses independently the degree to which constructivist and didactic approaches are observed" (p. 380). This measure is appropriate because of its designed purpose and its suitability for early primary grades.

The ECCOM measure consists of three dimensions that reflect different approaches: constructivist theory, traditional learning theory, and a laissez-faire approach. According to Stipek and Byler (2004), the constructivist dimension reflects a shared responsibility for management and learning, as well as a child-centered approach that is sensitive to and focused on children's needs and interests. Based on traditional learning theory, the second dimension reflects an approach that emphasizes the acquisition of academic skills and is based

Table 2. Early Childhood Classroom Observation Measure: Scale and Subscales

Scale	*Subscales*
Climate	Support for Children's Communication Skills
	Individualization of Instruction
	Relevance of Instructional Activities
	Student Engagement
Management	Child Responsibility
	Choice of Activities
	Discipline Strategies
	Management
Instruction	Teaching Concepts
	Instructional Conversation
	Standards of Learning
	Coherence of Instructional Activities

on a teacher's predetermined agenda. The third dimension represents a classroom managed by the children with little teacher direction. The teacher provides materials and maintains minimal order.

Each dimension has three scales, with four subscales each (see Table 2). Ratings for scale items range from 1 (*these practices are rarely seen—less than 20% of the time*) to 5 (*these practices predominate—80–100% of the time*), which provide an overall score out of 20 for each subscale. According to Stipek and Byler (2004), reliability is reported as high for two scales and the related subscales: "Constructivist: instruction, 0.80; management, 0.92; social climate, 0.82; Didactic: instruction, 0.80; management, 0.88; social climate, 0.88; all $p < 0.001$" (p. 387). They did not report reliability for the third scale, based on a laissez-faire approach.

Student Achievement

All students at Meadows Elementary take the Criterion-Referenced Competency Test (CRCT) each year in April. The test measures skills included in the state's core curriculum that are considered essential for academic progress. The test format is selected response, and scores are reported in percentages at three levels; Level 1 indicates that children "do not meet the standard"; Level 2, children "meet the standard"; and Level 3, children "exceed the standard." For example, if a class has a Level 2 score of 87, it means that 87% of the class meets the standard. At Meadows Elementary, 89% of students meet or exceed the standard in mathematics and English/language arts.

Analysis

Data analysis began with a review of field notes and initial coding; then, we examined the ECCOM and CRCT scores. The numerical scores were intended to augment our observations and provide a measure of student achievement. We both coded the field notes using a common code list taken from the literature; we also used the constant comparative method as recommended by Glaser and Strauss (1967) and Charmaz (2006). Constructing matrices, writing analytic memos, and generating vignettes were helpful in analysis because they inform discussions regarding interpretation of the data.

Findings

According to the ECCOM scores, classrooms varied in the degree to which one approach dominated or there was a mix of approaches. Five of the six teachers scored in the high range (15 to 20 [out of 20]) on the constructivist scale in instruction, management, and climate; however, three of the five teachers scored in the moderate range (8 to 14) on the behaviorist scale, what Cronjé termed *integrationist*. One teacher was predominantly laissez-faire; the other five scored in the low range (1 to 7) of this approach. The two third-grade teachers had the highest constructivist scores across all three areas. Years of experience did not seem to provide additional information, with one exception: The most laissez-faire teacher was also the one with the most experience. Table 3 provides ECCOM and CRCT percentages for each teacher by grade level.

The mean CRCT scores indicate that 85% to 94% of children in the six classes met or exceeded Levels 2 and 3 in reading, language arts, and mathematics, compared to the 89% mean for the school. Two teachers (Ms. Rose and Ms. Black) brought 94% of their children to the *meet* or *exceed* level. They also had the lowest percentage (6%) of children below level. These two teachers had high constructivist scores and low behaviorist scores. Ms. Green (who had a high laissez-faire score) and Ms. Brown and Ms. Gray (with high constructivist scores and mid-to-high behaviorist scores) had the most children at Level 1. Three teachers—Ms. Green, Ms. Brown, and Ms. Black (the latter with high constructivist scores and mid-to-low behaviorist scores)—had the highest percentage of children at Level 2 on the CRCT. Four teachers (Ms. Rose, Ms. Brown, Ms. White, and Ms. Black), three with high constructivist scores and one with mid constructivist and behaviorist scores, brought at least 90% of the children to Level 3, exceeding the standards.

Table 3. Early Childhood Classroom Observation Measure and Criterion-Referenced Competency Test: Scores for Teachers and Children, Respectively

Teachers[a]	*Ms. Rose*	*Ms. Green*	*Ms. Brown*	*Ms. White*	*Ms. Gray*	*Ms. Black*
Management						
Constructivist	15	8	16	16	20	20
Behaviorist	6	7	7	6	9	5
Laissez-faire	4	17	4	4	4	4
Instruction						
Constructivist	16	4	15	14	18	19
Behaviorist	7	7	11	10	7	7
Laissez-faire	4	17	4	4	4	4
Climate						
Constructivist	16	4	16	14	20	19
Behaviorist	6	10	6	10	5	5
Laissez-faire	4	20	4	5	4	4
Children[b]						
Level 1	6	10	10	9	15	6
Level 2	59	71	70	58	55	74
Level 3	35	19	20	32	30	20
Meet or exceed Levels 2–3[c]	94	88	90	90	85	94

[a]Range = 1–20.

[b]Mean percentage of children.

[c]In math, reading, and language arts.

In the following sections, we discuss the pedagogy that teachers practiced, based on observations and data from the ECCOM, and we delve into the six classrooms, focusing on management, climate, and instruction. Finally, we note what we observed and what we did not observe.

Classroom Management

The ECCOM has four subscales related to classroom management: child responsibility, choice of activities, discipline strategies, and management. Findings in these areas follow.

Child responsibility. In general, teachers shared selected responsibilities with children. For example, students had designated roles in the classrooms, and they took care of their materials. However, teachers did not provide many opportunities for children to make choices or take leadership roles beyond the typical roles (e.g., line leader). Teachers often facilitated conflict resolution, and children relied on the teacher to solve their problems.

Choice of activities. Teachers made broad choices within which children had some discretion in accomplishing a task. Students were allowed to select activities from prescribed choices, and they had the freedom to select how to approach certain tasks. In all classrooms, students had free time during the day, during which they chose among prescribed activities. Teachers retained control of the order of activities in four of the six classrooms and set the criteria for the finished products in all cases. Children were rarely involved in classroom decisions.

Discipline strategies. In all classrooms, the teachers used positive techniques; no evidence of negative strategies was observed. Five of the six teachers carried out discipline in a calm and nonthreatening manner, explained their disciplinary actions, and avoided disrupting the class. Teachers monitored children's behavior and guided them with only a few reminders. In one classroom, the teacher rarely disciplined the children. Rules were posted in all classrooms, and in four of the six classrooms, the teachers made the rules and developed reward systems for positive and negative behaviors. The two most constructivist teachers had developed class rules with the

children, and the children signed an agreement to observe those rules.

Management. In five of the six classrooms, the teachers had clear but flexible rules and routines. In no classrooms was there a rigid adherence to rules. Rules were consistently applied; routines were efficient; and teachers were aware of children's behavior at all times. In one classroom, there were only general directions, few rules, and disorganized transitions.

Social Climate

The ECCOM has four subscales related to social climate: support for children's communication and interpersonal skills, individualization of instruction, relevance of instructional activities, and student engagement. Findings in these areas follow.

Support for children's communication and interpersonal skills. In five of the six classes, teachers encouraged children to engage in conversations as they worked, which created a "hum" in the classrooms. Teachers provided opportunities for children to speak in front of the group, and they used strategies to ensure that many children were called on for their ideas. Teachers were attentive to children and encouraged them to elaborate on their thoughts. In three classrooms, teachers encouraged children to listen to and help one another, using each other as resources.

Individualization of instructional activities. In five of six classrooms, teachers were attentive to individuals' skills and developed tasks accordingly. In two classrooms, there were explicit opportunities for children to participate in tasks at different levels. In one classroom, children had discretion in how to complete tasks; in another, children were encouraged to demonstrate their knowledge in a variety of ways. Overall, children's contributions were recognized and praised.

Relevance of activities to children's experience. Relevance, or connections, is the key to this subscale item. Activities can be connected to children's personal lives, to prior activities, and to other content areas. In all classrooms, teachers spoke with children about what was happening outside of school. Comments were personal, such as "You seem tired today"; they also related to instruction. For example, in a third-grade classroom, a child brought a globe to share during science; in a second-grade classroom, children drew a map of their bedrooms for social studies. Only in the third-grade classrooms was there evidence of integrated content (e.g., using literature to teach math). We rarely observed lessons explicitly connected to prior learning.

Student engagement. In five of the six classrooms, teachers engaged children in instructional activities; they were busy classrooms. Teachers directed children to different places in the rooms for different lessons. In a few instances, children chose where to work—for example, reading groups met at tables or on the carpet. In only one classroom did we observe children wandering without purpose or direction.

Instruction

The ECCOM has four scale items related to instruction: teaching concepts, instructional conversation, and standards of learning. Findings in these areas follow.

Teaching concepts. In all classrooms, the teachers provided tasks to teach facts and procedures, and in five of the six classrooms, teaching for understanding was evident and, interestingly, found most often during math activities. In addition to participating in large group math instruction and completing worksheets individually, students participated in small group problem-solving activities that required them to use multiple ways to solve problems and generate new problems. However, in all cases, teachers used prescribed, rather than authentic, problems, and rarely were students and teachers involved as co-learners. In one class, students engaged in activities alone, with little or no teacher intervention except for discipline.

Instructional conversation. In these six classrooms, one would hear instructional conversations where teachers solicited students' ideas and responses to questions. Rarely were children ignored or cut off when they spoke. Not evident were opportunities for children to

generate their own questions or respond and elaborate on classmates' comments. The exception was a third-grade class where students engaged in book talks—small group discussions about a book they read.

Standards of learning. Given our age of accountability, it was not surprising that teachers had clear high standards for the students. All teachers expressed the view that everyone could learn and everyone's work should reflect that. In one second-grade classroom, students were encouraged to challenge themselves to become experts in what they were studying. What differed by classroom was the degree to which expectations were individualized for students and whether their work was monitored to assist or challenge them. In many cases, students completed tasks and turned in their work.

Coherence of instructional activities. This subscale item addresses how lessons and activities are connected between and within other academic lessons. In four of the six classrooms, there was little evidence of these connections; lessons were distinct and disconnected. Concepts and skills often were presented as isolated facts and skills were often narrow, for example, practicing addition facts. We did not observe unifying concepts or lessons embedded in a broader set of goals. In these four classrooms, there were few extensions provided as follow-up for lessons and activities. In contrast, the teachers in two classrooms explicitly connected and embedded lessons and activities in a broader context of learning. For example, a unit of study or a book study often provided this context. These teachers also utilized other strategies, such as advanced organizers and debriefings, to connect activities to prior understandings and goals for learning.

These descriptions separate components of classrooms for examination, so now we offer a vignette to provide a holistic glimpse of a classroom.

PDS Classroom Vignette

According to Ely (1991), a vignette, or "inferred soliloquy" (p. 153), represents ideas central to the findings of a study; it is the essence of findings and includes "meaning, cohesion and color" (p. 154). In this vignette, Ms. Rose represents a first-grade teacher with 4 years of experience.

Ms. Rose interacted with the students in a warm, attentive, and respectful manner and was patient and positive as she worked with the children. She interacted directly with her students, maintaining eye contact and sitting at her students' level.

In Ms. Rose's classroom, the students appeared to have a clear understanding of their expected behavior and their roles as members of the class. The class rules were posted on the wall, but Ms. Rose redirected students rather than explicitly remind them of the rules. Although Ms. Rose used a reward system ("happy sticks") and consequences (warning, timeout, pull a stick, laps at recess, note home), these occurrences did not dominate the classroom atmosphere. For example, when monitoring student behavior or work, Ms. Rose whispered to a girl to get a "happy stick" or bring her work over so that she could check it. Ms. Rose spoke to students quietly and in a manner that was not intrusive to the class. Students were expected to be responsible for their behavior; for example, one student spilled his snack and found the dustpan to clean it up.

Student behavior was consistently calm, productive, and respectful throughout the morning. Students worked individually and sought help from peers as needed. When talking, they used quiet voices. Overall, they were independent; they rarely asked questions. There were teacher-created posters to guide student behavior. These included choices during reading, daily work assignments, class rules, morning checklist, and lists of consequences and rewards.

The daily activities reflected Ms. Rose's knowledge of students' strengths and needs, in addition to a focus on learning standards. Ms. Rose expected student work to reflect genuine effort, although she varied expectations based on individual skill level. This was most evident during small group work, where Ms. Rose varied the lessons to benefit the needs of the students in each group. Although the

Table 4. Observation of Six Classrooms' Pedagogy: Instruction, Social Climate, and Management

Rarely observed	• Teacher lecturing or children copying from the board • Children solving problems for themselves or teachers encouraging them to do so • Leadership roles for children (beyond line leader) • Explicit attempts to find out what children know before teaching • Teacher facilitating prosocial or interpersonal problem-solving skills • Activities connected through a unifying concept • Teacher modeling a learner role • Using ongoing activities as opportunities for assessment • Children allowed to choose on the basis of their interests • Children and teachers involved as colearners
Seldom observed	• Children completing worksheets • Relevance to children's experience (other lessons/activities, authentic assessment, conversations about what happens out of school) • Teacher encouraging children to assist one another and celebrate one another's accomplishments • Children involved in classroom decisions • Teachers encouraging children to listen to and help one another, use one another as resources, and celebrate one another's accomplishments • Children allowed to choose where to work • Opportunities for children to ask questions and respond or elaborate on classmates' comments • Encouragement for children to set high standards and select challenging tasks • Connections to prior activities or lessons
Often observed	• Warm, responsive/attentive, positive affect • Teacher talking directly to children • Praise for children's efforts • Conveyance that all children can learn and work should reflect that • Teachers making the rules and developing reward systems for positive and negative behaviors • Teachers developing the criteria for the finished products. • Teachers using prescribed rather than authentic problems • Tasks designed for learning facts, procedures, and conceptual understanding • Instructional conversations where teachers solicited children's ideas • Many adult solutions imposed • Teachers leading most activities • Teachers making most of the rules

classroom had a relaxed feeling, Ms. Rose set clear expectations for students to take their work seriously.

During small groups in mathematics, Ms. Rose used a balance of practice, including rote counting activities and conceptual activities within problem-solving situations. Physical artifacts were incorporated into instruction, although the teacher was the only one manipulating the materials. Although Ms. Rose asked several higher-level questions, she did not pose questions that allowed student-initiated investigations. The students verbalized connections among addition, estimation, and measurement during the lesson.

Reading instruction was balanced; there was phonics instruction embedded in experience with meaningful text. Ms. Rose made connections to the students' life as she introduced a poem to them. In addition, students were introduced to the text in a variety of ways, including small individual books, repeated reading of the same text, whole group reading, and paired reading.

Overall, the students in Ms. Rose's class scored well on the state's CRCT. Of the three levels, 94% of her students met or exceeded expectations in all areas. Only one student in her class (6%) did not meet expectations. According to the ECCOM scale scores (instruc-

tion, social climate, management), Ms. Rose's scores were high constructivist (15, 16, and 16, respectively) and low behaviorist (6, 7, 6, respectively).

Summarizing a large amount of data is difficult; thus, to draw conclusions about teaching approaches, we summarize key points from our observations. Table 4 highlights what was often, seldom, or rarely observed as related to pedagogy in the six classrooms. The table not only provides a snapshot of teaching in the six classrooms but raises questions for discussion. In other words, if one were looking at the classrooms from a constructivist perspective, many elements were observed often (e.g., teachers' soliciting children's questions and ideas), seldom (e.g., students' involvement in class decisions), and rarely (e.g., the teacher's modeling the role of a learner). From a behaviorist perspective, elements such as reward and punishment systems were observed in all classrooms; elements such as worksheets were observed sometimes; and elements such as lecture and children copying from the board were rarely observed.

Discussion

The findings provide an image of primary classrooms in one PDS. Building on other studies of classrooms (Rainer Dangel, Guyton, & McIntyre, 2004; Wharton-McDonald et al., 1998), we discerned the complexity of teachers' practice. Several findings are noteworthy and informative for PDS schools. First, students are learning, and student learning is a central component of PDS work. A large percentage of diverse children in all classrooms scored at or above grade level on a standardized measure of achievement, yet there were differences in the numbers of children scoring at each of the three levels, based on the teacher's approach to teaching. Teachers using a predominantly constructivist approach brought a higher percentage of students to *meeting* or *exceeding* levels on the CRCT. In addition, with one other exception, teachers using a blended (or integrationist) approach brought a higher percentage of students to the exceed level on the CRCT but also had a higher percentage of children who did not meet the standard. The teacher with a laissez-faire approach had one of the highest percentages of students below standard and the lowest percentage of students exceeding the standard. These findings, consistent with those of Hamre and Pianta's (2005) study, indicate that a student's classroom experience contributes to positive outcomes. A qualitative study can provide a deepened understanding of teaching practice; however, large-scale research on the effects of instructional approaches on child outcomes in PDSs is also necessary to guide practice in schools.

Second, we found evidence of good teaching based on a range of approaches, with the majority being a blend of behaviorist and constructivist theories—what Wharton-McDonald and colleagues (1998) termed "the radical middle." This finding calls into question the conclusion by Ross and colleagues (1999) that instruction in PDSs is "more constructivist" (p. 211). In trying to understand teaching approaches as constructivist or behaviorist, we found the binary approach of placing teachers on a continuum from behaviorist to constructivist as being minimally helpful. More helpful is to consider the approaches observed in the six classrooms using Cronjé's (2006) model. Based on this model, the teaching approach for one classroom is clearly located in the immersion quadrant (low in teaching); the teaching approach for three classrooms is in the integration quadrant (combination of instructional approaches); and the teaching approach for two classrooms fits into the construction quadrant (primarily constructivist). No teaching approaches were observed that would be categorized as injection (primarily behaviorist). One advantage in using this model is that it removes the pejorative terms often used by supporters of one theory or another. This model has potential as we consider teaching approaches to make effective PDS placements for students and expand professional development for teachers in our PDS sites.

Third, when we reflected on pedagogies seldom or rarely observed in classrooms, we

noted encouraging and disconcerting practices. From a pedagogical perspective, we did not see teachers lecturing, children copying from the board, or an overreliance on worksheets. However, it is disturbing to see few opportunities for students to make choices related to curriculum and their learning, take leadership roles in the classroom, and solve problems for themselves. There were only a few observations of teachers integrating curriculum or students being allowed to follow their interests. From a theoretical perspective, it is heartening to find few examples of the scripted, didactic pedagogy that Stipek (2004) found in classrooms of low-income and, especially, African American children. Yet many constructivist elements were not observed, even in the classrooms that were predominantly constructivist according to the ECCOM measure. Using Richardson's (2005) five elements of constructivist pedagogy, we found little evidence of four elements: developing students' background knowledge, facilitating group dialogue to create a shared understanding of a topic, engaging students in tasks structured to challenge existing understandings, and developing students' metaawareness of their understandings and learning. Only one element was evident: planned and unplanned introduction of formal domain knowledge. Using Branscombe, Castle, Dorsey, Surbeck, and Taylor's (2003) more specific components of constructivist curriculum, we found a lack of evidence of many constructivist activities. Only one of the eight components was evident, social interaction; the others rarely observed included authentic tasks, decision making, play, projects, problem posing, problem solving, and reflection. This evidence could be explained by the integrationist approach of the teachers, but it also points to the continuing difference in perspectives within constructivist pedagogy.

Finally, there are practical implications for teacher educators in terms of instruction and field placements. As university instructors, we often teach using constructivist pedagogy, and we expect teacher candidates to use constructivist practices in their teaching. Given that two of six teachers in this study scored as primarily constructivist yet those classrooms were limited in their use of constructivist approaches, it is important for us to recognize that, when placed in PDS sites, our teacher candidates will likely experience a blended pedagogical approach with less emphasis on certain elements of constructivist pedagogy. Knowing the least utilized elements can inform our instruction; perhaps, we need to facilitate deeper understandings of project-based learning, questions that pose problems, authentic problems for children to solve, and children's reflection on their progress.

Based on what we most often observed, five of the six classrooms provided a valuable environment for field placements, a significant need in PDS sites. These classrooms had high expectations for children, and teachers were warm and responsive to children. Teachers used a variety of theory-based pedagogical strategies (typically, a blend of constructivist and behaviorist theories), and students were successful in terms of achievement scores. Classic studies from observations in classrooms (Goodlad, 1984; Jackson, 1990) suggested that teaching practices are mediocre at best, so our findings are encouraging, particularly in light of our PDS relationship.

One of our key findings is that teachers using a predominantly constructivist approach bring a higher percentage of children to the level of meeting or exceeding standards. Thus, we make recommendations for elementary teachers and teacher educators who wish to strengthen constructivist pedagogy. We use the term *students* to refer to elementary-age students and preservice teachers because research (Rainer Dangel & Guyton, 2004) supports using constructivist pedagogy to facilitate preservice teachers' understanding and implementation of constructivist theories. We suggest that teachers and teacher educators

- create opportunities for students to make decisions related to curriculum, classroom management, and their learning;
- provide leadership roles for students beyond the typical classroom roles;
- integrate curriculum;
- allow students to follow their interests;

- create authentic opportunities for students to solve problems;
- facilitate group dialogue to create a shared understanding of a topic;
- engage students in tasks to challenge their existing understandings;
- develop students' meta-awareness of their own learning; and
- build on students' understandings of content.

Suggestions for Future Research

This study adds to the PDS literature and provides a deeper understanding of pedagogy in PDS sites; however, it has limitations. Studying six classrooms in a natural context was appropriate for our qualitative study and questions, yet multiple observations over time would add to its trustworthiness. In addition, generalizability is not appropriate beyond the context of this study. For this, the results need to be replicated in other PDS schools. Future research should also include a variety of populations, given that different students benefit from different types of instruction.

The observational protocol (ECCOM) provided important insights into pedagogy not available in previous PDS research. The instrument was appropriate for the context and provided reliable scores (Stipek & Byler, 2004); however, we found teachers who scored as constructivists but did not implement specific elements of constructivist pedagogy—thus, we recommend further examination of classroom observation protocols. One use of the ECCOM and the Cronjé model in PDS schools might be as reflection and discussion tools by teachers.

Achievement tests provide one measure of child outcomes, but adherents of constructivist pedagogy are skeptical of the adequacy of these tests as a gauge of students' learning. Also, a much larger sample is needed to generalize student outcomes. The absence of a pretest measure is another limitation to be addressed in future research. We agree with Ross and colleagues (1999), who stated in their review of the PDS research agenda that work "to link instructional change to improvements in student outcomes is still much needed" (p. 210). SUP

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