DEDICATION

To mom and dad

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ABSTRACT

This study offers empirical analysis of how literacy practices in a contemporary enactment of the Montessori approach reflect and deviate from Maria Montessori's original stance on literacy learning and teaching. Because few studies have systematically examined organized literacy practice in Montessori classrooms, it is not known how contemporary enactments of this approach reflect Montessori's stance. Given this lack of research combined with the popularity of the Montessori approach, it is prudent to engage in rigorous study of the approach.

This study contributes to a limited number of empirical studies that have examined this approach. Moreover, it examines an area, literacy instruction in early childhood settings, which is a focus of the broader educational community. Indeed, bodies of contemporary research reflect Montessori's emphasis on promoting preschool- and kindergarten-aged children's literacy acquisition as well as her efforts to individualize instruction to complement individuals' unique learning profiles.

The following question frames this study: How do teachers' enactments of one contemporary version of Montessori literacy education reflect and differ from Maria Montessori's views of learning—literacy learning, in particular—and teaching?

This study's conceptual framework was inspired by the sociocultural perspective in that literacy activity served as the primary unit of analysis.

Qualitative and quantitative data were collected in 11 public Montessori classrooms, serving preschoolers and kindergartners. Inductive qualitative analysis was employed to generate assertions regarding documented patterns of literacy activity. Qualitative findings were supplemented by descriptive statistics pertaining to such patterns of practice as the degrees to which various activity types (e.g., reading activities, handwriting activities) accounted for overall literacy activity.

Taken collectively, findings reveal that teachers implemented practices that generally reflected Montessori's views. Although not all practices squared perfectly with her stance, deviations did not represent complete departures from it. Instead, deviations reflected teachers grappling with seemingly competing principles of her approach and teachers contending with outside pressures to assure that children acquired key literacy skills.

This dissertation concludes with a discussion of findings in relation to Montessori's views and to contemporary research. Some documented practices bode well when considered in relation to contemporary research, such as how teachers tailored instruction to individuals' skill levels and socio-emotional characteristics. Other documented practices raise questions for Montessori educators when considered in relation to contemporary research, such as the nature of teacher participation during open-ended writing and book-reading activities. Implications are presented regarding how Montessori teachers participated in meaning-making activities as well as regarding other patterns of practice.

CHAPTER I

INTRODUCTION

The present study examines the nature of literacy activity in a contemporary enactment of the Montessori approach in early childhood classrooms. This comprehensive educational approach, which Maria Montessori designed and first implemented over 100 years ago, has enjoyed a considerable presence both within and outside of the United States for the past several decades. Montessori's epistemology and instructional practices embody principles of effective classroom instruction as researched by scholars from a range of perspectives (Chattin-McNichols, 1992; Epstein et al., 1996; Lillard, 2005; Roopnarine & Johnson, 2000). Although Montessori education has endured over time and embodies principles of effective instruction, few empirical studies have examined how contemporary practice aligns with the approach put forth by Montessori (Chattin-McNichols, 1992; Manner, 1999; Roopnarine & Johnson, 2000).

Montessori conceived of her educational approach around the turn of the 20th century, and it was initially implemented in 1907 in Italy, her homeland. Her approach enjoyed a brief period of popularity in the United States in 1912, and it reemerged in the 1960s. The Montessori movement has enjoyed steady growth

in the United States since the 1960s, stemming from public support, especially from parents. There are currently more than 5,000 Montessori schools in the United States (Epstein, Schweinhart, & McAdoo, 1996). Although most of these are private schools, more than 100 public school districts in the United States currently boast Montessori programs, which operate as charter schools, magnet schools, and Head Start programs (Chattin-McNichols, 1992).

Scholars who have summarized contemporary research on the Montessori approach have bemoaned the limited extent to which it has been examined systematically (Chattin-McNichols, 1992; Manner, 1999; Roopnarine & Johnson, 2000). Similarly, the approach has been barely mentioned in seminal accounts of educational reform (e.g., Cremin, 1965; Ravitch, 2000). This is perplexing given that the approach has withstood the changing tides of education research and practice and that it has been implemented widely. The lack of research on Montessori programs is also perplexing given that elements of the epistemology and teaching practices conceived of by Maria Montessori reflect broader principles of effective classroom instruction (e.g., Epstein et al., 1996; Lillard, 2005; Roopnarine & Johnson, 2000).

Montessori developed a comprehensive program of instruction. Indeed, in addition to presenting an epistemology and outlining particular learning objectives for children of all ages, Montessori developed instructional materials, described a broad range of instructional methods, and designed and equipped classroom environments. Montessori's program encompasses a variety of subjects, including reading, writing, science, geography, and mathematics. In

addition to these more traditional “academic” subjects, her program features practical life activities and sensorial activities, which she designed to promote learning by tapping multiple senses (e.g., tactile, auditory, visual). She designed her program to accommodate a wide range of ages. Although Montessori education is commonly associated with young children, she proposed a theory of human development that extended from birth into adulthood, and she developed instructional programs for children from birth through adolescence.

Given the popularity of the Montessori approach, it is prudent to engage in close, empirical, and rigorous study of the approach. Because few studies have systematically examined organized literacy practice in Montessori classrooms, it is not known how contemporary enactments of this approach reflect Montessori’s conceptions of learning and classroom instruction. Indeed, despite the resilience of the Montessori method—or perhaps because of it—epistemological beliefs and teaching practices of Montessori educators vary (Chaney, 1991; Daoust, 2004; Zener, 1994). Thus, it is important to examine actual practice in Montessori classrooms rather than to assume that practice reflects Maria Montessori’s writings or other written accounts of the approach.

To add to the limited body of research on Montessori education, I have chosen to focus on literacy activity in Montessori early childhood classrooms. I decided to examine these classrooms because I have taught preschoolers and kindergartners in Montessori settings and because young children’s literacy acquisition is a subject that I have studied rather extensively. I am familiar with Montessori’s views on literacy learning. Prior to teaching in a Montessori setting,

I completed a university-based Montessori teacher-training program, which included a course that presented a Montessori approach to literacy instruction. As a classroom teacher in a Montessori school, I enacted literacy practices that this course addressed. Through my doctorial coursework and research positions at The University of Michigan, I have attained knowledge of other scholars' views of literacy instruction and literacy learning as well as of contemporary research in these areas.

In addition to contributing to a limited body of research on the Montessori approach, this study probes areas of inquiry that are reflected in contemporary research on young children's literacy learning. Indeed, bodies of contemporary research reflect Montessori's emphasis on promoting preschool- and kindergarten-aged children's literacy acquisition (e.g., NICHD 2000; Shonkoff & Phillips, 2000; Snow et al., 1998) as well as her efforts to individualize instruction to complement individuals' unique learning profiles (e.g., Connor et al., 2005; Foorman & Torgeson, 2001).

I located this study in Montessori public schools even though the approach is typically associated with private schools. Despite popular perception of Montessori as private education, more than 100 public school districts feature Montessori programs (Chattin-McNichols, 1992). I situated my study in public schools because public schools more closely reflect the actual diversity of the population than private schools, which tend to draw from a more homogeneous segment of the population.

In this study, I examine how patterns of practice in a contemporary enactment of the approach align with Montessori's views on teaching and literacy learning. The focus of this study pertains to an area, literacy activity in early childhood settings, which constitutes a focus of the broader educational community. My discussion of the findings reveals how the Montessori approach and contemporary research and practice hold the potential to inform one another. I next outline specific lines of inquiry that guided this study.

Lines of Inquiry

What might be learned from a systematic examination of literacy practices enacted in Montessori classrooms that could improve Montessori education *writ large*? With this broad question in mind, I conducted a year-long empirical study of literacy activity in Montessori classrooms. The following research questions framed this study:

How do teachers' enactments of one contemporary version of Montessori literacy education reflect and differ from Maria Montessori's views of learning—literacy learning, in particular—and teaching?

a. How do these teachers' practices reflect and differ from Montessori's view of the child and the practices Montessori described for attending to the child?
b. How do these teachers' practices reflect and differ from Montessori's view of the teacher's role and the practices Montessori described for teachers' enactments?

c. How do these teachers' practices reflect and differ from Montessori's view of the physical classroom environment and the practices Montessori described for attending to the environment?

My examination of classroom literacy activity was sensitized by central principles of Montessori's views of learning, particularly those views closely tied to literacy instruction. Each of the above sub-questions addresses a primary component (i.e., the child, the teacher, and the classroom environment) of Montessori's approach. The three-pronged framework of the child, the teacher, and the environment has been employed in comprehensive accounts of the Montessori approach (e.g., Chattin-McNichols, 1992; Lillard, 2005; Standing, 1957; Turner, 1992).

Montessori viewed children as active learners. Based on my analysis of documented patterns of classroom practice, I assert that multiple practices reflected her view. These practices include a relative lack of instructional time devoted to whole-class activities in these classrooms and an abundance of child-managed activities. However, I also maintain that although children frequently enacted activities independently and with minimal levels of teacher support, teachers routinely enacted practices that limited children's overall control over which activities they enacted, as well as how children enacted activities. This pattern of practice warrants attention when viewed in relation to Montessori's conception of the child as well as to her descriptions of teachers' roles in determining which activities children enact. I consider practices with regard to

Montessori's views, and in the final chapter, I view practices in relation to contemporary research.

Although Montessori implemented classrooms in which children directed much of their own activity, she also believed that children benefited from some direct interaction with teachers. Montessori observed that children learn at unique rates and called for teachers to tailor instruction to individuals. This aspect of Montessori's stance constitutes the focus of my examination of the teacher component. Based on my examination of teachers' instructional moves, I assert that teachers in classrooms in the present study, by and large, provided individualized instruction. Indeed, teachers tailored instruction to children's skill levels as well as to their socio-emotional characteristics. This finding was evidenced in such factors as the nature of instructional groupings and teachers' routine usage of evaluation to assign activities based on individuals' skill levels.

Montessori strove to create instructional materials that children could use independently of teacher support. My examination of the environment component included an exploration of Montessori's (1986) notion of "auto-education." Based on my examination, I hold that only select instructional materials provided corrective feedback and that corrective feedback was virtually absent in materials used in such fundamental activities as book reading and the writing of connected text. Bearing in mind Montessori's views and contemporary research, I discuss possible implications of this finding in the final chapter.

The Montessori approach features multiple interrelated components. As such, I deem it prudent to view findings through the lens of Montessori's

epistemology rather than to conceive of these practices as disparate phenomena. The content and organization of this dissertation facilitate this approach, enabling the reader to contemplate the assertions that I put forth while bearing in mind the theoretical underpinnings of Montessori's epistemology as well as the instructional practices that she described.

Organization of Chapters

In chapter two, I present a history of the Montessori movement and a description of Montessori's epistemology. I then describe Montessori's specific views on literacy learning and literacy instruction. Finally, I review research that has been conducted in Montessori settings.

In chapter three, I describe the research design and methods. To examine the precise nature of literacy activity in Montessori classrooms, I collected and analyzed data in 11 Montessori classrooms, which served preschoolers and kindergartners. I used both qualitative and quantitative methods of data collection and analyses. The conceptual framework guiding this study is presented in this chapter. This framework addresses issues related to literacy activity in early childhood education settings. I outline a Montessori approach to literacy instruction in early childhood settings. In describing this approach, I emphasize that there is no *one* Montessori approach, citing research studies that have documented variability in Montessori teachers' beliefs and classroom practices. I conclude chapter three by describing my specific experiences with Montessori

education and explore how these experiences may have contributed to my interpretation of the approach.

I present research findings regarding documented patterns of practice in relation to Montessori's approach in chapters four and five. In chapter four, I examine findings regarding which types of literacy activities were enacted as well as the extent to which various types of activities accounted for overall literacy activity. In doing so, I explore the general literacy contexts in which students and teachers participated. In chapter five, I examine how documented practice within these contexts reflected and differed from Montessori's views. I put forth assertions regarding these practices for each of the three components of the Montessori approach (the child, teacher, and environment).

In chapter six, I discuss findings in regard to Montessori's epistemology as well as to the instructional practices that she described. I also consider the findings in relation to contemporary research on young children's literacy acquisition and literacy instruction. I identify ways in which contemporary research could inform practice in Montessori settings. I also point to ways in which documented practices in these classrooms hold the potential to inform contemporary research and practice. I summon Montessori educators to reflect on documented practices that hold the potential to contribute to – and in some cases, to detract from – the quality of classroom literacy activity in Montessori classrooms.

CHAPTER II

REVIEW OF RELATED LITERATURE AND RESEARCH

This chapter is divided into four sections. First, to orient the reader to Montessori education, I present a history of the Montessori movement. Second, I outline Montessori's theory of learning, which covers her general views on learning and teaching. Third, I focus on literacy instruction by describing Montessori's views on literacy learning and on the teaching practices that she implemented to provide literacy instruction. Fourth, I describe critiques of the Montessori approach and findings of research studies that have examined Montessori programs.

A History of Montessori Education

Maria Montessori was born in the town of Chiaravalle in 1870, on the brink of Italy's entrance into the industrial age. Italy was unified as one territorial entity the year that Montessori was born (Kramer, 1988). Italy's unification was followed by a general sense of optimism. Italians were confident that they would soon rid their country of the widespread poverty and illiteracy that had plagued their homeland for centuries. School reform was expected to be one of the central mechanisms that would promote positive change, and Italian schools did change. Control of public schools was transferred from the private sector and church to

the state, and elementary, junior high, and high school became compulsory for all Italian children (Kramer, 1988).

In Italy, the burgeoning sense of optimism that was sparked by its unification in 1870 was deflated by the end of the century. Italy fell far short of realizing its economic and educational aspirations (Kramer, 1988), and its public school system, which had been expected to contribute substantially to the nation's prosperity, lacked ample funding and was in disarray (Kramer, 1988). It was during this period that Montessori attended school. Montessori (1995) recalled that students' roles were relatively passive, with hour after hour of drill-oriented instruction. Furthermore, Italian schools were "crowded and dirty" and lacked adequate teaching supplies, such as books and pens (Kramer, 1988). Montessori displayed little enthusiasm for school, and her academic performance was mediocre (Standing, 1957).

When it came time for Montessori to select a career path, she was certain of one thing: she did not want to become a teacher (Standing, 1957). Instead, and much to the chagrin of her father, who assumed that she would embark on a female-oriented career path, Montessori set her mind on becoming a physician. There were no Italian female physicians at the time. In 1896, Montessori graduated from medical school, becoming the first female Italian physician.

During her first job after medical school, Montessori (Kramer, 1988) worked in a psychiatric clinic with "feebleminded" children who had been written off by her colleagues as un-educable. Montessori, however, sensed potential in these children and began studying the works of Jean Itard and Edouad Seguin,

who had developed instructional materials for similar children. They drew on Locke's epistemology, viewing mental development as being heavily influenced by sense impressions, and designed manipulative-based activities. Montessori constructed an educational environment, which included many of these materials. Her young patients demonstrated rapid intellectual and social growth. By Montessori's accounts, they passed the standardized exams that were taken by their same-age peers in regular Italian schools (Lillard, 1972). She also noted that her patients demonstrated improved behavior and became increasingly self-sufficient.

These results prompted Montessori to wonder how normal children would respond to her program of instruction, which she gained the opportunity to discover when she was asked to run a day care center in the slums of San Lorenzo, Italy for sixty children between the ages of two and six. She opened the first Casa Dei Bambini there in 1907. In addition to learning "academic" skills, including how to write and read, the children became self-directed and self-disciplined. As others began to take note of the remarkable progress of the children, the Casa Dei Bambini gained worldwide attention. Three months after opening the first Children's House, Montessori opened another one in San Lorenzo. Over the next few years, she opened schools in other Italian locations (Kramer, 1988). Montessori's method soon became an international phenomenon. By 1912, there were Montessori schools in Switzerland, and several countries had plans to implement the program of instruction, including India, China, Mexico, Korea, Argentina, Russia, and America (Kramer, 1988).

In America, where the progressive movement was gaining popularity, many educators demonstrated interest in the Montessori method. Over four hundred superintendents requested information about the Montessori method (Kramer). Information about Montessori's method extended well beyond its initial impetus, word of mouth, as it was disseminated in newspapers, books, magazines, and professional journals.

Thus, by her first visit to America in 1913, Montessori was fairly well-known by professional educators and the general public alike (Standing, 1957). Montessori remained busy during her visit, lecturing and exchanging ideas with America's social and academic elite. Montessori delivered two sold-out lectures at Carnegie Hall that were presided over by John Dewey (Standing, 1957). In Philadelphia she met with Thomas Edison and Helen Keller, who considered herself, "a product of the Montessori method" (Standing, 1957). In Washington DC, she met with Alexander Graham Bell, who became one of her most adamant supporters. He eventually opened a Montessori school for his two grandchildren and become president of the Montessori Educational Association (Standing, 1957).

The first American Montessori school was opened in 1911 in Tarrytown, New York under the direction of Anne George, who received her training from Montessori herself (Chattin-McNichols, 1992). It is not surprising that George received her training directly from Montessori. Montessori considered herself the only person who could adequately train teachers in her method, and she regularly offered training courses in Italy. Sixty-seven Americans attended

Montessori's first international training course in Rome in 1913, and by the end of that same year, there were over 100 Montessori schools operating in America (Kramer, 1988). The enthusiasm that Americans displayed for the Montessori method, however, would be relatively short-lived.

The enthusiasm that greeted Montessori during her first visit to America in 1913 subsided before the end of the decade. Kramer (1988) noted that by 1918, "Montessori was all but forgotten by the American public. Ten years later hardly anyone but a few professors of education knew her name" (p. 16). This sharp decline in the interest and support of her method in America is difficult to account for completely, though it can be linked with several factors. Some of these factors relate to who Montessori was – a foreigner, a woman, and a Catholic (Kramer, 1988). Montessori's practices regarding teacher training may have also put the Montessori movement at a disadvantage, particularly in America. Montessori insisted that the only valid way of being trained in her method was to attend a training course that was given by her. Although she regularly gave courses, they were held in Italy, making it difficult for Americans to attend. Montessori may have adopted this approach to increase the fidelity in the implementation of her method. Business matters, however, may have also played a role in her approach to teacher education. Montessori had relinquished her appointment at the University of Rome, and her primary sources of income came from sales of her books and from tuition for her teacher training programs.

The most substantial blow to the Montessori movement in America, I believe, was dealt by William Kilpatrick. Kilpatrick (1914), a disciple of Dewey,

visited the original Casa Dei Bambini in 1913 and published *The Montessori System Examined* a year later, which was a critique of the Montessori method. Kilpatrick, a professor at Teachers College, was highly influential in the educational community, and his critique was scathing. He repeatedly accused Montessori's method of contradicting "scientific" thought, and considered Montessori's notion of transfer of learning and of sense training particularly problematic. The progressive movement professionalized the field of education by inducing a shift of control over America's public schools from the general public to professors of education and psychology and to school administrators. Given Kilpatrick's status in the field of education and the degree to which professionals influenced the field of education, *The Montessori System Examined* may have contributed more than any other factor to the declining popularity of Montessori education in America.

The presence of Montessori education in America changed little during the ensuing years (Kramer, 1988). The movement had been virtually eradicated in America by 1920 and was still decades away from making its resurgence. Because the Montessori movement remained, on the whole, alive and well in Europe during this period, it was poised to make its resurgence when global competition would influence Americans to demand schools that targeted reading and math skills. The approach itself expanded during the 1920s. Montessori extended it through high school.

The Montessori movement suffered a temporary setback in Europe during the late 1930s. Montessori received the opportunity to further promote her

schools in Italy when Mussolini asked her to oversee the implementation of her program in more public schools (Standing, 1957). It is not entirely clear why Mussolini made this request, considering that one of the primary aims of Montessori's program was to encourage children to become independent thinkers. Kramer (1988) speculated that his support of the method was attributable to the reputation that it had in promoting literacy and math skills. Mussolini might have also been unaware of the overarching social aims of the method. Montessori initially accepted Mussolini's offer and supervised the growing number of public Italian Montessori schools. However, when Mussolini's political intentions became clear to Montessori, she withdrew support, refusing to work with the Italian school system. This decision put her life in jeopardy. Around this time, her method also fell out of favor in Nazi Germany. An effigy of Montessori and her books were burned at a public school in Berlin (Kramer, 1988). Montessori's future became unclear.

After failing to comply with Mussolini's request to oversee Italy's Montessori schools, Montessori fled to India, where she lived for several years (Standing, 1957). During her stint in India, she refined her elementary and high school curricula, wrote several books, personally trained over 1,000 Indian teachers, and supervised Montessori schools, which, like her original schools, served primarily children from impoverished families (Kramer, 1988). One of her schools served children who had been sent to her village from larger cities that were in constant danger of being bombed.

It was her work on peace education that seems most central to her during her time in India. Both the elementary and high school curricula that she refined during this period stressed cultural studies and emphasized the interrelatedness of people, cultures, and countries. After spending several years in India, Montessori moved to Amsterdam at the age of seventy-six, where she continued to develop and promote her method. Her efforts in promoting peace were recognized. She was nominated for the Nobel Peace Prize in 1949, 1950 and 1951 (Kramer, 1988). On May 6th, 1952 Maria Montessori died.

Nearly ten years after Montessori's death, the Montessori movement began a resurgence in the United States that continues to this day. Nancy Rambusch, founder of the American Montessori Society, attributed its rebirth to the calls for more instruction in academics that the launch of Sputnik ignited ("Montessori Form of Teaching Gains," 1964). Though the Montessori approach had been out of favor in America from 1920 through most of the 1950s, its reputation for promoting strong reading, writing, and math skills had never been at issue. In fact, its emphasis on the promotion of these skills may have contributed to its unpopular position, as neither developmental theories nor educational programs of that period dovetailed with explicit instruction of such skills for preschool- and kindergarten-aged children. In 1958, Rambusch opened the Whitby School in Greenwich, Connecticut, and an additional 100 Montessori schools opened by 1964 ("Montessori Form of Teaching Gains," 1964). The Montessori movement crossed over to the public sector in 1975, when the first Montessori public school opened in Cincinnati, Ohio (SandsMontessori.cps-

k12.org, Retrieved 5-30-2004). Approximately 100 public school districts currently boast Montessori schools (Epstein et al., 1996).

Montessori's Theory of Learning

A primary desired outcome of Montessori's (1995) approach is "normalization,' which Montessori described as a state of being composed of such qualities as discipline, "sociability," and a strong work ethic (p. 204). Montessori perceived normalization largely as an outgrowth of concentration, and she structured classrooms to facilitate self-directed activity that encouraged children to extend their powers of concentration.

Montessori (1995) also valued and sought to promote independence. Her emphasis on independence could be mistakenly associated with a disregard for social development. However, Montessori held that independence serves as the foundation for social development, noting that the ability to function with others depends on the ability to control one's behavior. She emphasized self-discipline and self-sufficient behaviors. Moreover, she was a Progressive, and she sought to better society through education and spent much of her career writing about peace education. Her efforts did not go unnoticed. As noted above, she was nominated for the Nobel Peace Prize three times. Montessori viewed her instructional approach as promoting democracy by equipping children with self-discipline and with the skills and knowledge that she deemed necessary for making informed decisions as adults. Her instructional approach was based on her general theory of learning, which I summarize in this section.

In addition to outlining the principles of Montessori's epistemology, I describe particular materials addressed in her writings. Montessori wrote at length about the educational materials used by her students and prescribed instructional activities that incorporated these materials. In addition to incorporating materials that she had developed in her classrooms, she used materials designed by contemporaries.

Because principles of Montessori's theory permeate all areas of the Montessori curriculum, this section does not pertain exclusively to literacy learning. I devote this section to her general theory of learning to provide the reader with a foundation that the reader can relate to my later description of Montessori's views of literacy learning and instruction. My description of her theory is organized around three principal components: the child, the teacher, and the environment. This three-pronged framework has appeared in comprehensive accounts of the Montessori approach (e.g., Chattin-McNichols, 1992; Lillard, 2005; Standing, 1957; Turner, 1992).

The remainder of this section is divided into three subsections. Each subsection addresses one component. However, given the interrelatedness of these components in Montessori's theory, it is not possible to provide a thorough account of one component without referring to the other two. Consequently, each subsection *emphasizes* a particular component but does not cover it exclusively. Furthermore, the following description is not an exhaustive account of Montessori's epistemology. Rather, it is intended to provide the reader with a sufficient grasp of the theory's primary theoretical underpinnings to facilitate an

understanding of the subsequent description of Montessori's views on literacy instruction and to aid in the interpretation of the present study's findings. For more comprehensive accounts of Montessori's theory of learning, see Montessori (1985; 1995), Standing (1957), Chattin-McNichols (1992), and Lilliard (2005).

The Child

Montessori (1995) formed a stage theory that encompassed the first twenty-four years of life. She identified four "planes of development." The first plane of development, which extends from birth to age six, covers the ages of children in the present study. This plane is characterized by Montessori's notion of the "absorbent mind," which holds that young children are extraordinarily receptive to environmental stimuli. Montessori considered this first plane of development the most critical plane:

> There are many who hold, as I do, that the most important period in life is not the age of university studies, but the first one, the period from birth to age six. For that is the time when man's intelligence itself, his greatest implement, is being formed. (p. 216)

Montessori (1995) viewed the second plane of development, which extends from ages six to twelve, as a period of consolidation during which children refine the skills and knowledge that they acquired during the first plane. The ability to think abstractly is the most momentous development of this plane. Montessori considered the third plane, which extends from ages twelve to eighteen, as a period of tremendous growth. During this plane, she held that children undergo great physical change and devote much attention to social development. The fourth plane begins at eighteen and ends at twenty-four. Like

the second plane, the fourth plane represents another period of consolidation, as young adults continue to develop and refine their identities that took root during earlier developmental planes.

Although Montessori (1964) contended that individuals develop at unique rates, she held that all children pass through the same general developmental planes. She conceived of numerous windows of opportunities in which children possess capacities and drives to efficiently acquire specific sets of skills. Montessori labeled these windows of opportunity “sensitive periods.” She identified, among others, sensitive periods for language, movement, order, and imagination. By describing her thoughts on how children capitalize on sensitive periods, this section highlights that Montessori’s view of children as active learners is central to her conception of the child.

Although Montessori (1995) held that all children pass through the same sensitive periods at roughly the same ages, she observed that children pass through them at varying rates. She observed that children of the following three spans share sensitive periods: ages three to six, ages six to nine, and ages nine to twelve. Montessori divided her instructional approach accordingly, grouping three- to twelve-year olds into three grade levels corresponding to these three age spans.

Montessori (1995) contended that the degree to which children capitalize on sensitive periods depends on their powers of concentration: “The first essential for the child’s development is concentration. It lays the whole basis for his character and social behavior. He must find out how to concentrate and for

this he needs things to concentrate upon" (p. 222). She conceived of concentration as an all-engrossing state. Furthermore, she believed that children emerge from periods of deep concentration rejuvenated, rather than fatigued. To reduce the likelihood of interrupting children engaged with classroom activities, she incorporated long, uninterrupted work periods in her classrooms. In addition, Montessori designed activities aimed at eliciting concentration. To this end, she developed and implemented activities that required students to use precise movements and to follow complex sequences of steps. Furthermore, classroom activities varied greatly according to level of difficulty to challenge a wide range of student ability levels.

Montessori (1985) thought that learning depended largely on the extent to which children engaged actively with others and with objects:

> Adults look upon a child as something empty that is to be filled through their own efforts, as something inert and helpless for which they must do everything, as something lacking an inner guide and in constant need of inner direction . . . An adult who acts in this way, even though he may be convinced that he is filled with zeal, love, and a spirit of sacrifice on behalf of his child, unconsciously suppresses the development of the child's own personality. (p. 16)

Montessori (1964) noted that her approach ran contrary to the instructional format commonly employed in Italy near the turn of the 19th century, which she depicted as students sitting passively as teachers lectured. Montessori associated this format with the conviction that children's minds were blank slates upon which teachers impart knowledge. Based on her systematic observations of and work with young children, she determined that learning is promoted when children physically manipulate objects. In particular, she observed a strong

connection between the hand and the developing mind. Based on this premise, she designed an array of materials that lent themselves to physical manipulation.

In addition to perceiving that physically manipulating objects promoted learning, Montessori (1995) deemed it important to allow children to select which classroom activities to enact. She held that children are inherently drawn to activities that enable them to capitalize on their sensitive periods. Accordingly, her students selected their own activities and spent the vast majority of the school day engaged in individual and small-group activities.

Montessori's view of children as active learners is intertwined with her contention that intrinsic motivation, rather than extrinsic motivation, serves a critical role in development. She believed that children are motivated, either consciously or unconsciously, to seek experiences that optimally promote their development and that by engaging in such experiences, children advance their powers of concentration, which drives their overall development. I return to Montessori's thoughts on intrinsic motivation in the following section, which addresses the teacher component of her epistemology.

The Teacher

Montessori (1995) used the term "directress" to describe the person who would be typically labeled a "teacher." Her choice of this term is indicative of her view of children as active learners, as she perceived the directress's primary role of promoting children's learning as being indirect. Indeed, Montessori maintained that a primary task of the directress was to design, equip, and maintain an

appropriate classroom environment. Nevertheless, I use “teacher” rather than “directress” henceforth because the reader is more likely to be familiar with “teacher” than “directress.”

Montessori (1995) designed an educational environment in which teachers tailored instruction to individual children, and she outlined some ways in which teachers could interact with children in the contexts of instructional activities. She contended that teachers play an essential role in helping children acquire skills that they would not learn implicitly. Montessori developed a series of activities based on her instructional materials. Montessori often described these activities as one-on-one teacher-child interactions. In addition, her descriptions frequently outlined how teachers could use particular materials during these activities.

The presence of rather direct teaching practices might appear at odds with Montessori’s view of children as active learners. To reconcile how these seemingly incongruent characteristics coexist within her approach, it is helpful to consider that her notion of active learners induced her to create a classroom in which children spent the vast majority of time working independently and with their classmates. Consequently, the amount of time that any given child had direct contact with teachers was limited. The indirect nature of the teacher’s role was reflected in the predominance of children’s independent activity. In contrast, the direct nature of the teacher’s role was evident in a relatively limited amount of child-teacher interactions.

Montessori viewed children as passing through developmental stages at varying rates. This view framed Montessori’s thoughts regarding how teachers

should plan for and engage in instruction. Montessori (1995) deemed it essential to match task difficulty to individuals' skill levels, holding that doing so promoted intrinsic motivation: "The essential thing is for the task to arouse such an interest that it engages the child's whole personality" (p. 206). Montessori theorized that for children to become motivated to reach such engagement, it was necessary to enjoy ample opportunities to extend their ability levels.

I next describe Montessori's conception of the classroom environment and a key characteristic of her instructional materials.

The Classroom Environment

Montessori (1995) regarded the physical classroom environment as an integral component of her instructional approach. The manner in which she developed a theory of learning was child-centered in that it was based on her systematic observations of young children. She approached the design of the classroom environment in a similar vein, striving to create an environment that aligned with children's observed traits. She constructed child-sized furniture. In addition to adding to the comfort and ease with which children managed within the classroom, she held that by removing aspects of adult-sized furniture that might impede children's actions, she would gain a more accurate glimpse of children's innate tendencies, enabling the refinement of her approach.

Montessori (1964) meticulously designed a classroom and furnished it with materials in accordance with her theory of learning. She labeled the outcome of her efforts "the prepared environment." Her conception of the

prepared environment included the design and organization of classroom furniture, classroom décor, and instructional materials. She considered classroom materials as integral to the classroom environment. In the following paragraphs, I describe key elements of the prepared environment and then discuss a central characteristic of Montessori's instructional materials.

Montessori (1964) constructed a classroom that was stocked with brightly colored materials, and child-sized desks and tables. These desks and tables, rather than being oriented in the same direction, were scattered across the classroom, facing various directions. In fact, a focal point from where a teacher could provide whole-class instruction was absent. The wide range of activities on the shelves is indicative of the high degree of choice that Montessori sought to offer children. Her classrooms held materials from various curricular areas that Montessori addressed, including practical life, sensorial, math, and language. Although these areas were represented in each of the three grade levels (three- to six-year-olds, six- to nine-year-olds, and nine- to twelve-year-olds), the following descriptions of these areas are based on the level that served three- to six-year-olds.

Practical life activities aimed at teaching children how to care for themselves, for their environment, and for others. These activities targeted such skills as shoe tying, buttoning, and dish washing. Montessori observed a deep sense of dignity in children and contended that by learning how to care for themselves, children become increasingly self-confident and self-directed. Sensorial activities required children to use various senses (e.g., visual, auditory,

tactile) to grade, sequence, and sort objects. Children could manipulate math activities as they learned abstract concepts, such as numeral recognition, understanding of mathematical operations, and knowledge of the decimal system. Language materials targeted a range of literacy skills. I address these materials in the following section in which I specifically examine Montessori's thoughts on literacy learning and literacy instruction.

Montessori believed that classroom décor should reflect home décor. She equipped her classrooms with mirrors, pictures, flower arrangements, and photographs, which were positioned according to a young child's stature. Decorative items were selected for their aesthetic qualities and were intended to instill a sense of comfort and contentment that Montessori associated with the home. She did not erect displays that targeted "academic skills," such as alphabet strips.

As noted above, Montessori (1964) viewed children as active learners, labeling her brand of self-discovery "auto-education." To facilitate auto-education, Montessori developed a set of materials that were disposed to physical manipulation. She associated sense training with cognitive growth and designed many materials to stimulate and refine specific senses, including visual, auditory, tactile, and olfactory senses. For instance, to help children learn letter sounds, Montessori designed the sandpaper letters. These enabled children to engage their auditory, visual, and tactile senses, thus, according to Montessori, promoting the learning of letter sounds and shapes. I further describe the sandpaper letters in the following section.

Montessori (1964) contended that transfer of learning was fundamental to mental development. This element of her epistemology is evidenced in the materials that she designed, as well as in the activities that she included in her curriculum. For instance, she designed materials that children could manipulate based on the base-10 numerical system. She presumed that by working with these materials, children would develop implicit understandings of the decimal system.

Montessori assigned both direct and indirect aims to “practical life” activities, including dishwashing, shoe tying, and sewing. The direct aims of such activities are to learn how to wash dishes, to tie shoes, and to sew. Although she saw some value in the acquisition of manual skills, her rationale for including practical life activities extended beyond the acquisition of these skills. By working these activities, Montessori contended that children refined fine motor skills that would later help them master handwriting. She also held that practical life activities enhanced their self-regulatory functions, such as by extending their powers of concentration. The metal insets also reflect her espousal of transfer of learning. Although Montessori designed the metal insets to promote children’s handwriting skills, she did not intend for children to use the metal insets to form letters. Rather, Montessori intended for children to use this material to draw shapes, a process that, according to her, fosters overall writing development. I describe the metal insets further in the following section.

Montessori (1964) sought to incorporate a built-in control of error into her materials. This characteristic of materials reflects her view of children as active

learners. Montessori maintained that this feature promoted auto-education by enabling children to recognize their own mistakes rather than having to rely on teacher feedback.

Montessori's design of the *cylinder block* illustrates the built-in control of error feature. The cylinder block is composed of a wooden block with ten holes and a set of ten wood cylinders of varying diameters. The size of each hole corresponds to one cylinder. To use this activity, children remove the cylinders from the block and then attempt to return them. Unless all of the cylinders are returned to the correct holes of the block, it is impossible to return all cylinders. Hence, it is not necessary for teachers to point out when children make mistakes because students can see for themselves all of the cylinders have not been returned. By making children less dependent on teachers, Montessori held that such materials facilitated independent work, thus promoting concentration and persistence. Although the self-correcting design is readily apparent in some materials, such as the cylinder block, it is less apparent in other materials, especially those in the language area. In chapter five, I examine the extent to which literacy activities enacted in classrooms of the present study provided corrective feedback.

I next describe Montessori's thoughts on literacy acquisition and instruction. In doing so, I further elucidate some of the aforementioned elements of her approach.

Montessori's Thoughts on Literacy Learning and Instruction

Montessori theorized about literacy development and designed an approach to teach children how to write and read. Montessori's thoughts on literacy development as well as her literacy instructional practices complement her general theory of learning. In the following paragraphs, I explore Montessori's views on literacy learning and instruction and describe literacy materials and activities that she implemented in her classrooms.

Montessori's notion of the sensitive period for language is related strongly to her approach to classroom literacy activity. Montessori (1995) held that this sensitive period endures from birth through six years. Montessori contended that young children innately attend to language closely during this age span and noted the rapid pace of their language development. Montessori used the term "the absorbent mind" to describe the efficient learning that takes place during the first six years of life, and she held that language acquisition was an area that enjoyed such rapid growth. Montessori believed that children pass through specific stages of language development: "All children pass through a period in which they can only pronounce syllables; then they pronounce whole words, and, finally, they use to perfection all the rules of syntax and grammar" (p.111).

Although Montessori considered the absorbent mind a universal phenomenon, she maintained that children's immediate environment determined the extent to which they capitalized on the sensitive period for language. To acquire language optimally, she held that children had to be in the presence of adults who modeled appropriate language. She also maintained that children had

to be afforded with opportunities to exercise their burgeoning command of language.

In her interactions with and observations of children, Montessori (1995) perceived a strong desire in young children to develop oral language and to acquire understandings of written language. Indeed, before she had introduced literacy materials in her classrooms, she reported that her students began asking to be taught how to read and write. Bearing in mind this expressed desire of Montessori's students as well as her observation of the impressive pace of oral language development, Montessori anticipated that children under the age of six would be especially receptive to participating in organized instructional activities that targeted literacy skills. In addition to benefiting from activities that explicitly addressed characteristics of written language, she held that children's language and literacy development was dependent on experiences that did not entail conventional literacy skills.

Indeed, Montessori associated the innate tendency to advance language development to "the mathematical mind," a term that she borrowed from Blaise Pascal, a 17th century mathematician and philosopher (Standing, 1957). He held that humans have an innate tendency for math. Montessori espoused this view and perceived similarities between the acquisition of math and language. Both of these areas, she contended, require understandings of order and exactness. Consequently, prior to introducing children to literacy materials, she introduced children to exercises in practical life and sensorial activities. She designed these activities, in part, to foster children's senses of order and exactness.

Montessori believed that learning is largely tied to the senses during the first six years of life. She perceived a particularly strong connection between the actions of the hand and the development of the mind. Based on this supposition, Montessori designed three language materials that appealed to the tactile sense: the metal insets, sandpaper letters, and moveable alphabet. Although these materials have various aims, they all call on controlled physical movements. According to Montessori (1995), "…the child's intelligence can develop to a certain level without the help of his hand. But if it develops with his hand, then the level it reaches is stronger" (p. 152).

Montessori designed the metal insets to refine fine-motor skills that are used to control writing utensils. The design of the metal insets reflects the mechanical bent of her conception of how children learn to write. The set of metal insets resembles a collection of stencils. Ten different geometric shapes are represented, including a circle, square, triangle, rectangle, and pentagon. Montessori wrote about children using the metal insets in exploratory manners to make designs and to draw pictures inside the outlines of the insets: "The number of exercises which the child performs with the drawings is practically unlimited" (Montessori, 1988, p. 148). She emphasized that using the metal insets required precise movements, thus preparing the hand for handwriting.

Montessori designed the sandpaper letters to promote children's understandings of grapheme-phoneme associations and letter formation. The sandpaper letters included all letters of the alphabet formed on sandpaper and mounted on thin boards. Montessori (1988) outlined a way for teachers to use

the sandpaper letters with children. Teachers modeled how to trace a given letter by first using only the index finger and then using both the index and middle fingers (Montessori, 1964). Using the sandpaper letters prepared children for both reading and writing, “Touching the letters and looking at them at the same time, fixes the image more quickly through the co-operation of the senses. Later, the two facts separate; looking becomes reading; touching becomes writing” (Montessori, 1964, p. 266).

Montessori also called for teachers to teach letter sounds while using the sandpaper letters. She suggested that teachers implement the *three-period lesson*, a technique employed by Edward Sequin. The first period of the lesson involves the teacher labeling what is being learned. In the case of sandpaper letters, this entails the teacher uttering the phoneme of a given letter. The second period involves the teacher asking the child to recognize a given sound. The teacher places down multiple sandpaper letters, asking the child to identify the letter that corresponded to a particular phoneme (e.g., “Point to the /s/.”). This second period lesson requires the child to recognize what the teacher had presented during the first period. The third period requires children to recall, as opposed to recognize, this information. With the sandpaper letters, the teacher would point to a particular letter and ask the child to produce its phoneme.

Montessori (1964) implemented the moveable alphabet, which was composed of a box that had multiple cutouts of each letter of the alphabet. Once children had learned grapheme-phoneme correspondences using the sandpaper letters, she deemed that children were ready to compose words using the

moveable alphabet. Montessori (1998) considered Italian, her native tongue, “a phonetic language.” She suggested that teachers who taught children to write in written languages that are “not phonetic” adopt a more involved approach to writing words. Whereas Italian students could use moveable alphabets relatively independently given the shallow orthography, she recommended that teachers working with deeper orthographies model how to compose words and encourage children to repeat the words. By using the moveable alphabet, children developed reading skills: “When the child has composed the words in this way [using the moveable alphabet], he knows how to read them. In this method, therefore, all the processes leading to writing include reading as well” (Montessori, 1988, p. 154).

Montessori (1988) outlined how teachers could enact these materials with children. She emphasized, however, that it was children’s self-directed activity with materials that generally accounted for literacy skill gains. Similarly, Montessori (1995) did not attribute the literacy development of her students to their home environments, noting that her students hailed from, “the humblest social levels, and their parents were illiterate” (p.7). Montessori (1995) recalled interactions between her students and visitors, “If visitors asked them, ‘Who taught you to write?’, they often answered with astonishment: ‘Taught me? No one has taught me!’” (p. 7).

In her work with children, Montessori observed that the ability to write preceded the ability to read. Within the sensitive period for language, Montessori (1988) held that at approximately age four, children enter a phase during which

they are particularly predisposed to acquire writing skills. Correspondingly, she regarded age four as the opportune time to commence writing instruction. Whereas Montessori (1964) perceived learning how to write as "exceedingly easy for children," she believed that learning to read required:

> …a much longer course of instruction, and which calls for superior intellectual development since it treats the *interpretation of signs* [Montessori's emphasis], and of the modulation of accents of the voice, in order that the word may be understood. And all this is a purely mental task, while in writing, the child, under dictation, *materially translates* sounds into signs, and *moves*, a thing which is always easy and pleasant for him. (p. 266)

Montessori (1964) emphasized the "abstract" nature of meaning making in elucidating why she viewed reading as a more complex process than writing. She noted the interpretive nature of reading. Despite identifying complexities inherent in reading, Montessori developed methods for teaching young children how to read. Her decision to do so was influenced by requests from her students, as well as from their parents. In addition to the sandpaper letters and moveable alphabets, which Montessori viewed as promoting writing skills *as well as* reading skills, she developed materials that specifically targeted reading skills.

Montessori (1964) implemented activities that required the reading of isolated words as well as activities that required the reading of connected text. She initially introduced labeling activities. She wrote words on slips of paper that corresponded to classroom furnishings, toys, and instructional materials. Children matched these labels to respective classroom objects. Soon after being exposed to such nomenclature activities, Montessori reported that children began reading environmental print, such as that on calendars.

To read connected print, Montessori (1964) introduced activities that required children to read phrases and sentences. One such activity was enacted similarly to the game of charades. Montessori wrote instructions on slips of paper that children read and then acted out, such as by opening and closing blinds in the classroom. She recalled that her students enjoyed this activity, eventually writing their own commands on slips of paper.

Montessori's students also read, "beautifully illustrated books" of "simple fairy lore" (p. 303). Montessori noted that extracting meaning from connected text was not synonymous with decoding text. After listening to a boy read a book, Montessori asked him whether he understood what he had read to which he responded, "No." Montessori (1964) elucidated the difference between decoding and comprehending, "Between knowing how to read the *words*, and how to read the *sense* [Montessori's emphases], of a book there lies the same distance that exists between knowing how to pronounce a word and how to make a speech" (p. 304).

In addition to designing literacy activities for three-to six-year-olds, Montessori (1991) constructed literacy activities for children in elementary grades, producing many "grammar" activities. Children used word study activities to learn about prefixes, suffixes, and compound words. Other grammar activities taught children how to identify various parts of speech. Children also learned how to parse sentences and how to use punctuation.

Montessori's elementary program also featured a reading component. In describing her view of reading in regard to elementary students, as she did in

regard to younger children, she distinguished decoding from comprehension. Moreover, Montessori (1991) criticized schools for focusing on decoding, especially on pronunciation, at the expense of comprehension, arguing, “all of this stress on the physiological mechanics of pronunciation is foreign to true reading” (p. 172). Montessori observed that her grammar activities fostered children’s abilities to construct meaning from print, which she labeled “true reading” (p. 176). To determine whether children comprehended what they read, Montessori asked them to summarize passages.

Montessori (1991) designed “little reading” books for beginning readers. One such book, which featured between one and several sentences on a page, described the physical classroom environment. A page read, “There are green plants and beautiful bouquets of flowers everywhere about the rooms in our school” (Montessori, 1991, p. 180). Elementary students also enacted activities akin to those described above that resembled charades. These activities designed for the elementary classroom featured longer and more complex commands than did the activities that younger children used. As children demonstrated an increased interest in reading, Montessori wrote additional books. Montessori constructed books herself because she, “found a surprising lack of reading for little children in Italian” (p. 196). She applauded American libraries for holding many children’s books.

The Montessori Approach Critiqued and Researched

In this section, I discuss critiques and empirical studies of the Montessori approach, focusing on those that relate most closely to the present study.

From the outset of Montessori's work, her unique educational approach and its rapid spread drew attention from her contemporaries. The most noteworthy critiques of the approach came from Kilpatrick (1914). He was highly critical of the Montessori approach, focusing his criticism on Montessori's emphasis on the transfer of learning. Transfer of learning was bound up with Montessori's epistemology, particularly in how she believed that sense training profoundly affected children's development. For instance, Montessori claimed that using her sensorial materials, which required children to use their senses to categorize, sequence, and grade objects, promoted children's overall intellectual development. In the case of literacy materials, Montessori maintained that the tactile nature of the sandpaper letters fostered children's learning of letter shapes and sounds. Kilpatrick claimed that Montessori overestimated the extent to which her approach allowed for transfer of learning.

Vygotsky (1997), another contemporary of Montessori, presented a more mixed review of the Montessori approach. He reported that Montessori's students acquired writing skills at a fast pace. Vygotsky wrote that in homes where, "books and pencils are used intensively and especially where there are older children, we know that at the age of four to five, the child spontaneously learns to read and write just as he learns the spoken language" (p. 144). He added that children in Montessori classrooms acquire literacy skills in this same "natural way" as happens in such home environments.

Although Vygotsky (1997) recognized that the Montessori approach yielded gains in certain early literacy skills, particularly in children's abilities to form letters and write words, his examination was not without criticism: "writing is taught as a certain motor habit and not as a complex cultural activity" (p. 145). Vygotsky stated, "writing must make sense to the child, must be elicited by a natural want, a need, included in a lifelike task essential to the child" (p. 145). He doubted that Montessori's approach to writing instruction allowed for such meaningful experiences. In short, Vygotsky commended the Montessori approach for teaching the mechanical aspects of writing, but he criticized the approach for not promoting children's understandings of personal and "lifelike" functions of writing.

The Montessori approach has also been evaluated more recently. Epstein, Schweinhart, and McAdoo (1996) have examined the Montessori approach, as well as five other early childhood education approaches, in three general categories: curriculum, teacher training, and dissemination. Their evaluations were largely based on written accounts and documentation of the approaches, including research studies. Within these categories, Epstein et al. probed multiple areas. They determined that the Montessori approach, on the whole, meets criteria for quality early childhood education programs. However, Epstein et al. did note some areas in which the Montessori approach did not fully meet such criteria. More specifically, they gave the Montessori approach "mixed" scores regarding the extent to which it is structured to foster children's social development. Epstein et al. noted that some scholars have, "stated that there is

little explicit focus on social interactions" (p. 70). They also noted that NAMTA, a Montessori organization, contends that Montessori teachers receive training in how to promote children's social development. Epstein et al. also assigned a mixed score for the degree to which children were afforded opportunities to learn, "through exploration of materials and social interactions," holding that classroom materials , "must be used in a prescribed manner" (p. 70).

Roopnarine and Johnson (2000) have also based an evaluation of the Montessori approach on multiple resources, including empirical studies. They have argued that Montessori foreshadowed the whole language movement by emphasizing the mutually dependent relationship between oral language and literacy development. Roopnarine and Johnson (2000) point to many aspects of the approach that are indicative of quality early childhood programs, including multi-age grouping, individualized instruction, the use of manipulatives, and child-centered learning. They claim that these qualities contribute to the quality of Montessori programs: "Much more so than a particular set of didactic materials, these aspects are integral to good Montessori practice and make the Montessori approach a viable option with potent possibilities for contemporary educators" (p. 217).

Considering that the Montessori approach has endured for more than 100 years and that it is implemented widely, relatively few studies have been conducted on Montessori settings. Scholars who have conducted reviews of this research base (e.g., Chattin-McNichols, 1992; Manner, 1999; Roopnarine & Johnson, 2000) have acknowledged the relative lack of research on Montessori

programs. Moreover, there is an even more limited amount of research that has focused extensively on the nature of literate activity in Montessori classrooms. That being said, some studies, albeit a limited amount, have assessed the effects of Montessori schooling on children's learning outcomes. In this section, I outline these studies.

One factor that is difficult to control for when examining Montessori programs is selection bias. That is, given that students are typically not randomly assigned to educational programs (i.e., Montessori or non-Montessori), it is difficult to control for variables associated with parental choice to enroll or not enroll their children in Montessori classrooms. Parents who elect to enroll their children in Montessori programs might be more or less likely than parents who do not enroll their children in Montessori programs to engage in practices that could potentially influence learning outcomes. It is important to bear in mind the potential influence of selection bias while considered findings of these studies. Apart from the first study addressed in this section, random assignment was not employed.

In the late 1960s, approximately 200 children, most of whom were African-American and qualified for Head Start, were randomly assigned to four preschool programs: Montessori, Bereiter-Engelmann (direct verbal instruction), Darcee (a program that blends pre-academic and motivational goals), and traditional (Chattin-McNichols, 1992; Golbeck, 2002). Miller and Dyer employed a pretest-posttest design in this study. At the end of the preschool year, Montessori students preformed significantly higher on the WISC-R Verbal and Performance

IQ test than those attending the other programs. Montessori students performed superior to students in other programs on the California Achievement Test standardized reading measure at the end of second grade. Males derived greater benefits from participating in the Montessori program than did females, as males performed superior to all other groups in math. Males fared especially well in Montessori programs. At the end of second grade, Montessori males, along with females from the control group, earned the highest overall achievement scores and IQ scores. Children who attended the Montessori classrooms seemed to derive long-term benefits, demonstrating superior reading skills in middle school and high school than those who attended the other programs. Miller and Bizzell (1984) conducted a follow-up study to this study, following students through the tenth grade. They found that the reading and math scores of students who had participated in the Montessori program remained significantly higher than those in the other programs.

Chattin-McNichols (1992) reviewed a series of other studies that were conducted in the 1960s and 70s that compared the performance of Montessori and non-Montessori preschoolers on language and intelligence assessments. He concluded the children who attended Montessori schools demonstrated greater short-term gains on these measures than those who attended traditional preschool programs. However, children who attended more "academic" programs, such as Bereiter-Engelmann and the Karnes Ameliorative Program, performed at higher levels at the end of kindergarten than did Montessori students on the same measures.

Dawson (1987) compared the achievement of Montessori students who attended a public school with students who attended non-Montessori public schools. She determined that the Montessori students performed, overall, at levels superior to others in the district. Moreover, although non-minorities in the Montessori school outperformed minorities, the achievement gap between those groups was smaller than it was in the non-Montessori schools. Moreover, minority students at the Montessori school significantly outperformed other minorities in the district.

Faro (1997) compared the performance on standardized tests of matched samples of Montessori and "traditional" students in grades two through five. Second graders attending traditional schools performed superior to those attending Montessori public schools on standardized mathematics assessments. However, by the fifth grade, the Montessori students performed better on measures of language expression and social studies than students attending traditional schools. As was found in the longitudinal studies described above, males appeared to benefit from participating in Montessori schools more than females. At the end of fifth grade, Montessori males outpaced Montessori females as well as males and females from the traditional classrooms.

Manner (1999) conducted a study that compared the reading and math performance of matched samples of Montessori and non-Montessori students on the Stanford Achievement Test. Manner followed the students for two years, concluding the study at the end of third grade. At the onset of the study, students were matched on reading and math levels based on results of the Stanford

Achievement Test. By the end of the third grade, Montessori students significantly outperformed the non-Montessori students in the areas of both reading and math.

Arndt (2005) compared literacy outcomes of first-grade Montessori students and first-grade non-Montessori students. All of the participants in this study, which had a pretest-posttest design, had attended Montessori preschools. Arndt found that children who attended the non-Montessori first grade classrooms outperformed children who remained in Montessori classrooms in first grade on literacy measures. Non-Montessori students outperformed their counterparts on all literacy measures, which included measures of reading level (as measured by the California Achievement Test, 5th edition; and the Developmental Reading Assessment), reading comprehension, spelling, and writing of connected text.

Lillard and Else-Quest (2006) examined differences in academic and social domains between students of public Montessori schools and students of public non-Montessori schools. These schools served primarily urban minority children. All students in the study had applied for enrollment into Montessori schools, and a school lottery determined which children were assigned to Montessori schools and which were assigned to non-Montessori schools. Children in the Montessori schools outperformed those in non-Montessori schools on several measures. Montessori students performed better on standardized math and reading assessments at the end of kindergarten. By the end of elementary school, differences between these two groups on standardized

measures of math and reading were no longer significant. Montessori students, however, demonstrated superior writing skills, composing, “more creative essays with more complex sentence structures.” In addition, Montessori students displayed stronger social skills and expressed experiencing “a greater sense of community” than did non-Montessori students.

In addition to studies such as those addressed above that have examined academic skill growth of Montessori students, studies have examined other phenomena in Montessori classrooms. For instance, children in Montessori classrooms have been found to have many opportunities to use oral language, interacting more with each other than children in traditional kindergarten classrooms (Reuter, 1976). Vaughn (2002) also examined social relationships in Montessori classrooms, focusing on issues of empowerment. Rathunde and Csikszentmihalyi (2005) examined engagement and patterns of social activity in Montessori and traditional middle schools, finding that Montessori students, relative to traditional students, spent more time engaged in “school-related” activities and less time in leisure and didactic contexts.

Whereas the studies addressed above have examined the impact of the Montessori approach on children’s learning, other studies have examined how Montessori teachers implement the approach and how they interpret it. A body of research has identified variability across Montessori teachers’ interpretations and implementations of the Montessori approach (e.g., Chaney, 1991; Daoust, 2004; Zener, 1994). These studies have typically compared teacher beliefs and practices, as measured by self-reports, to researchers’ interpretations of

Montessori theory and practice. Zener (1994) conducted a series of interviews with teachers certified by the Association of Montessori Internationale (AMI) to assess the extent to which their beliefs represent those expressed in Montessori's writings. AMI and the American Montessori Society (AMS), which I discuss further in the following chapter, are the largest Montessori organizations. Zener found that these teachers hold a range of beliefs and has linked these differences to multiple factors, including their misunderstandings of Montessori's writings and their struggles to translate aspects of Montessori's theory into classroom practice.

Chaney (1991) also identified teacher misunderstandings of Montessori's writings and difficulties implementing Montessori's theory as sources of variability. Moreover, Chaney found that teachers were likely to allow their own beliefs to override Montessori principles, as expressed in Montessori's writings, when they lacked thorough understandings of such principles. Furthermore, these divergent beliefs were manifested in classroom practices that deviated from those practices described in Montessori's writings. Daoust (2004) noted that the studies by Zener (1994) and Chaney, while pointing to differences across Montessori teachers and linking these differences to specific sources, were limited in size. The studies of Chaney and Zener, which were based primarily on teacher interviews, boasted sample sizes of four and sixteen, respectively.

Daoust (2004) conducted a study with a larger sample size. She compared the implementation of the Montessori approach of AMS- and AMI-certified teachers. Based on teacher self-reports of classroom practice, Daoust

concluded that AMI teachers were more likely to implement the traditional Montessori approach, as based on her own interpretation of Montessori's writings. She identified instructional dimensions that have been found to vary across Montessori teachers, including supplementing Montessori materials with other materials, the nature of instructional groupings, allowing children to select their own activities, and presenting instruction to individuals or to larger groups of children. Daoust identified variability in these dimensions across teachers within the various Montessori organizations and found systematic differences across AMS- and AMI-certified teachers. More specifically, she determined that AMI-certified teachers' beliefs and self-reported classroom practices were more closely aligned with Montessori's writings than were expressed by AMS-certified teachers.

Taken together, these studies point to variability across Montessori teachers within as well as across Montessori organizations. Moreover, Daust's (2004) findings support the contention that AMS-certified teachers adhere less closely to the practices reflected in Montessori's writings than do AMI-certified teachers. Even within the teacher education program in which I participated, there is variation in the presentation of the Montessori language curriculum, as the unique perspectives of the various instructors who teach of the Montessori language course influence how the language curriculum is presented (Smith, personal communication, 2005). In addition, there are program-wide sources of variation, as program directors routinely seek ways in which to enhance the teacher education program (Smith, personal communication, 2005).

Summary and Research Questions

In this chapter, I describe the historical contexts in which the Montessori approach has endured and outline the primary elements of Montessori's general theory of learning and educational approach. I also present her approach to classroom literacy activity. The review of critiques of and research on the Montessori approach addresses its potential shortcomings as well as its strengths. This review also points to a general lack of empirical research that has examined practice in Montessori classrooms, revealing that little is known about actual patterns of practice in these classrooms. Do typical Montessori classrooms follow the learning theories and engage in instructional practices laid out by Maria Montessori? The present study fills to this void in the research base by providing an empirical examination of classroom practice.

I based this study on a framework derived from Montessori's views on learning and teaching. By viewing the findings through the lens of Montessori's views, I identify how contemporary practices reflect and deviate from her approach. In the final chapter of this dissertation, I discuss these findings in relation to Montessori's approach as well as to contemporary research. The following questions guided this study:

> How do teachers' enactments of one contemporary version of Montessori literacy education reflect and differ from Maria Montessori's views of learning—literacy learning, in particular—and teaching?

a. How do these teachers' practices reflect and differ from Montessori's view of the child and the practices Montessori described for attending to the child?
b. How do these teachers' practices reflect and differ from Montessori's view of the teacher's role and the practices Montessori described for teachers' enactments?
c. How do these teachers' practices reflect and differ from Montessori's view of the physical classroom environment and the practices Montessori described for attending to the environment?

CHAPTER III

RESEARCH DESIGN AND METHODS

Given the limited amount of research on Montessori programs, it is not known whether or how principles of Montessori's epistemology and the specific teaching practices that she described are actually implemented. To examine the precise nature of literacy activity in Montessori classrooms, I collected and analyzed data from 11 Montessori classrooms that served preschoolers and kindergartners. These classrooms were all located in schools within the same public school district. I employed both qualitative and quantitative methods of data collection and analyses, which I present in this chapter.

As chapter two reveals, there are multiple interpretations of the Montessori approach. In this chapter, I outline one contemporary Montessori approach to literacy instruction in preschool and kindergarten classrooms. I base this description on an approach that is presented in a university-based Montessori teacher education program in which I, as well as all teachers in the present study, participated. I conclude this chapter by describing my specific experiences with Montessori education and exploring how these experiences may have contributed to my interpretation of the approach.

Framework Guiding Data Collection and Analysis

The framework guiding this study was inspired by the sociocultural perspective. According to this perspective, thinking and learning are mediated by the social and cultural contexts in which they occur. The thinking and learning of students and teachers are contextualized in classrooms. In line with the sociocultural perspective, to fully evaluate an instructional approach, I deem it necessary to examine it where participants enact it, rather than to merely evaluate an approach's outcomes. Indeed, factors other than the approach itself could affect its outcomes.

Although the sociocultural perspective informed my framework, I do not maintain that this study presents a comprehensive sociocultural analysis of literacy activity in these Montessori classrooms. The scope of my study in terms of both the settings in which I collected data and the nature of data that I collected did not extend beyond classroom walls. That is, unlike studies that align more squarely with sociocultural perspectives, I did not directly probe spheres of influence outside of classrooms, such as by interviewing school principals or students' parents. In addition, I solicited little information from teachers regarding how these broader spheres influenced their teaching decisions. Bearing these qualifications in mind, I examined various participants, teachers and students, and environmental elements within the contexts of activities. As such, this framework reflects some elements of sociocultural perspectives. Nevertheless, despite some of these parallels, as noted above, my examination of literacy activity does not constitute a complete sociocultural analysis.

Although there are multiple sociocultural perspectives, these perspectives share general characteristics. While acknowledging the multiplicity of sociocultural perspectives, Wertsch, del Rio, and Alvarez (1995) have noted that such perspectives share the goal, “to explicate the relationships between human mental functioning, on the one hand, and the cultural, institutional, and historical situations in which this functioning occurs, on the other” (p. 3). According to Rogoff, Radziszewska, and Masiello (1995), another element represented across sociocultural perspectives is the use of activity to examine these components. Ratner (2002) has addressed the need for empirically grounded activity-based investigations: “The form of activity is the way in which the participants actually act, not the way they are supposed to perform it” (p. 20). It was essential to ground my examination of literacy activity in Montessori classrooms in empirical observation rather than to base it on how literacy activities are presented in Maria Montessori’s writings.

Indeed, research has identified sources of variability across enactments of the Montessori approach (e.g., Chaney, 1991; Daoust, 2004; Zener, 1994). This body of research is consistent with McGill-Franzen’s (2005) contention that teachers vary in terms of program implementation. McGill-Franzen (2005) has examined research on the implementations of various “research-based” reading programs in elementary grades. She has determined that this body of research points to large “teacher effects” in the implementation of reading programs, citing research findings that suggest that “teacher effects are larger than schooling and program effects.

Nye, Konstantopoulos, and Hedges (2004) have conducted analyses on the Tennessee class-size study dataset and have found that teacher effects outweighed school effects and even class size effects. In addition to noting the considerable role of teacher effects on student learning, McGill-Franzen (2005) has argued that researchers mistakenly examine the degree of "fidelity of implementation" to explain teacher effects. That is, to assess teacher effects, it is not necessarily productive to examine only the degree of fit between actual classroom practice and a given instructional approach. Rather, as Datnow and Castellano (2000) have noted, it is important for researchers to document *how* teachers implement the program, as teachers' deviations from the program can hinder *as well as* promote student learning.

Bearing in mind this research on teacher effects, I designed this study to capture particular characteristics of teachers' adaptations to Montessori's thoughts on and descriptions of literacy learning and instruction. In line with the sociocultural perspective, I situated my study in classrooms, the contexts in which the thinking and learning of students and teachers occurred.

Conception of Literacy Activity

Given my focus on literacy instruction, it is necessary to offer my perspectives on literacy and literacy activity, as these perspectives influenced the design of the present study. I define literacy as the ability to extract meaning from written text. This definition is somewhat restrictive in that it is limited to written texts. Other researchers (e.g., Dyson, 1997; Gee, 2001) have considered multiple semiotic systems in their explorations of literacy use. Although

experiences with these other forms of text are not entirely unrelated to experiences with written texts, I limit my definition in order to focus on those experiences that have the most bearing on reading and writing development, or, at least, to those experiences that the present study was designed to examine.

Accordingly, my conception of literacy activities was restricted to activities that *directly* target the development of products and principles of the writing system. I used "directly" to narrow my focus, as I was unable to attend to all factors that may contribute to reading and writing development. Included in my conception of the products and principles of the writing system were characteristics of emergent literacy. According to Sulzby and Teale (2003), emergent literacy constitutes, "the reading and writing behaviors of young children that precede and develop into conventional literacy" (p. 300). Thus, I considered behaviors that do not represent conventional literacy but link to literacy development, such as scribble and drawing. Also included in my conception were activities that explicitly target components of the alphabet principle. Excluded from my definition were oral language activities that did not pertain directly to written text.

Research Design and Methods

To generate and analyze patterns of literacy practice in these Montessori classrooms, I employed a mixed-methods approach to data collection and analysis.

Data Collection Methods

I employed classroom observations as well as formal and informal teacher interviews to obtain data on classroom, teacher, and child variables. Classroom variables captured general characteristics that influenced literacy activity, such as the duration of instruction blocks, as well as physical elements of classrooms, such as environmental displays. Teacher variables included information on how teachers interacted with children during literacy activity as well as teachers' expressed views of literacy activity. Child variables included information noting which activities children selected, how these activities were enacted, and the degree of adult participation in these activities. Before discussing data collection methods, I describe the data collection setting and participants.

Data Collection Setting and Participants

Data were collected in 11 classrooms that were identified as Montessori classrooms. These classrooms were located in public schools. To describe the data collection setting, I discuss characteristics of the public school district, classrooms, and teachers. All teachers in the present study had participated in the same teacher education program. I describe this program, emphasizing how it prepares participants to provide literacy instruction

School district. I located my study in public schools because they more closely reflect the actual diversity of the population than do private schools. I collected data in 11 classrooms in four schools in a public school district of a large city in the Midwest during the 2004-05 school year. These classrooms served preschoolers and kindergartners and were distributed across four Montessori magnet schools. Teachers in all classrooms identified themselves as

Montessori teachers. There were 25 Montessori preschool/kindergarten classrooms in the district during the 2004-05 school year, and teachers from all of these classrooms were invited to participate in the present study. Eleven teachers elected to participate.

The Montessori approach is well established in the school district. In fact, the first public Montessori school in the United States was opened in the district in the mid-1970s. During data collection, the district boasted four Montessori elementary schools and one Montessori middle and high school, all of which are magnet programs. Parents and guardians who were interested in sending their children to the Montessori schools entered a magnet lottery, as demand for these schools of choice exceeded enrollment capacities.

Of the four elementary Montessori schools, three served student bodies that were racially and economically diverse, and one served a student body that was predominantly comprised of African-American families living in poverty. More specifically, enrollments of two of these schools were composed of approximately 50 percent African-American children, 45 percent white children, and 5 percent "mixed" children. The third school was composed of approximately 60% African-American children, 40% white children, and 10% mixed children. The fourth school was composed of roughly 90% African-American children, with white children and mixed children constituting the rest of the student body.

Classrooms. The 11 participating classrooms were spread across the district's four elementary Montessori schools. Nine classrooms were located across the three schools that served student bodies that were racially and

economically diverse, and two classrooms were located in the school that serves predominantly African-American children of families living in poverty. Prior to data collection, I had secured the participation of three classrooms from each school. However, one of the teachers withdrew from the study after learning that it extended across the school year. She was pregnant and planned on taking an extended leave of absence after giving birth. Thus, while 12 teachers initially consented to participate, the number of participating classrooms was reduced to 11. Enrollment in these classrooms, which all served preschoolers and kindergartners, was between 18 and 20 children.

All classrooms were equipped with many low shelves that were stocked with numerous instructional materials. Many of these materials consisted of commercially produced Montessori materials, whereas others were commercially produced non-Montessori materials and teacher-made materials. Child-sized desks and chairs, rather than being placed in rows and oriented in the same direction, were scattered across classrooms and oriented in multiple directions. All classrooms held numerous books that were accessible to students. Classrooms were divided into areas reflecting various areas, including language, math, geography, and science.

Teachers. Teachers participated on a voluntary basis. All teachers had graduated from the same university-based teacher-training program, which is accredited by the American Montessori Society (AMS), an, “organization dedicated to encouraging and supporting the Montessori teaching approach in private and public schools” (http://www.amshq.org/society.htm, 8/15/2005). I

describe AMS, as well as other Montessori organizations, in the section below. All teachers had earned bachelor degrees in Montessori education, and four had earned Master degrees. All teachers in the present study had taught for at least five years before data collection began. Nine of them had accrued all of their teaching experience in public schools, while two had also taught in private schools. Nine teachers had spent all of their years teaching preschoolers and kindergartners, while two teachers had taught children in other grades. I selected five of the eleven teachers to serve as focal teachers during data collection (see Appendix A for a description of sampling criteria). Later in this chapter, I describe the nature of the participation of those focal teachers. I next briefly introduce these teachers.

Ms. Yorke earned an undergraduate degree in education from the university-based Montessori teacher-training program. At the time of the study, Ms. Yorke was in her 11th year of teaching. For each of these years, she had taught classrooms that served preschoolers and kindergartners. All of her teaching experience was in public Montessori schools. Ms. Yorke considered literacy her “favorite” curricular area. She added that it was her primary instructional focus.

Prior to the start of the present study, Ms. West had spent more than 30 years as a teacher. She earned her state teaching credential and Montessori certification through the abovementioned Montessori training program. Throughout her entire teaching career, she taught classrooms of preschoolers and kindergartners in Montessori schools. She had taught at her current school

for 20 years. Ms. West explained that she had a particularly challenging class during the year of data collection. With a big smile, Ms. West expounded, “This is like a year that I’ve never had!”

Ms. Greenwood earned a master’s degree from the university in which the Montessori training program was located. She had been a classroom teacher of preschoolers and kindergartners for 12 years. Prior to earning a teaching credential, Ms. Greenwood worked as an instructional aide in classrooms that served first through third graders in a public Montessori school. She explained that her experience as an aide influenced her teaching practice. For instance, because she observed Montessori first through third graders struggle with handwriting, Ms. Greenwood said that she strove to emphasize handwriting instruction in her classroom.

Ms. Selway had non-Montessori teaching experience in addition to Montessori experience. Before teaching at a Montessori school, she spent three years teaching elementary students at a public non-Montessori school. At the time of the study, she was in her ninth year of teaching classrooms of preschoolers and kindergartners in pubic Montessori schools. Ms. Selway explained, “I need to have a peaceful [classroom] environment to work.” Her class appeared to meet this desire, as the noise level was consistently low.

Like Ms. Selway, Ms. O’Brien had taught at both private and public schools. Before accepting a position at the public Montessori school, where Ms. O’Brien taught during data collection, she spent 21 years teaching at a public Montessori school. In addition to having earned Montessori training for the three-

to six-year-old grade level, Ms. O'Brien had earned Montessori certification to teach the six- to nine-year-old grade level. She had not, however, taught at this grade level, as all of her teaching experience was in classrooms that served preschoolers and kindergartners. Of the various curricular areas, Ms. O'Brien considered science a curricular area of great interest and strength.

Montessori Organizations. Association of Montessori Internationale (AMI) and the American Montessori Society (AMS) are the largest Montessori organizations. Dr. Maria Montessori founded AMI. AMS is the largest Montessori organization in the United States (Chattin-McNichols, 1992), boasting a membership of over 10,000 that includes teachers, parents, schools, and teacher education programs. AMS was founded in 1960 by Nancy Rambusch, an AMI-certified teacher. Rambusch (1992) modified the Montessori approach, as presented by AMI, by incorporating elements of American educational practices. She labeled the result of this adaptation process the "naturalization" of Montessori education. Some of these modifications pertained to how AMS teacher training centers prepared prospective Montessori teachers. For instance, AMS teacher training programs added instruction on the work of developmental theorists other than Montessori and on non-Montessori educational materials. In addition to holding that the AMS approach would differ from the more traditional AMI approach, Rambusch held that characteristics of specific settings of American Montessori programs would encourage additional alterations of Montessori's approach. These characteristics included such school characteristics as sector (i.e., private or public school) as well as characteristics

of the broader cultural contexts of schools. It is important to note that Rambusch modified the approach only in ways that she considered in line with Montessori's general theory.

In addition to AMS and AMI, other Montessori organizations operating in the US include the National Center for Montessori Education and the Montessori Institute of America. These organizations are all accredited by the Montessori Accreditation Council for Teacher Education (MACTE), which serves as an "umbrella-accrediting agency" of Montessori teacher education programs (http://www.macte.org/purpose.html). Because the term "Montessori" is public domain, neither schools nor teacher education programs need to receive MACTE accreditation to be marketed as espousing the Montessori approach. In fact, it is estimated that there are more independent Montessori schools in the US than there are schools that are associated with all of the MACTE-accredited organizations (Chattin-McNichols, 1992).

To receive MACTE accreditation, teacher education programs must meet a set of standards. These standards provide only general guidelines regarding how teacher education programs should address various areas of the Montessori curriculum, including the area that targets literacy learning. Thus, because of these rather general standards, teacher education programs have flexibility regarding how to present the Montessori approach to prospective teachers. Rather than providing an account of how the Montessori community writ large approaches literacy instruction, my description in the following section is confined to how literacy instruction is presented in one specific AMS-accredited

Montessori training program because it is the program in which all of the teachers in the present study were educated.

One teacher education program's approach to literacy instruction. Montessori (1964) labeled the area of her program that targets reading and writing skill growth the "language" area, reflecting the mutual relationship between oral language development and literacy skill development. I henceforth refer to this curricular area as the "language curriculum."

In this section, I illustrate how one teacher education program presents the language curriculum. Before outlining the curriculum, I describe the organization of the course in which it is covered.

The Montessori language curriculum is presented in a semester-long course. Coverage of the language curriculum constitutes one half of this course. The other half is devoted to the Montessori math curriculum. Instructors introduce students to the language curriculum by drawing on Montessori's writings in order to elucidate its philosophical underpinnings. The remainder of the course is devoted to demonstrating how to enact a wide variety of literacy activities, many of which are based on materials that Montessori designed. These activities are divided into the following sections: early language, key sounds, moveable alphabet, mechanical writing, reading, and function of words.

In addition to taking the course on the Montessori language curriculum, students currently enrolled in the Montessori teacher education program take two courses in the teaching of reading in elementary grades. Both courses are taught by a non-Montessorians and are located in the general department of education,

rather than in the Montessori department. One of these courses is based on, “a holistic philosophy that relates to phonics, structural analysis, spelling, comprehension, and children’s literature…integration of speaking, listening, reading, and writing strategies across the curriculum.” The other course focuses on the diagnosis of and correction of reading disabilities. It is important to consider, however, that the particular nature of these courses has changed over time. In fact, when I went through the program in the mid-1990s, only one of these courses was required. Given that the teachers in the present study graduated from the program across many years, generating a thorough description of their coursework in non-Montessori literacy instruction is beyond the scope of the present study. Nevertheless, it is important to bear in mind that teachers in the present study were required to complete at least one such course.

A Montessori Language Curriculum

The aforementioned teacher-training program is accredited by AMS. Although AMS does not provide specific guidelines regarding how to train prospective teachers to teach literacy-related skills, the AMS Handbook (2004) presents “minimum standards for content and emphasis” for this curricular area. These standards require teacher education programs to spend a minimum of 35 instructional hours to cover the following topics of this area: “1) philosophy and rationale, 2) receptive and expressive language experiences, 3) visual and auditory perceptual experiences, 4) vocabulary development and enrichment, 5) basic materials: a) sandpaper letters, b) moveable alphabet, c) metal insets, 6)

reading, 7) penmanship, 8), writing, and 9) function of words" (American Montessori Society Handbook, 2004, Chapter 5, p 12).

Outline of Montessori Language Curriculum

The following description of the literacy activity in Montessori classrooms is not intended to embody *the* Montessori language curriculum. Rather, it represents *an* interpretation of it. Indeed, as the research outlined above reveals, there are multiple interpretations of the Montessori approach. The presentation of the language curriculum is based on my interpretation of the Montessori language curriculum as presented in the aforementioned teacher-training program. In preparing the following description, I referred to a "language album" that I made while in the teacher-training program. This album holds detailed descriptions of the various activities that I outline below.

The Montessori language curriculum is divided into the following sections: early language, key sounds, moveable alphabet, mechanical writing, reading, and function of words.

Early Language

The early language section of the Montessori language curriculum targets skills that are prerequisites for conventional reading and writing, including skills associated with expressive language, receptive language, visual discrimination, and print familiarity. In addition to prescribing specific activities that target such skills, the early language section describes how to create classroom environments that provide children with abundant exposure to oral and written

language. To provide experiences relevant to written language, teachers are recommended to stock reading corners and other classroom areas with broad assortments of books and to equip classrooms with writing centers that hold a variety of writing utensils and other writing supplies. The curriculum directs teachers to provide relevant oral language experience by encouraging children to recite their own stories, to enact roles in dramas, and to participate in games that encourage careful listening. Specific activities target auditory discrimination and visual discrimination. For instance, some activities that target visual discrimination require children to sequence series of objects or pictures (e.g., a series of pictures depicting a child putting on and tying a shoe).

Key Sounds

The key sounds section features activities aimed at promoting knowledge of the alphabetic principle. Some activities in this section target phonological awareness without targeting letter-sound knowledge, while others target both phonological awareness and letter-sound knowledge. For example, the *I spy* activity targets phoneme recognition by encouraging children to identify beginning, middle, and ending phonemes of words. To help children learn letter shapes and letter-sound relationships, teachers are taught to use the sandpaper letters. Once children demonstrate knowledge of virtually all single-letter sounds, they use the *phonogram sandpaper letters* to learn common phonograms and digraphs.

Moveable Alphabet

To promote writing development, teachers are taught to use the moveable alphabet. The Montessori language curriculum presents a sequence of moveable alphabet activities. The introductory activity entails the teacher revealing the layout of the moveable alphabet letters to a child and demonstrating that it is possible to write any word with the letters. Subsequent activities call on children to write several consonant-vowel-consonant (CVC) words that contain the same vowel.

Once children demonstrate the ability to spell most CVC words conventionally, they are directed to compose longer phonetic words and eventually words that hold phonograms and digraphs. Toward the end of the sequence of moveable alphabet activities, children are encouraged to compose connected prose. Children are encouraged to spell words by sounding them out and to use invented spelling.

Mechanical Writing

Activities in this section target fine motor skill development with the ultimate purpose of refining pencil control. The principal activity in the mechanical writing section involves the *metal insets*, which are described in the previous chapter. Other activities in the mechanical writing section directly target letter formation and employ more conventional materials, including chalkboards and paper. For instance, small chalkboards are paired with the sandpaper letters. Teachers demonstrate how to trace the sandpaper letter and then invite a child to trace it. After the child traces the sandpaper letter, she is asked to write the letter

on the chalkboard. Pencil and paper are also used to promote handwriting skills by writing multiple copies of their names and isolated letters.

Reading

Many reading activities require children to read isolated words. For instance, the *first reading lesson* requires children to match labels of phonetic words to objects or pictures. In addition, a sequence of activities is based on word families that share standard spelling patterns. Rather than withholding the presentation of activities that require the reading of phonetic words activities until children know all 26 letter-sound relationships, teachers expose children to them as soon as they demonstrate the knowledge of several letter-sound correspondences. Once children appear to read most phonetic words correctly, they enact activities based on rhyming-word families that contain blends and phonograms.

Other activities require non-phonetic word reading. Flash cards are used to teach sight words. Teachers are directed to use the three-period lesson, a technique described in chapter two, to present activities that require memorization, such as the teaching of sight words. Other activities also require the reading of non-phonetic words, such as the *command cards*. This activity is enacted by a small group of children and resembles the game of charades. Children take turns drawing from a deck of cards. Each card specifies an action (e.g., jump, dance, clap). Children read the card silently and enact the action specified on the card while others try to guess what is written on the card.

In addition to activities that require the reading of isolated words, the reading section holds activities that require the reading of connected text. One activity, for instance, calls on children to match labels of phrases that include non-phonetic words to corresponding objects. A collection of small objects in the forms of a turkey, a hen, a pig, and a rabbit might be paired with labels displaying the following phrases: “the big black turkey,” “the little brown hen,” “the small rabbit,” and “the tiny black piglet.”

The language curriculum instructs teachers to use sets of phonetic and non-phonetic readers and predictable readers. Moreover, it provides some guidance regarding how teachers should approach the reading of these books. These recommendations include reading a book to the child prior to asking her to read it independently; discussing the meanings of words depicted in a book with which the children might lack familiarity; and maintaining a record of the books read by each child.

Function of Words

The final section in the language album, function of words, features activities that target meta-linguistic understandings of grammar. A series of activities addresses the functions of nouns, adjectives, articles, verbs, prepositions, and conjunctions. For instance, the function of the noun is instructed in the following manner. A teacher presents the introductory activity to the noun by gathering a small group of children and asking one of them to obtain an object from the environment without specifying exactly which object to attain. The teacher begins this activity by saying, “I want you to get the…” The teacher

pauses, and once the child appears confused or asks the teacher to specify what she wants, the teacher says, “Oh, I forgot to tell you the name of what I want you to get. I want you to get the *noun*.” The teacher then notes that s/he forgot to use a “naming word” to describe exactly what she wanted, explaining, “naming words are called nouns.”

Literacy in Other Areas of the Montessori Curriculum

Other curricular areas also engage literacy skills, particularly the geography and science areas. Many activities in these areas are designed to promote vocabulary development, as students are taught nomenclature associated with a wide range of phenomena. Many such activities take the form of *three-part cards*. Each three-part card activity is composed of three groups of cards. To learn botany nomenclature, for instance, children use three-part cards that depict and label the parts of plants. One group of cards depicts pictures of the parts (e.g., roots, stem, leaves), one group presents the labels of the parts, and the remaining group features both pictures and labels. To use the three-part cards, a child first lays out the cards that display only the picture. The child then matches labels to these pictures. The child uses cards that depict both the picture and label to check whether she correctly matched the labels to the cards that depict only the pictures.

Storybook Reading

Montessori (1995) contended that children learn at differing rates and created an educational approach in which whole-class lessons, especially those that target academic skills, were virtually nonexistent. The Montessori teacher-

training program adheres to her contention, encouraging teachers to minimize the amount of whole-class instructional activities. Correspondingly, it provides substantially less training on whole-class literacy activities than on individual and small group activities. Whole-class activities addressed include storybook reading and oral language-based activities, such as reciting poems and singing songs that encourage children to attend to rhymes and other nuances of oral language.

The Montessori language curriculum provides recommendations regarding how to conduct storybook readings. These recommendations include defining and discussing words with which children might lack familiarity before starting to read a book; explicitly mentioning the title, author, and illustrator and labeling parts of the book (e.g., “This is the front of the book. This is the title page.”); pausing a story occasionally to invite children to predict how it will unfold; and occasionally pointing to words as they are read to promote an understanding of one-to-one correspondence between spoken and written words.

Classroom Observations

Data collected through classroom observations served as my primary data source. I observed literacy activity on multiple days in the classrooms of the 11 participating teachers. Before discussing the specifics regarding the frequency with which I conducted observations and the foci of these observations, I describe the nature of my role as an observer.

Role of the researcher. I conducted naturalistic observations during which I served predominantly as a nonparticipant observer, attempting to minimize my

interactions with the teachers and children. Patton (2002) has argued that the extent of participation in field settings is more accurately captured by being located along a continuum rather than by being assigned to one of two discrete categories (participant or nonparticipant). Correspondingly, although I served more of a non-participant than participant role, there were many occasions in which I interacted with teachers as well as students. In fact, it was rare to complete an observation without having held a conversation with a teacher or student.

My interactions with teachers typically pertained to aspects of classroom literacy activity, as I occasionally asked teachers to clarify aspects of literacy activities during instructional blocks. On other occasions, teachers volunteered information regarding such aspects without my prompting by clarifying aspects of particular activities, by explaining the instructional aims of activities, and by describing how particular activities related to activities that had been enacted on days that I had not observed.

My interactions with students also took multiple forms. Although I generally strove to minimize my influence on classroom practice, I occasionally asked children to elucidate elements of literacy activity (e.g., “Can you tell me about what you’re doing here?”). Most of my interactions with children, however, were initiated by the children approaching me to ask questions or to tell me about a given activity. In addition, children occasionally solicited my help in carrying out activities, perhaps viewing me as a sort of instructional aide. When I felt capable of providing sufficient help in a timely manner, I sometimes attempted to meet

these requests. A more common type of interaction with children began with their showing me a product of a literacy activity, such as a written composition. During such interactions that centered on products of literacy activity, I typically asked the children follow-up questions regarding their initial comments and summarized these conversations in my fieldnotes.

Thus, neither “participant” nor “nonparticipant” adequately captures my role as an observer. Elements of both types of involvement were manifested during my observations. Moreover, my level of involvement varied across observations. Nevertheless, if I were to characterize the general extent of my participation along a continuum, I would locate my level of involvement as in-between participant and nonparticipant but closer to the nonparticipant end of the continuum.

Classroom observation foci. Classroom observations were conducted in two waves. Wave One lasted from August through December of the 2004-05 school year, and Wave Two lasted from January through May. During Wave One, I observed each classroom three times. On two days, I observed literacy activity during the morning instructional block, and on one day, I observed both the morning and afternoon instructional blocks. To help offset the potential effects that the time of school year might have on literacy activity, I spread out these observations over the first four months of the school year for each classroom. That is, rather than conducting all three observations in a given classroom before moving onto another classroom, I conducted one observation in all classrooms before conducting a second observation in any one classroom.

Similarly, I observed all classrooms for the second time before observing a classroom for the third time.

My first two observations of each classroom were naturalistic observations during which I adopted a wide-angle view of how teachers and children enact literacy activities. My primary goal during these observations was to record the following information about each enacted literacy activity: the name of the activity, the number of children who enacted it, and the extent to which a teacher was involved. Although I was often able to record detailed descriptions of particular activities, due to the nature of the instructional blocks, I was limited to capturing these characteristics rather than to document nuances of activities. Although whole-class instruction was provided in all classrooms, the majority of all instructional blocks consisted of individual and small group activity. It was not rare for several literacy activities to transpire simultaneously.

During the third observation, I administered the Literacy Environment Checklist (LEC) (Smith et al., 2002), which is a measure in the Early Language & Literacy Classroom Observation (ELLCO) Toolkit. The LEC was piloted in 150 preschool classrooms for the Head Start-funded New England Quality Research Center and for the Literacy Environment Enrichment Project. The pilot studies collected data primarily in preschools in lower-income communities. The User's Guide to the ELLCO Toolkit reports descriptive statistics on data collected in these studies on the Books subscale, which is a composite of the Book Area, Book Selection, and Book Use categories, the Writing subscale, which is

composed of the Writing Materials and Writing Around the Room categories, and the total score.

Using the LEC facilitated my examination of how literacy activity in Montessori classrooms reflected broader principles of effective literacy instruction. This measure, which took approximately 15 minutes to complete, yielded a brief measure of literacy-related classroom materials and displays. The LEC is divided into five categories: *book area*, *book selection*, *book use*, *writing materials*, and *writing around the room*. Each category is composed of multiple (between three and six) items. Items in the *book area* category address the organization and contents of classroom book areas. The *book selection* category pertains to the "number, variety, and condition" of books in classrooms. The *book use* category measures "the placement and accessibility of books". The *writing materials* category addresses the writing utensils and surfaces accessible by children. And items in the final category, *writing around the room*, "address evidence of writing activities, such as children's writing and teacher dictation displayed." I also took multiple photographs in each of the classrooms to generate a permanent record of key elements of environments.

Scoring the items that composed each category was relatively straightforward, as most items solicit information that is readily quantifiable. For instance, an item in the book selection category asks, "How many books are easily available to children? (Count all books that are accessible to children, not only those in the book area.)" This item holds three possible responses: fewer than 15 books, 16 to 25, or 26 or more. Most items were as clear-cut to score as

this item, even those that at first glance could be viewed as requiring more inference, such as the following item from the *book area* category: “Is the area where books are located orderly and inviting?” This item actually required little inference, as LEC users are directed to answer it based on the following operationalized criteria: “Are the books displayed on a bookshelf or bookcase? Are they oriented properly (front covers or spines facing out and right-side up)? Are they neatly organized?” A value is attached to each of the possible responses, yielding a subtotal for each of the five categories and a total by summing the category subtotals.

At the conclusion of Wave One, I selected five classrooms in which I performed more extensive naturalistic observations during Wave Two, which began in January 2005. My selection of these focal classrooms was purposive rather than random. I based my selection on analyses conducted on data gathered from Wave One. I used maximum variation sampling (MVS) (Patton, 2003) to select focal classrooms based on student demographics and on the following categories of classroom activity: type of activity management, teacher mobility, and nature of whole-group instruction. Using demographic information from each school, including the proportion of minority students and percentage of students who qualify for free or reduced lunch, I selected a proportionally representative sample based on student demographics. I identified the other three categories (teacher mobility, type of activity management, and nature of whole-group instruction) as characteristics that were related to classroom literacy

activity. Appendix A presents the empirical and theoretical grounds for the inclusion of these categories.

Patton (2003) has described a major strength of MVS and has summarized the findings that it can yield:

> This strategy for purposeful sampling aims at capturing and describing the central themes that cut across a great deal of variation. For small samples, a great deal of heterogeneity can be a problem because individual cases are so different from each other. The maximum variation sampling strategy turns that apparent weakness into a strength by applying the following logic: Any common patterns that emerge from great variation are of particular interest and value in capturing the core experiences and central, shared dimensions of a setting or phenomenon… data collection and analysis will yield two kinds of findings: (1) high-quality, detailed descriptions of each case, which are useful for documenting uniquenesses, and (2) important shared patterns that cut across cases and derive their significance from having emerged out of heterogeneity. (p. 234)

In line with MVS, the set of focal classrooms represented a broad range of the variations within each category. I observed literacy activity in each of the five focal classrooms for three weeks. In addition, I conducted one observation in each of the non-focal classrooms during Wave Two. Similar to Wave One, I staggered classroom observations during Wave Two. However, instead of staggering focal classroom observations by days, I staggered them by weeks. I spent three weeks in each focal classroom. As I had done during Wave One observation, I adopted a wide-angled view of classroom literacy activity during some Wave Two observations. However, most Wave Two observations were more focused. I elected to take a more fine-grained look at literacy activity to better document how literacy activities were enacted. To record more nuanced accounts of literacy activity, I narrowed my foci during observations. I focused on

one of three phenomena: teacher-child interactions during literacy activity; child moves during literacy activity, regardless of whether the teacher or other adults were present; and teacher moves in, as well as out of, the context of literacy activity.

Approaching observations with these foci enabled me to generate accounts of literacy activity. Generating detailed accounts of teacher-child interactions during literacy activity allowed for the exploration of the teacher components and, to a lesser extent, the environment and child components. By focusing on child moves during literacy activity, I produced fieldnotes that were particularly receptive to the exploration of the child component in so far as they documented a wide range of children's actions. Similarly, observations that focused on teacher moves were disposed to exploration of the teacher component. In addition to the receptiveness to the child component, these accounts allowed for the study of the teacher and environment components. I devoted three days of observation in each classroom to each of these three foci.

Teacher Interviews

Data collected through teacher interviews served as a secondary, or contextual, source of data, supplementing the data generated through classroom observations. During Wave One of data collection, I interviewed all teachers. These interviews were based on a modified version of the ELLCO Teacher Interview, which is a standardized interview protocol that probes approaches to classroom literacy activity. Because this protocol did not tap all facets of literacy activity in which I was interested, particularly facets related specifically to the

Montessori approach, I supplemented the ELLCO protocol with additional questions. See Appendix B for a list of questions that I posed during the teacher interviews.

During Wave Two, I conducted unstructured, naturalistic interviews with teachers of focal classrooms to gain more thorough accounts of their views of literacy instruction. These interviews were typically short, enduring for fewer than five minutes. Although I initiated most of these interviews, there were occasions during which the teachers initiated conversations with me that evolved into unstructured interviews. Teachers often began such conversations by clarifying particular literacy activities as they were being enacted by children, by describing how certain activities related to activities that I had not observed, and by presenting a rationale for given activities.

Data Analysis Methods

I used both quantitative and qualitative methods of data analyses. The following discussion of data analysis methods is divided into two sections. Each section corresponds to one of the two guiding questions. First, I describe the methods used to investigate the types of literacy activities enacted. Second, I outline the methods used to examine how documented patterns of practice reflected and deviated from Montessori's views on teaching and learning.

My conception of activity was informed by Montessori's views as well as by the sociocultural perspective. Indeed, I did not limit my conception of activity to whole-class instruction. Instead, my conception reflected the multiple groupings

that Montessori (1964) addressed. I took account of whole-class literacy activities as well as of occasions when teachers worked one-on-one with children and with small groups. I also examined occasions during which children worked alone and with classmates. My conception of activity included a broad range of literacy events that directly targeted the development of understandings of written language. I examined events in which teachers participated (e.g., storybook readings, small-group handwriting lessons) as well as occasions during which children used the specific materials that Montessori developed and implemented (e.g., moveable alphabets, sandpaper letters) and more general literacy materials (e.g., books).

My conception of literacy activity aligns with the sociocultural perspective in that I viewed teachers and children as active participants in these activities. I did not assume that enactments of literacy activities would necessarily align with the patterns of practice that Montessori outlined regarding the use of particular literacy materials. As such, my conception reflects Ratner's (2002) view that, "The form of activity is the way in which the participants actually act, not the way they're supposed to enact it" (p. 20).

To examine what types of literacy activities were enacted in the classrooms, I first labeled each documented literacy activity in my fieldnotes. I then indicated the instructional format in which each activity was enacted. Instructional blocks consisted of two instructional formats: whole-class instruction and "work periods." Both formats were present in all classrooms. I considered these formats mutually exclusive. Combined, these formats accounted for the entire duration of all

instructional blocks. Whole-class instruction refers to a setting during which all children participated in an activity managed by the teacher or another adult. This instructional format constituted a considerably smaller portion of instructional blocks than did the work period format.

Instructional periods during which children are not participating in whole-class instruction were referred to as “work periods” in the Montessori teacher-training program. During work periods, children engage in activities individually and with small groups of peers. Activities are enacted without teacher assistance, some are enacted with a moderate level of teacher input, and others are directed primarily by the teacher.

Many documented activities were presented in the Montessori language curriculum, and I labeled these activities as they are labeled in the curriculum. I labeled activities that did not appear in the Montessori language curriculum based on their most salient characteristics. I collapsed the specific documented literacy activities into broader categories. I initially attempted to base such categories on the sections of the Montessori language curriculum. However, after beginning to assign these activities to categories, I realized that many enacted activities were not represented in the Montessori curriculum. In the end, I established categories with more general labels, which corresponded to various literacy skill sets. These categories included reading, writing, handwriting, phonological awareness, letter-sound correspondence, letter-name knowledge, and other.

I divided three of these general categories into subcategories. I partitioned

the reading category into three subcategories: word-level, sentence-level, and whole book. I divided the writing category into two subcategories: closed- and open-ended. I divided the handwriting category into three subcategories: letter formation, copying, and metal insets. These subcategories as well as the more general categories are discussed in greater detail in the following chapter.

Many activities clearly fit a specific category, and thus assigning them to categories was relatively straightforward. However, some documented activities appeared to exercise skills associated with multiple categories. To determine how to code such an activity, I considered all categories to which the activity could potentially be assigned. I then assigned the activity in question to the category that represented the broader range of skills. For instance, activities that required children to write also summoned them to exercise their knowledge of letter-sound relationships and components of phonological awareness. Rather than situating these activities in either letter-sound relationships or phonological awareness categories, I located them in the writing category because it characterized a broader range of literacy skills.

In addition to labeling each documented literacy activity, I assigned each activity a type of "activity management." Activity management refers to the extent to which various participants (teachers, children, teaching assistants) participated in activities. I identified four activity management types: child-managed, teacher-managed, teacher-involved, and other adult-involved. Activity management was of interest because most instruction in Montessori classrooms is typically provided to individuals and small groups of children rather than to the entire

class. Moreover, examining activity management type aligns with Montessori's (1964) descriptions of the mixture of independent child activity, child-teacher dyads, and small group and whole class activities in which teachers participate.

I conceived of child-managed activities as those that children carried out with little to no involvement of teachers or other adults. In contrast, teachers participated for virtually the entire duration of teacher-managed activities. Teacher-involved activities were those that teachers did not manage from start to finish yet still influenced considerably, such as demonstrating how to initiate an activity, providing temporary assistance when a child was already engaged with an activity, and reviewing the outcome of an activity (e.g., checking spelling on a written composition). The fourth type of activity management, other adult-involved activities, included activities that involved the participation of teaching assistants, interns, or parent volunteers.

Given that I used two terms that capture the degree of participation (managed and involved) and identified three types of participants (children, teachers, and other adults), I could have used six types of activity management – the four that I have outlined as well as *child-involved* and *other adult-managed*. However, I decided not to use *child-involved* because children, by definition, participated in all instructional activities. I decided not to use *other adult-involved* because even though I recognized that teaching assistants, interns and parent volunteers influenced literate activity, I did not consider their roles as being as central to classroom literate activity as that of the teacher. Moreover, I did not document activities that children enacted with other adults as extensively as I

documented activities that children enacted with teachers, making it difficult to determine the extent and nature of participation of other adults in some activities. This would have made it problematic to determine whether to label such activities as other adult-*managed* or as other adult-*involved*.

I generated a dataset that displayed all types of documented activities. The dataset also accounted for the four activity management types. Thus, each activity was represented four times: once for each management type. Columns of the dataset represented activity types and activity management types. Each row of the dataset represented a day of observation, and the dataset cells held frequency counts of enacted activities.

I eventually collapsed these activity types into the activity categories (e.g., reading, writing, handwriting), producing a more parsimonious dataset. Nevertheless, I constructed such a nuanced dataset because doing so encouraged me to carefully consider the nature of activities before assigning them to more general categories.

Some whole-class literacy activities, such as storybook reading, were enacted in each classroom. Whole-class activities were also represented in the dataset. However, because all whole-class activities were teacher-managed, I did not record the degree of teacher involvement during whole-class activities in the dataset.

Categories of Literacy Activity

I assigned each activity to one of the following categories: reading, handwriting, letter-sound correspondence, writing, drawing, phonological awareness, letter-name knowledge, and other.

Category Descriptions

This section describes the literacy categories as well as the subcategories into which three of these categories were partitioned.

Reading. Because numerous types of reading activities were enacted, I divided the reading category into three subcategories: book-reading, word-reading, and sentence-reading. Among book-reading activities were those in which teachers read books with children, other adults, such as instructional aides and parent volunteers, read with children, children read with one another, and children read independently. Activities in the word-reading subcategory required children to read isolated words, such as lists of high-frequency sight words (e.g., *I*, *and*, *the*), phonetically spelled words, and words of rhyming-word families (e.g., *tap*, *map*, *cap*). Activities in the sentence-reading category required children to read sentences that were not in books. I included this subcategory because Montessori (1964) outlined activities that required the reading of connected text that did not involve books.

Writing. I divided the writing category into two subcategories: closed- and open-ended writing. Closed-ended writing activities were those in which teachers or classroom materials prescribed words for children to write. I observed teachers dictate lists of words for children to write, such as CVC words holding the same short vowel. On other occasions, children used instructional materials

that dictated which words to write. Children occasionally spread out pictures that depicted words from a given word family (e.g., *shut*, *ship*, *bush*) and used moveable alphabet letters to compose those words.

I defined open-ended writing activities as activities in which children controlled word choice. Children sometimes composed open-ended compositions independently of teachers, and on other occasions, teachers specified topics for children to write about (e.g., “Write about what you did over the weekend.”). Even activities for which teachers provided such topics were coded as open-ended writing presuming children determined which words to write. It was not necessary for an activity to entail the use of a writing utensil to be considered a writing activity. Many writing activities entailed children composing with moveable alphabet letters.

Activities in the writing category differed from those in the handwriting category by requiring children to determine letter use as they composed words. That is, whereas handwriting activities required children to form letters, the letters formed during handwriting activities were directed by the teacher or by characteristics of materials, such as by teachers asking children to produce multiple copies of a given letter across lined paper and by children completing worksheets that provided models of letters to reproduce. In contrast, writing activities required children to decide which letters to use, and thus called on such skills as letter-sound knowledge and phonological awareness.

Handwriting. I divided the handwriting category into three subcategories: copying, letter formation, and metal insets. Activities in the copying subcategory

required children to use writing utensils, including pencils, markers, and chalk, to copy text from teacher-made or mass-produced models. Activities in the letter formation provided explicit guidance regarding how to produce certain letters, such as by providing cues regarding where to start to form letters (e.g., starting at the top of a lower-case *t* rather than starting at the bottom) and how to produce marks that comprise letters (e.g., moving counterclockwise rather than clockwise while forming a *C*). The metal insets subcategory referred to activities based on one of Montessori's (1995) original materials, the metal insets. Although using the metal insets does not entail the formation of letters, it is aimed at fostering graphomotor skills. Moreover, Montessori (1964) held that the metal insets develop the same motor skills and sequences that are required to write letters.

Drawing. My inclusion of the drawing category, in part, reflects the age span of children in the sample of classrooms. Drawing, after all, serves as an alternative means to using letters by which young children can express themselves on paper. Moreover, contemporary research has found that young children use multiple forms of written expression, including scribble and drawing (Brenneman et al., 1996; Sulzby, 1989). I documented all instances during which children used paper and writing utensils, which included pencils, markers, and crayons. I coded activities in which children did not produce letters but rather drew or scribbled in the drawing category. Activities in which children used multiple writing forms including print, such as by accompanying a drawing with words, were coded in the writing category rather than in the drawing category.

Letter-sound knowledge. I coded activities that explicitly targeted relationships between phonemes and individual letters and letter combinations in the letter-sound category. However, these activities were not the only activities that held the potential to promote letter-sound knowledge. Indeed, reading and writing activities also afforded children with opportunities to exercise such knowledge. Unlike writing and reading activities that called on a broad range of literacy skills, activities located in the letter-sound correspondence category focused almost exclusively on letter-sound learning.

Letter-name knowledge. Although the Montessori language curriculum does not feature activities aimed at promoting knowledge of letter names, some documented activities explicitly linked letters to names without reference to letter sounds. I located such activities in the letter-name category.

Phonological awareness. Activities constituting the phonological awareness category called on a variety of oral language skills, including the identification and manipulation of phonemes and syllables. I only assigned activities to the phonological awareness category that were entirely oral language-based without reference to print.

Other. Activities that did not meet the criteria of any of the above categories were assigned to the other category. For instance, puzzles that depicted the alphabet were used by children in some of the classrooms.

Quantitative Data Analysis Methods

To examine the proportion of total literacy activity for which each activity category accounted, I conducted frequency counts of all documented literacy

activities. Because multiple activities were frequently enacted simultaneously during work periods, it was infeasible to record the duration of all activities. Consequently instead of measuring the duration of activities, I counted activities to document how many children participated in each activity. Activities enacted by one child were counted once, activities enacted by two children were counted twice, etc. For instance, a handwriting activity in which three children participated would have been counted as three activities. I counted in this manner because it provided a more accurate account of what types of literacy activities children actually experienced than an account would have yielded that did not account for the number of children who participated in the activities. As noted above, I assigned each activity that was enacted during work periods to an activity management category.

I also recorded activities that were enacted during whole-class instruction, and assigned each of these activities to an activity category. However, whereas I counted each activity enacted during work periods based on the number of children who participated in it, I counted each whole-class literacy activity once.

My approach to coding activities yielded two datasets. One dataset captured literacy activity during work periods, and one depicted activity during whole-class instruction. I ran descriptive statistics to examine the proliferation of activities enacted from each category across the sample of classrooms. These statistics reflect the relative frequencies with which various types of literacy activities were enacted both during work periods and during whole class

instruction. I also generated descriptive statistics revealing relative proportions of the various types of activity management.

Qualitative Data Analysis Methods

To examine how patterns of practice in these Montessori classrooms reflected and deviated from Montessori's views, I used inductive qualitative analysis to generate assertions. I derived assertions from repeated examinations of fieldnotes and interview transcripts. The writing of narrative vignettes and interpretive commentaries (Erickson, 1986) facilitated the generation of assertions. To evaluate the validity of assertions, I constructed key linkage charts, which permitted the systematic examination of confirming, as well as disconfirming, evidence. In the following paragraphs, I elucidate this inductive approach.

Erickson (1986) has noted that both "formal and informal systems operate simultaneously" in classrooms and that teaching, "consists in managing the warp and woof of both dimensions in dealing with children and their engagement with subject matter" (p. 128). In the context of the present study, formal systems could be conceived of as including the contents of the Montessori language curriculum, district-mandated assessments administered by teachers, and class schedules, which were controlled at the school level. Informal systems could be conceived of the particular ways in which literacy activities were actually enacted and in the nuances of structures (e.g., work contracts) that influenced which activities were enacted.

Erickson (1986) has maintained that much educational research accounts only for formal systems, which are captured in "predetermined coding categories," disregarding the informal, unofficial systems that also shape classroom activity. Given my familiarity with Montessori education, I approached the data corpus with predetermined analytic categories in mind. The framework that I employed imposed the general categories of child, teacher, and environment on data analysis. To identify non-predetermined categories, I drew on an approach to qualitative inquiry advanced by Strauss and Corbin (1998).

Strauss and Corbin (1998) have termed their research methodology "constant comparative analysis" and have noted that this methodology generates grounded theories, which are, "derived from data, systematically gathered and analyzed through the research process" (p. 12). Strauss and Corbin have emphasized that the findings of such inquiry are primarily rooted in data rather than in the researcher's "preconceived theory." However, despite this emphasis on deriving theory from data, they have acknowledged that the researcher plays an essential role in inquiry. After all, the data corpus alone does not represent theory. It is only through researcher's interpretive efforts that theory can be generated.

Strauss and Corbin (1998) have described a series of coding procedures that allow for the systematic analysis of data. I employed these coding procedures to examine how literacy activity was enacted in Montessori classrooms. Again, rather than bringing a blank slate to qualitative analysis, I brought particular preconceived categories to data analysis. These broad

categories, which corresponded to the three components of the Montessori approach (i.e., the child, teacher, and classroom environment), served as an organizational framework for qualitative analysis. To identify more specific categories of literacy activity, I used open coding, which Strauss and Corbin have described as, “the analytic process through which concepts are identified and their properties and dimensions are discovered in the data” (p. 101). Categories represent abstracted concepts derived from the data.

After identifying categories, I attempted to identify salient processes and structures associated with the categories. As is noted in the conceptual framework, literacy *activity* served as the primary unit of analysis in the present study. Consequently, it was essential to employ coding procedures that specifically probed processes. According to Strauss and Corbin (1998), “process can be described as a series of evolving sequences of action/interaction that occur over time and space, changing or sometimes remaining the same in response to the situation or context” (p. 165). The context is defined by “structure,” which, “creates the context for action/interaction and, as such, is what gives it rhythm, pacing, form, and character” (p. 179). Actions that I documented during literacy activity included utterances and non-verbal behaviors of children and teachers. Structures included aspects of the physical classroom environment, such as the presence of and organization of instructional materials as well as classroom procedures. In addition to identifying processes and structural elements, I explored links among processes and structural elements. I

tailored my examination of links among processes and structures to dovetail with the three components of Montessori's theory.

After using open coding to identify categories and the corresponding processes and structures of literacy activity, I employed axial coding (Strauss & Corbin, 1998) to further probe the nature of categories of literacy activity and to elucidate relationships among the identified processes and structures of classroom literacy activity. Whereas open coding focused on the identification of central components of literacy activity, axial coding embodied the more theoretical aspect of coding by facilitating the generation of assertions regarding relations among categories, processes, and structures. Throughout data collection and analysis, I routinely searched my fieldnotes for confirming and disconfirming evidence of emerging assertions. This recursive practice of inductive analysis led to more focused assertions, which in turn propelled me to focus on a more restricted range of activities during classroom observations. Thus, as the school year progressed, I attended to more nuanced characteristics of literacy activities than I did during initial observations.

Throughout data collection, I wrote interpretive commentaries on aspects of literacy activities and narrative vignettes of selected literacy activities (Erickson, 1986). I composed interpretive commentaries to explore patterns of characteristics of documented literacy activity and to explore links among such characteristics and theories of literacy learning. According to Erickson, a narrative vignette is a, "vivid portrayal of the conduct of an event" (p. 149). Erickson has noted that narrative vignettes can help ground descriptions of

phenomena of interest and that narrative vignettes can be examined to evaluate the validity of interpretations. Thus, writing narrative vignettes served as key analytic tool, as generating rich descriptions of literacy activities encouraged me to adopt a reflective and analytic stance while examining fieldnotes.

I evaluated the soundness of assertions by generating key linkage charts (Erickson, 1986). Key linkage charts depicted the sub-assertions on which my general assertions were based. In addition, key linkage charts displayed the evidentiary warrants on which the sub-assertions were based. As such, generating key linkage charts was a means by which I scrutinized emerging and more advanced assertions. Evidentiary warrants to support sub-assertions were culled from classroom fieldnotes, interview transcripts, and the dataset of the frequency with which various activities were enacted.

Experiences Influencing my Interpretation of Montessori Education

This section reveals that my experiences as a student of the Montessori approach and as a teacher in a Montessori school are associated with the American Montessori Society (AMS). I received my Montessori training through the same university-based Montessori teacher education program described above. I earned a Master of Education through this program.

After completing this program, I taught a multi-aged classroom that was comprised of preschoolers and kindergartners at an AMS-accredited public Montessori magnet school. During my three-year stint as a teacher, I enrolled in an AMS-accredited training program to attain Montessori certification at the lower-elementary grade level, which covers children from ages six to nine (first

through third graders). While I was enrolled in this training program, I team taught a lower-elementary class, sharing responsibility with another teacher for both this class of first- through third-graders and my original class of preschoolers and kindergartners. Although I completed most of the lower-elementary Montessori teacher education program, before finishing it, I moved to Ann Arbor to commence a Ph.D. program at The University of Michigan.

My experience with Montessori education also includes the attendance at three national AMS conferences. Conference activities included participating in workshops regarding how to supplement portions of the Montessori curriculum and attending lectures delivered by Montessorians as well as by non-Montessorians. These conferences also afforded me opportunities to tour other Montessori schools and to observe classrooms. I considered many of these conference activities relevant to classroom teaching and implemented some practices that I gleaned from these activities in my classroom.

This overview reveals that my experiences are tied closely with the American Montessori Society. Indeed, I completed an AMS-accredited teacher education program, taught in an AMS-accredited school, and engaged in professional development activities at AMS national conferences. However, as the literature review highlights, determining exactly what constitutes the AMS approach is problematic given that AMS presents relatively general guidelines. In fact, this limited amount of specificity actually dovetails with the suggestion of Nancy Rambusch (1992), the founder of AMS, to allow for flexibility in the interpretation of and implementation of the Montessori approach. I concur with

Rambusch's general perspective, believing that it is more advantageous to view the Montessori approach as a dynamic approach than as a static approach. More specifically, I hold that it can be fruitful to modify the approach to compliment local conditions as well as to align its practices with contemporary educational research findings.

Through my experiences with Montessori education, I have become an advocate of the Montessori approach. Through my experience as a Montessori classroom teacher, I came to believe that Montessori instructional practices, by and large, promote student learning. I strove to take into account my penchant for the Montessori approach while conducting the present study. It is important to reassert, however, that I espouse a progressive view of Montessori approach, which is, perhaps, a product of my association with AMS. Although I consider the approach generally sound, I am not convinced that it is perfect. Moreover, I believe that it is useful to regard the approach as dynamic and open to change rather than as static. In fact, one factor that encouraged me to enroll in a PhD program was to conduct research on the Montessori approach to explore its possible strengths as well as weaknesses. The present study meets this ambition.

CHAPTER IV

Findings One: Contexts of Montessori Literacy Instruction

In this chapter, I explore findings regarding which particular types of literacy activities were enacted as well as the extent to which various types of activities accounted for overall literacy activity. These findings depict the general literacy contexts in which students and teachers participated. In the following chapter, I take a fine-grained look at documented practice within these contexts.

The findings that I present in this chapter reveal that children in these Montessori classrooms enacted a vast array of activities that targeted a broad range of literacy skills. In general, these activities, when viewed collectively, reflect the literacy practices that Montessori (1964) outlined. There were, however, some exceptions to this general trend. Indeed, given Montessori's (1995) emphasis on writing, I anticipated writing to constitute a greater portion of overall literacy activity than these findings reveal. In addition, metal inset activity was virtually nonexistent in these classrooms.

Relative Proportions of Various Activity Categories

To review, each activity was assigned to one of eight categories: reading, handwriting, letter-sound knowledge, writing, drawing, phonological awareness,

alphabet, and other. In addition to depicting which types of activities were enacted, the findings below reveal the extent to which each activity category accounted for total documented literacy activity across the sample of classrooms.

As I describe in the previous chapter, I counted activities that were enacted during work periods based on the number of children who participated in them. For instance, a handwriting activity in which three children participated would have been counted as three activities. I employed this method of counting because it provided a more accurate account of what children actually experienced than a method would have that did not account for the number of children who participated in activities. The findings presented in this section pertain to activities enacted during work periods. Later in this chapter, I present findings regarding which types of activities were enacted during whole-class instruction.

Findings displayed in Table 4.1 depict the relative proportions of literacy activity accounted for by each category. For instance, the figure of 41 percent associated with the reading category reveals that 41 percent of all documented activities were reading activities. I calculated these proportions by dividing the number of children who participated in a given type of activity (e.g., reading, handwriting) across the entire sample by the total number of children who participated in all types of activities combined. Table 4.1 also reveals how the relative portions of activity categories varied across classrooms, displaying the ranges of the relative proportions of these categories across classrooms. For instance, the 22 to 56 percent range associated with the reading category

indicates that 22 percent of activities were assigned to the reading category for the classroom that had the lowest proportion of documented reading activities, and that 55 percent of activities were assigned to the reading category for the classroom that had the highest proportion of reading activities. The fourth column displays the standard deviations of each category across classrooms.

Table 4.1

Relative Proportions of Activity Categories During Work Periods

Activity Category	Percentage of total activities	Range across all classrooms	Standard deviation
Reading	41%	22-56%	11.8%
Handwriting	22%	11-42%	9.7%
Letter-Sound	15%	5-29%	7.0%
Writing	10%	6-19%	3.7%
Drawing	7%	0-22%	7.9%
Phonological Awareness	2%	0-5%	1.7%
Alphabet	1%	0-5%	1.7%
Other	1%	0-2%	2.0%

Taken collectively, four categories (reading, handwriting, letter-sound, and writing) accounted for the vast majority of enacted literacy activity in these classrooms. Reading accounted for the greatest portion of activities, and it was the most prolific category in nine of 11 classrooms, with handwriting being the most prolific in the other two classrooms. I next build on these findings by

describing specific characteristics of these various activities. The organization of the section progresses from the most prolific category to the least prolific.

Reading

I divided the reading category, which accounted for 41 percent of all enacted activities, into the book-, word-, and sentence-reading subcategories. Sixty-four percent of children participating in reading activities were involved in book-reading activities. These activities included the reading of phonetic and graded readers, storybooks, and expository books. Thirty-five percent of reading activities were word-reading activities, which called on children to read groups of isolated words. Fewer than one percent of the reading activities fell into the sentence-reading category.

Book reading. Book-reading activities frequently involved the use of books from graded series. Many such books featured primarily phonetic words, and the non-phonetic words in these books were typically high-frequency sight words. These phonetic readers often highlighted a particular letter-sound relationship, holding multiple words with a given letter-sound relationship. Other graded series of books featured words with common spelling patterns. Children also read storybooks and expository texts.

Children frequently read storybooks by themselves and occasionally with teachers. When a teacher and child read together, they typically read books that appeared to be near that child's independent or instructional reading level. Teachers rarely read books that appeared to be well beyond a given child's

reading level. Teachers rarely read *to* children, but rather *with* them. Teachers read almost exclusively with children who were already reading conventionally.

However, there were exceptions to this pattern. Ms. Yorke's classroom, for instance, featured books that were paired with props. For example, *The Three Little Pigs* was paired with objects of pigs, a wolf, and three miniature houses. I documented multiple instances of Ms. Yorke's students paging through these books and using props to act out plot elements, and on three occasions, she joined children, demonstrating how to use the objects to replicate plot elements. Despite Ms. Yorke's participation with books with props, teachers interacted little around books with children who were not yet reading conventionally.

The manners in which teachers interacted with children during one-on-one readings varied. Some readings entailed reading a book aloud without discussing its content. Other readings included teacher-child discussions about books. Some discussions involved teachers asking children to clarify story elements, such as by asking about characters (e.g., "Who's the first person in the book?"). Other discussions addressed the meanings of particular words. After a girl read *sob*, Ms. West asked, "When you're sobbing, you're doing what?" to which the girl replied, "crying."

All focal teachers provide explicit reading comprehension instruction. For instance, while reading phonetic readers with children, Ms. O'Brien posed discussion questions that were printed in the books, such as by asking the respondent to recall plot elements in the order in which they occurred in the story. Ms. Yorke routinely posed questions that probed comprehension, asking

children to predict story events, to identify characters, to describe settings, and to summarize stories (e.g., “Tell me what happened in the story.”).

Word-reading activities. Word-reading activities included those calling on children to read lists of high-frequency sight words, phonetically spelled words, rhyming-word families, and vocabulary building activities related to thematic units. Many word-reading activities were drawn from graded activity sequences, such as high-frequency sight word reading activities that were sequenced according to the frequency with which words appear in text. The activities toward the beginning of the sequence contained such high-frequency words as articles and pronouns, and the words became less common as the activity sequence progressed. Other types of sequenced word-reading activities included those that featured words holding similar vowels (e.g., CVC words holding the same short vowel) and standard spelling patterns (e.g., digraphs and phonograms). Activities highlighting blends, phonograms, and digraphs were enacted in all classrooms.

Whereas some word-reading activities were embedded in sequences of sight words and words sharing standard spelling patterns, other activities were not systematically tied to orthographic characteristics. Many such activities were related to ongoing thematic units. These activities were typically labeling activities in which children read labels and matched them to corresponding objects or pictures. For instance, an activity in Ms. O’Brien’s classroom that tied into an instructional unit on human anatomy required children to match labels of organs to a diagram of the body. Many labeling activities entailed *three-part card*s, which were used in all classrooms.

Handwriting

Activities that involved the production of print were assigned to either the writing category or handwriting category depending on whether children determined which letters to write. Activities in which letter use was directed by the teacher or by characteristics of instructional materials were located in the handwriting category. In contrast, activities were located in the writing category that called on children to use letter-sound knowledge and phonological awareness to determine letter use.

Handwriting activities were divided into three subcategories: copying, letter formation, and metal insets. Copying activities required children to use writing utensils (e.g., pencils, markers, chalk) to copy text from a teacher-made or commercially-produced models. Activities in the letter formation subcategory, unlike those in the copying category, provided guidance regarding *how* to form letters, such as by providing cues regarding where to start to form letters and how to produce marks that comprise letters. The metal insets subcategory held activities that used one of Montessori's (1995) original materials. Of the documented handwriting activities, 51 percent were copying activities, 49 percent were letter formation activities, and one percent were metal inset activities.

Copying. Many copying activities were follow-up activities to writing activities. For instance, children copied many lists of words that they had composed with moveable alphabet letters onto paper. Open-ended compositions that were composed with moveable alphabets were frequently copied on lined paper. Other copying activities were related to thematic units in such areas as

science and geography. All classrooms featured such activities, which often required children to label parts of a blackline illustration of a phenomenon that they had been studying. For instance, as part of a unit on human anatomy, some of Ms. O'Brien's students copied the names of various body parts onto an illustration of the body.

Letter formation. Letter formation activities constituted approximately half of all handwriting activities. In contrast to copying activities in which children did not receive explicit guidance in how to form letters, activities in the letter formation category provided such guidance. This guidance was provided by either teachers or by features of classroom materials. Teachers often told children where to start letters and how to move a writing utensil, such as by demonstrating to move counterclockwise while making an *o*. Materials that provided handwriting cues typically took the form of worksheets that displayed dots identifying where to begin letters and arrows displaying how to direct a writing utensil.

Metal insets. Given the emphasis on metal inset activities in Montessori's writings and in the Montessori language curriculum, it is noteworthy that metal insets were rarely used, accounting for less than one percent of total literacy activity.

Letter-Sound Correspondence

Activities in the letter-sound correspondence category targeted phonological awareness and letter-sound correspondence knowledge. Fifty-eight

percent of activities in the letter-sound category entailed the use of the sandpaper letters, which Montessori implemented in her classrooms.

By matching sandpaper letters to objects or pictures based on initial sounds, children in three of five focal classrooms used sandpaper letters in a manner that required them to segment initial phonemes and to associate these phonemes with letters. Virtually all instances of this use of the sandpaper letters required children to match letters to initial phonemes of words rather than to middle or ending phonemes. Merely two percent of these activities required children to match middle or ending sounds. All classrooms featured activities that required children to match letters to objects or pictures based on initial sounds. Some such activities did not involve the sandpaper letters.

Teachers in these classrooms frequently enacted sandpaper letter activities in accordance with Montessori's (1991) descriptions of how she used this material. Teachers often began sandpaper letter activities by demonstrating to a child how to trace a letter while uttering its most common sound and then to invite the child to trace it three times and to utter its corresponding sound, which constitutes the first period of the three-period lesson that Montessori described. Teachers enacted the second period by uttering a sound of a given letter and asking a child to point to the corresponding letter. If the child successfully completed the second period, teachers enacted the third period by pointing to a letter and asking a child to produce its sound.

Sandpaper letter activities typically targeted letter-sound correspondences rather than letter names. That said, letter names were mentioned occasionally

during sandpaper letter use. Even during such occasions, however, the primary instructional goal appeared to be promoting letter-sound knowledge. It was usually children, rather than teachers, who mentioned letter names. In addition to sandpaper letters depicting single letters, sandpaper letters depicting letter combinations, such as digraphs and phonograms, were enacted.

Writing

The writing category, which accounted for 10 percent of documented literacy activities, was divided into two subsections: closed- and open-ended writing activities. Across the sample of classrooms, approximately 60 percent of writing activities were closed-ended, and 40 percent were open-ended. The key distinction between these two subcategories pertains to whether children determined the word choice of their written productions. For closed-ended activities, children wrote words that were dictated by teachers or by instructional materials. In contrast, children controlled word choice in open-ended compositions. Open-ended writing activities generally involved children composing connected text rather than composing lists of isolated words, which closed-ended writing activities typically yielded.

Closed-ended writing activities. Closed-ended writing activities typically entailed children writing lists of words that held similar vowels, vowel combinations, or digraphs. Moveable alphabets were used in 57 percent of writing activities. Approximately 85 percent of moveable alphabet activities were closed-ended writing activities.

The words written in closed-ended activities were dictated either by teachers or by instructional materials. Within these activities, children typically wrote several words that shared a common spelling pattern. Teachers typically dictated several words to individuals or small groups of children, often providing corrective feedback when children misspelled words. The instructional materials used in closed-ended writing activities consisted of small objects or pictures of objects that children wrote. These materials often featured word families for a given short vowel, phonogram, or digraph.

Open-ended writing activities. Forty percent of writing activities were open-ended. These activities typically yielded connected text. Open-ended compositions were frequently produced in response to writing prompts, which teachers provided (e.g., “Write about what you did over the weekend.”). Ms. O’Brien’s students, for instance, frequently used small stuffed animals as story starters and composed stories in which a stuffed animal served as a character. Other writing prompts originated from classroom materials. All focal classrooms featured open-ended writing activities that related to thematic units. Children in the classrooms of Ms. Selway, Ms. Yorke, Ms. O’Brien wrote about graded books that they had read, such as by writing about their favorite aspects of a book or particular story elements, including the characters, plot, or setting.

Drawing

The drawing category constituted seven percent of total literacy activity. As noted in the literature review, I included drawing in my examination of literacy practice because drawing is a common form of written expression used by

preschoolers and kindergartners. To be assigned to the drawing category, activities could not involve the production of letters. Activities that included both drawings and letters were assigned to the writing category. Children used multiple utensils in drawing activities, including colored pencils, crayons, and markers.

Phonological Awareness

Phonological awareness activities accounted for two percent of all documented activities. It is important to bear in mind, however, that only activities were assigned to the phonological awareness category that were entirely oral language-based without reference to print. Activities assigned to such other categories as reading and writing also summoned children to exercise their phonological knowledge.

Letter-Name Knowledge

Few activities were enacted that reinforced letter-name knowledge without explicitly addressing letter-sound correspondences. One percent of activities fell into the letter-name knowledge category. These activities included those that required children to alphabetize letters similar to those made for refrigerators. Activities that I located in the letter knowledge category, however, were not the only activities during which letter names were explicitly mentioned, but rather were the activities that focused almost exclusively on promoting letter-name knowledge. Children exercised letter-sound knowledge during activities that were coded in other categories. While working with the sandpaper letters and moveable alphabets, for instance, children frequently referred to letter names.

Documented Literacy Activity During Whole-Class Instruction

Across the sample of classrooms, an average of 17 percent of the duration of instructional blocks was devoted to whole-class instruction, with the class spending the least amount of time in whole-class instruction at eight percent and the class with the most at 28 percent. Although the proportion of time spent in whole-class settings varied across classrooms, the majority of time in the instructional blocks was spent in work periods in all classrooms. Classes typically convened for whole-class lessons at the beginning or end of instructional blocks. Teachers used whole-class groupings to carry out a range of tasks, such as singing, having show-and-tell, celebrating children's birthdays, and enacting specific instructional activities. Activities were enacted from multiple curricular areas, including geography, science, math, and literacy. On average, two whole-class literacy activities were enacted during each instructional block. The average number of whole-class activities enacted daily ranged from an average of .6 in the classroom enacting the fewest whole-class literacy activities to 3.5 in the classroom with the most.

A broad range of whole-class literacy activities was enacted, including activities that centered around books, activities that emphasized letter-sound correspondences, and activities that called on children to exercise phonological awareness skills. Unlike activities that were enacted during work periods, I did not factor the number of children into my counts of activities enacted during whole-class instruction. Because all children in a given class, by definition,

participated in whole-class activities, I did not denote how many children participated in these activities. I counted each whole-class activity once.

Seventy-eight percent of whole-class literacy activities were reading activities (see Table 4.2). Almost half of these entailed the reading of connected text with storybook reading serving was the most common type, accounting for approximately 38 percent of documented book-based activities. Although storybook reading was a *relatively* common whole-class activity, due to the limited amount of whole-class activities overall, storybooks were read in only approximately half of documented instructional blocks. Other book-based activities included the reading of expository books, “authors chair” during which children read to their classmates, and the reading of big books. Book-based activities, however, were not the only whole-class activities that involved the reading of connected text. Teachers also read letters and poems.

Table 4.2

Relative Proportions of Activity Categories During Whole-Class Instruction

Activity Category	Percentage of total activities	Range across all classrooms	Standard deviation
Reading	78%	58-90%	12.8%
Phonological Awareness	12%	5-29%	7.0%
Letter-Sound	8%	6-19%	3.7%
Writing	2%	0-5%	1.7%

Twelve percent of whole-class literacy activities exercised phonological awareness, and eight percent targeted letter-sound correspondence knowledge.

Activities that tapped phonological knowledge included those in which children clapped to the syllables of words that they uttered as well as activities in which teachers asked children to produce rhyming-word combinations. Among activities that focused on letter-sound relationships were “letter-of-the-week” activities and Orton-Gillingham phonics activities. Writing activities accounted for only two percent of all whole-class literacy activities. I documented only one teacher model writing during whole-class instruction. The proportion of time in instructional blocks devoted to whole-class instruction was stable across the school year. In addition, the number of whole-class literacy activities enacted during instructional blocks was virtually identical across the first and second halves of the school year.

CHAPTER V

Findings Two: Examining How Montessori's Views of Learning and Teaching Were Reflected in Literacy Activity

In this chapter, I consider patterns of practice in these Montessori classrooms in relation to Montessori's views on learning and teaching. Based on my analyses of these patterns, I generated multiple assertions. I also identified the following overarching assertion, which encompasses these more specific assertions: teachers implemented practices that generally reflected Montessori's views of learning and teaching. Although not all practices squared perfectly with Montessori's stance, deviations did not represent complete departures from her stance. Instead, deviations reflected how teachers grappled with seemingly competing principles of her approach.

I identified three general assertions associated with the child component. Two of these assertions reflected Montessori's (1995) emphasis on fostering independent child activity. First, classrooms were structured to allow for instructional groupings that facilitated active student engagement. Based on my analysis of instructional groupings, I determined that teachers participated more frequently in activities that targeted discrete literacy skills than they did in more integrative literacy activities, such as open-ended writing. Second, teachers encouraged children to complete activities with minimal levels of teacher support.

The third assertion pertaining to the child component – that children's routine use of "contracts" limited their control over activity selection – ran counter to Montessori's emphasis on independent child activity. Contracts, which I describe later in this chapter, were essentially individualized task lists that teachers used to dictate which activities children enacted.

I identified the general assertion related to the teacher component as teachers tailoring literacy activity to multiple characteristics of their students. More specifically, teachers used a broad range of assessment methods to align instruction with individuals' ability levels. Teachers also considered socio-emotional factors and learning objectives when planning for and enacting activities. These teacher moves yielded an overarching pattern of practice reflecting Montessori's call for teachers to individualize instruction.

I generated two general assertions regarding the instructional materials and print-based displays of these classrooms. First, all classrooms featured a broad selection of books, which were readily accessible to children. Although Montessori's (1964) classrooms held few books, she believed that classrooms should feature many books. Indeed, she bemoaned the fact that a limited number of children's books were available in Italian, her native tongue. Second, classrooms varied substantially regarding the extent to which they featured literacy-related environmental elements that did not pertain to book use, such as print-based displays. Montessori did not encourage teachers to hang such didactic displays as alphabet strips, nor did she recommend that teachers hang samples of student work.

My analysis of the environment component included an examination of the self-correcting nature of literacy materials. Along this line of inquiry, I generated two assertions. First, even materials that featured self-correcting design elements provided limited amounts of feedback. Second, I determined that materials featuring such elements were restricted to those used in activities that targeted discrete literacy skills and did not include materials used in meaning-making activities. Consequently, when viewed collectively, literacy materials held limited potential to foster Montessori's notion of auto-education.

Documented Activity and Montessori's Approach

In chapter two, I outline the principles of the Montessori approach that served as sensitizing concepts to guide my analysis of classroom literacy practice. To review, I organized these principles around three components of Montessori's theory (the child, teacher, and environment). The principles that I associated with Montessori's (1995) conception of the child, teacher, and environment were, respectively, her view of children as active learners, her call for teachers to tailor instruction, and her contention that elements of the physical classroom environment and instructional materials influence activity and learning considerably.

I grounded my examination of literacy practice in empirical observations, and literacy activity served as the primary unit of analysis. To examine patterns of literacy activity within and across the child, teacher, and environment components, I applied a series of coding procedures (Strauss & Corbin, 1998) to

fieldnotes that I generated during classroom observations as well as to transcripts of teacher interviews. Within the overarching categories of the three components, I employed open coding procedures (Strauss & Corbin) to identify more specific categories of literacy activity. To conduct a fine-grained analysis of the data, I used axial coding to identify salient processes and structures associated with these categories.

Employing these coding procedures yielded assertions regarding patterns of classroom literacy practice. To evaluate the validity of these assertions, I constructed key linkage charts (Erickson, 1986), which permitted the systematic examination of confirming, as well as disconfirming, evidence (see Appendix C for an example of a key linkage chart). These key linkage charts depicted the subassertions on which general assertions were based as well as the evidentiary warrants on which subassertions were based.

The Child Component

Central to Montessori's (1991) conception of the child is her view of children as active learners. In this section, I put forth assertions that reveal how practices in these classrooms complemented, as well as ran counter to this view. More specifically, I examine how classroom practices promoted children's independent literacy activity as well as how practices limited children's control over the selection of activities.

I identified two general categories within the child component: teacher encouragement of independent activity and children's use of "contracts." Through

selective coding, I fleshed out these categories, identifying specific classroom processes and structures underlying these categories. Here, I address characteristics of activity that fostered independent activity. I then explore how the use of contracts restricted independent activity by reducing children's influence over which activities they enacted as well as over how activities were enacted.

Independent Child Activity

> "Great! You know what…I don't think you need my help anymore. Awesome!" [Ms. O'Brien responded to a boy who demonstrates the ability to work through an activity without her assistance.]

I identified two general assertions regarding how literacy practices fostered independent child activity. First, teachers structured classrooms to allow for instructional groupings that facilitated active student engagement. Second, teachers encouraged children to complete activities with minimal levels of teacher support. These patterns of practice both dovetail with Montessori's view of children as active learners. Before examining evidence associated with these assertions, I briefly present findings that I generated from quantitative data that pertain to independent child activity. These findings reveal that Montessori's view was evidenced in the limited amount of time spent in whole-class instruction and in the proliferation of child-managed activities.

Montessori (1995) contended that children learn at differing rates and created an instructional approach that featured a limited amount of whole-class instruction. I use the term "work periods" to refer to instructional time that was not

spent in whole-class instruction. Montessori educators commonly use this term. The prioritization of work periods over whole-class instruction in classrooms of the present study reflected Montessori's privileging of individual and small group activity over whole-class instruction. Across the sample of classrooms, the average duration of an instructional block was slightly longer than two hours and 15 minutes. On average, 17 percent of this time was spent in whole-class instruction, and the remaining 83 percent was spent in work periods. Despite the limited amount of whole-class instruction across the sample, some whole-class literacy activities were enacted in each classroom. The vast majority of literacy activities, however, were enacted during work periods.

These findings reveal that classrooms were structured to facilitate independent activity by devoting the majority of instructional blocks to individual and small group work. To take a fine-grained look at the nature of activity during work periods, I assigned each documented literacy activity a type of "activity management," referring to the extent to which various participants (teachers, children, teaching assistants) participated in literacy activities. I identified four activity management types: child-managed, teacher-managed, teacher-involved, and other adult-involved.

I examined the pervasiveness of each management type and found that child-managed activity was by far the most prevalent type. As Table 5.1 displays, 55 percent of all literacy activities were child-managed, which were activities that children carried out with little to no involvement of teachers or other adults. The second most common type of management was teacher-managed, which

comprised nearly one quarter of all activities. Teachers participated for virtually the entire duration of these activities. Each of the remaining two types of activity management, teacher involved and other adult involved, accounted for approximately 11 percent of enacted activities. Teacher-involved activities were those that teachers do not manage from start to finish yet still influence, such as by demonstrating how to initiate an activity, by providing temporary assistance when a child was already engaged with an activity, and by reviewing the outcome (e.g., a written composition) of an activity with a child. Other adult-involved activities involved the participation of teaching assistants, interns, or parent volunteers.

Table 5.1:

Activity Management Type

Activity Management Type	Percentage of management type	Range across all classrooms	Standard Deviation
Child-managed	55%	34-76%	12.6%
Teacher-managed	23%	10-55%	11.7%
Teacher-involved	10%	1-27%	7.3%
Other adult-involved	12%	4-22%	6.3%

These findings encompass activities enacted during work periods but not during whole-class instruction. Activities enacted during whole-class instruction were all managed by teachers. The findings presented in Table 5.1 reveal the extent to which the prevalence of the various activity management types varied across classrooms. For instance, the percentage of child-managed activities

ranged from 34 percent in the class with the lowest portion of such activities to 76 percent in the class with the highest portion.

I also examined how activity management types varied across the differing types of activities. Activities in the letter-sound, open-ended writing, and phonological awareness categories featured the highest level of teacher participation. Eighty-three percent of letter-sound activities, and 70 percent of closed-ended writing activities were either teacher-managed or teacher-involved. All enacted activities in the phonological awareness category involved teacher participation. Teachers participated least frequently in book-reading, open-ended writing, and drawing activities. Indeed, 78 percent of book-reading activities were child-managed, 80 percent of open-ended writing activities were child-managed, and 95 percent of drawing activities were child managed.

Based on these findings, I determined that teachers were more likely to participate in activities that targeted discrete literacy skills than to participate in activities that called on children to integrate multiple literacy skills. In the following chapter, I consider this pattern of practice in relation to Montessori's views as well as to contemporary research.

The quantitative findings outlined thus far point to patterns of practice that reflect Montessori's view of children as active learners. I now examine qualitative findings that reveal how teachers' practices aligned with this view by seeking to foster independent activity. This was evidenced in how teachers interacted with children during literacy activities, how children employed classroom materials and displays to facilitate independent activity, and how teachers encouraged

children to support one another during activities rather than to seek teacher assistance.

All teachers encouraged children to perform activities with minimal levels of teacher assistance, even when children appeared to struggle while enacting activities. This was evidenced in multiple types of activities, including teacher-child book readings and writing activities. When children struggled to read words, teachers rarely read the words to them. Instead, teachers typically encouraged children to attempt to read the words again by sounding them out. While reading a book to Ms. Greenwood, a boy asked her to read a word. She replied, “You’re getting used to me assisting you, and I don’t think you need assistance.” Later during that instructional block, Ms. Greenwood was reading with a girl. After the girl misread a word, Ms. Greenwood said, “Try again. I’m not going to help you.” The girl misread it again, and Ms. Greenwood repeated, “Try again.” On the girl’s third attempt, she read the word correctly.

Similarly, when children demonstrated difficulty spelling words, teachers typically asked them to rewrite the words by directing them to draw on their phonological awareness and letter-sound knowledge. Ms. Yorke used an additional strategy to help children spell high-frequency sight words with which they struggled. Her students produced lists of high-frequency sight words on the inside cover of their journals. Ms. Yorke directed children to refer to these lists when they had difficulty spelling sight words.

Book reading and writing activities were not the only activities that teachers encouraged children to perform independently. A boy in Ms. West’s

class was working on a coloring worksheet that required him to color black-line drawings of balloons based on color labels. To color each balloon the correct color, the boy had to read its corresponding label. He brought the worksheet to Ms. West and asked which color to color a particular balloon. Rather than reading the label to him, she said, “You need to figure that out. You know those,” suggesting that if he put forth more effort, he could successfully read the labels independently. He returned to his desk and completed the worksheet alone, correctly coloring in the balloons according to their labels.

In addition to encouraging children to work independently, teachers complimented children who had completed activities with minimal support. Ms. O’Brien, for instance, sat beside a boy who was holding a book of poems. Ms. West expressed delight after the boy read a poem to her, “Great! How did you do that?” The boy provided a brief explanation, and Ms. O’Brien exclaimed, “Great! You know what…I don’t think you need my help anymore. Awesome!” She left the boy’s side, and he read the poem again. In addition to suggesting that Ms. O’Brien valued independent activity, this interaction demonstrates that she verbalized this value to her students.

To foster independent activity, teachers introduced materials that provided corrective feedback, enabling children to evaluate their own work. This pattern of practice aligns with Montessori’s (1991) emphasis on promoting independent child activity as well as her notion of auto-education, which I examine further later in this chapter. Children in all focal classrooms used materials, such as *control ladders*, to self-monitor their performance during closed-ended moveable

alphabet writing activities. Students used *word ladders* to determine which words to write with moveable alphabets. After writing words that corresponded to pictures on the word ladders, children used control ladders to check their spelling. Control ladders listed the correct spellings of the words depicted on the word ladders. To identify and correct misspelled words, children used control ladders to compare their spellings with conventional spellings. The use of control ladders was but one way in which children used materials that featured self-correcting design elements. I describe how children used other such materials later in this chapter in my examination of the environment component.

In addition to demonstrating how to use classroom materials to promote independent activity, teachers showed children how to employ environmental displays to complete activities without teacher support. Ms. West, for instance, frequently directed her students to refer to an alphabet strip that hung over a blackboard. A picture of an animal was located underneath each letter on this strip. The first letters of these animals' names corresponded to the letters under which they were posted (e.g., alligator underneath *A*). On multiple occasions, Ms. West told children to refer to the alphabet strip after they asked her questions about letter formation and letter-sound relationships. Ms. West's students appeared to internalize this strategy, as they occasionally referred to the letter strip without her prompting. For example, a girl who was slowly sounding out words while reading a phonetic reader looked at the strip several times to identify sounds associated with several letters in the words in the book.

Other practices aimed at reducing children's dependence on teachers by encouraging collaborative work among students. Ms. West periodically instructed children to "check" one another's work. Ms. O'Brien periodically paired preschoolers and kindergartners together. Student collaboration, however, did not always stem directly from teachers' commands. I observed some of Ms. West's students solicit the help of classmates to "check" their work just as Ms. West sometimes directed them to do. For instance, a girl in her classroom was enacting an activity that required her to match pairs of rhyming-word cards. Each card held one word. The words appeared challenging for the girl to read. She read the words slowly aloud and misread several of them. After struggling to read the word *stack*, she asked a classmate, "What does this say?" He told her, and she placed *stack* next to *stop*. He then said, "stack…track" and placed *stack* beside *track*, which she had already read. The girl seemed to realize that she had not matched other cards based on rhymes, but rather on initial sounds. She started the activity over and matched all rhyming-word pairs correctly.

The findings presented above substantiate my assertions that classrooms were structured to allow for instructional groupings that facilitated active student engagement, and that teachers encouraged children to complete activities with minimal levels of teacher support. More specifically, these findings demonstrate how teachers structured instructional blocks, encouraged children to work though challenging situations by themselves, and equipped their classrooms with some materials that allowed for children's self-directed activity. These patterns of practice complement Montessori's (1986) view of children as active learners.

Child-Selected Activity and Contract Use

> "The thing I found when I used to do this [use contracts] on a more regular basis was that they [children] became very dependent upon those and when they didn't have them, they didn't know what to do." [Ms. West conveyed conflicting thoughts regarding contract use.]

The use of contracts constituted my second major category in the child component. Montessori (1964) believed that children are motivated, either consciously or unconsciously, to seek experiences that optimally promote their development. In line with this belief, she created an instructional approach in which children were free to select their own activities. Although children in all classrooms of the present study were afforded with some opportunities to select activities, such choice was limited through the use of "contracts." This assertion runs counter to Montessori's notion of the importance of allowing children to self-select activities. To elucidate the subassertions and evidentiary warrants that underlie this assertion, I next describe how contracts were used and explore why teachers used them.

Contracts listed between two and five activities that children were assigned to carry out before they were granted the freedom to select activities on their own. Contracts were generally used by kindergartners but not by preschoolers. Consequently, many activities enacted by kindergartners were teacher-selected, whereas preschoolers had more control over activity selection. Kindergartners in four of the five focal classrooms regularly used contracts, and kindergartners in the other classroom used them periodically. Contracts in all

classrooms listed literacy and math activities. Other curricular areas, including science and geography, appeared on contracts in some, but not all, classrooms. Contracts typically delineated which activities children enacted, but children usually were free to determine the order in which to enact them.

In addition to giving children assignments, all focal classroom teachers, at times, influenced the nature of enacted activities by determining whether children had completed them successfully. Teachers frequently told children to redo activities that did not meet teachers' standards. Ms. Selway, for instance, reminded a kindergartner, "Did a teacher check your work? Remember, you need to always have a teacher check your work." After determining that a child had completed activities to their standards, teachers typically initialed beside these activities listed on the contracts. Activities that were not completed on children's contracts on a given day were usually written on contracts for the following day. Contracts produced paper trails, enabling teachers to track activities that children had enacted as well as to note whether they had completed them successfully.

Teachers typically provided two rationales for using contracts. First, teachers sought industrious classroom environments. Second, they wanted children to enact activities that were optimally challenging. That is, teachers employed contracts to direct children to activities that would stretch their competencies. Despite identifying these benefits of contract use, all focal teachers expressed the belief that it ran counter to Montessori's notion that children are inclined to self-select optimally challenging activities. In response to this perceived downside, teachers modified how they used contracts. I next

describe how two teachers made such modifications. First, I describe how Ms. West altered the frequency with which she used contracts to achieve an optimal balance between dictating activity selection herself and children controlling activity selection. Second, I explain how Ms. Greenwood changed her contract system during the school year to achieve such a balance.

Ms. West, the one focal classroom teacher who did not use contracts regularly, employed other practices that directed the selection of activities. Her kindergartners were expected to enact one activity each day from each of the following curricular areas: reading, writing, and arithmetic. Although her students generally determined which activities from these three areas to enact, Ms. West occasionally told children that their selections were not challenging enough and instructed them to select “more challenging” activities. In addition to limiting child choice in this manner, Ms. West periodically used contracts, which she referred to as “work lists.” I henceforth refer to these work lists as contracts because they took a similar form and served a similar function as the contracts in other classrooms.

I observed Ms. West’s classroom three times before observing contract use. During my fourth observation, Ms. West explained that she had assigned them, “because nobody was choosing work yesterday that was worth anything.” When Ms. West noticed that children were not selecting challenging activities, she typically asked them whether they preferred to select more challenging activities by themselves or whether they preferred to work from a contract. Ms. West estimated that children elected the former option approximately as often as

they opted for the latter. When children requested contracts, Ms. West typically solicited children's feedback in the construction of contracts by asking such questions as, "What do you think that you should be doing in language? What kind of reading work should you be doing?" However, she did not leave activity selection entirely up to children: "Sometimes I'll guide their choices a little bit. I'll say, 'You already know that pretty well. What's something that's still hard for you?'" Ms. West perceived a drawback to assigning contracts: "I found when I used to do this [assign contracts] on a more regular basis was that they became very dependent upon those." In sum, she maintained that contract use, especially when employed regularly, stripped children of independence.

The perceived connection of contract use and children's independence also influenced Ms. Greenwood's approach to contract use. She altered her contract system during the school year in an effort to increase children's independence. During the first half of the year, her contracts listed two activities for children to complete before lunch and two after lunch. Students were assigned one literacy and one math activity in the morning and one science and one geography activity in the afternoon.

During the second half of the school year, Ms. Greenwood implemented a new contract "system," which increased the extent to which children self-selected activities. Ms. Greenwood explained that she granted children more "choice" because she had, "too many children who aren't independent," suggesting that affording children with more control over activity selection would foster independence. Ms. Greenwood's decision to use contracts reflected her

overriding desire to foster the growth of certain literacy skills. Prior to teaching preschool and kindergarten, Ms. Greenwood taught older elementary students. She explained that working with older children prompted her to focus on promoting certain academic skills, especially spelling and handwriting skills, that she observed many of the older children as lacking.

Both Ms. West and Ms. Greenwood, as well as all other focal classroom teachers, perceived that contract use ran counter to strands of Montessori's (1995) epistemology. However, their decisions to use contracts did not reflect complete deviations from the Montessori approach. Instead, deciding whether to employ contracts pressured teachers to choose between what they perceived as manifestations of competing strands of Montessori's theory. Contract use appeared, in part, to reflect teachers' desires to replicate the industrious environments described in Montessori's writings. Montessori (1995) wrote at length about the critical role that purposeful engagement served in children's development. Montessori labeled such engagement "work" rather than play, and she conceived of work, by and large, as children enacting challenging learning activities.

Teachers' decisions to use contracts were driven, in part, by the desire for children to remain engaged with activities. They appeared uncomfortable with children spending time not engaged in instructional activities. Indeed, teachers routinely directed children who were not engaged with industrious activities to select activities. Teachers expressed their desires for industrious environments to their students. For example, Ms. Yorke's class was unusually noisy one day,

and she rang a bell to get the attention of the children. She then called out the names of children who were actively engaged with activities, and then encouraged other children to select activities, “You need to get busy and be quiet.” Ms. Yorke’s call for a “busy” work period was also exemplified by Ms. O’Brien. At the end of an instructional block, Ms. O’Brien commended her class for having a “busy morning.”

Contracts, according to these teachers, fostered industrious instructional blocks. Although all teachers expressed that an industrious classroom was a necessary component of a satisfactory work period, they did not consider it a sufficient component. Indeed, teachers expressed that another necessary component for a satisfactory work period related to the extent to which children’s skill levels matched the activities with which they worked. Some teachers revealed their decisions to use of contracts were informed, in part, by outside pressures. More specifically, two teachers expressed that they employed contracts to assure that children acquired key literacy skills that were tied to grade-level expectations.

Ms. Yorke expressed this belief by explaining that she assigned activities, “based on where they [children] are…to make sure they’re moving forward.” Although her students typically used contracts, she explained that on “some days” she allowed children to select all of their activities. I observed her classroom on such a day. Although Ms. Yorke permitted children to select activities during this instructional block, she occasionally exercised a sort of veto power when children selected activities that she did not deem “challenging.” A

kindergartner, for example, obtained an activity that involved a storybook and objects that depicted the story's characters and props. Children were intended to use this activity to reenact events depicted in the book. Before the boy began the activity, Ms. Yorke told him to return the book and to choose, "a more challenging work."

It is important to note that even as they employed contracts, teachers made some space for children's choices. Teachers rarely assigned contracts to preschoolers, and thus, preschoolers selected a large portion of their own activities. In addition, after kindergartners completed the assignments listed on their contracts, they were typically granted the freedom to choose activities. Even some activities listed on contracts allowed for some degree of choice. For instance, one day Ms. Yorke was preparing a contract during the work period for a boy to use the following day. The boy sat beside her as she worked on it. Ms. Yorke named the titles of several books and then asked him which two he wanted to read the following day. She wrote the book titles that he mentioned on his contract.

Montessori's (1991) conception of independence is bound with her contention that children should be afforded with opportunities to guide their own activity. To this end, she granted children freedom to determine which activities to enact. Contract use in classrooms of the present study reduced the amount of control that children exercised over literacy practice by limiting the extent to which they self-selected activities. As such, this practice deviates from this principle of Montessori's approach.

The Teacher Component

The overarching assertion that I associated with the teacher component is that teachers tailored instruction to multiple characteristics of their students. This pattern of teacher practice was linked to multiple factors, including such key instructional variables as how teachers planned for instruction, how teachers interacted with children in the context of literacy activities, and how teachers tracked children's literacy skill growth. I identified two key subassertions within this overarching assertion. First, teachers tailored instruction based on which activities they assigned to and enacted with children. I conceived of this as teachers individualizing instruction *across* activities. Second, teachers individualized instruction *within* activities by modifying practice within the context of activities in response to children's demonstrated proficiencies. Integral to teachers' efforts to individualize instruction was their routine use of various methods of observation and assessment.

Individualizing Instruction Across and Within Activities

> "My job is to guide them and challenge them, and I'm not going to let them go by without being challenged everyday." [Ms. Selway described her effort to individualize instruction]

Assuming that children in a given classroom hold varying skill levels, one necessary, though not sufficient, indication that teachers tailor instruction is that they enact a broad range of activities with their students. The quantitative findings that I presented in the previous chapter reveal that a broad range of

activities was enacted in all classrooms. However, assuming that children hold varying skill levels, merely having children enact a variety of activities does not necessarily imply that such activities complement their skill levels. In this section, I explore qualitative findings related to how teachers modified instruction in accordance with children's skill levels as well as in accordance with other characteristics of children.

I divided the category of individualized instruction into two subcategories: individualizing across activities and within activities. Individualizing across activities refers to how teachers dictated activity selection or guided children toward activities that teachers deemed as optimally challenging. Individualizing within activities refers to how teachers provided and adjusted instructional support within the context of activities. I next discuss how teachers tailored instruction across activities and then describe how they tailored instruction within activities.

One teacher, Ms. Selway, explained in the quote that opened this section that she saw her job as guide and challenger. The use of contracts, which is described in the previous section, was a process enacted by all teachers to help assure that children worked with activities that encouraged them to stretch their competencies. In determining which activities to add to contracts, all teachers maintained that they accounted for student skill levels.

Ms. West's following comments regarding how she provided writing instruction reveals that in addition to accounting for skill levels, she considered

children's affective qualities. I asked her, "When do you start to encourage children to write creatively?" She responded:

> That's just one of those things…I do it so individually. There are some kids who can't write much of anything but they want to write a story. They want to write a story, so we get out a moveable alphabet and we…sometimes we just get out one letter. For the word DOG, they'll get out a /d/…this says dog, you know…and if they're kind of creating something and it's kind of flowing that sounds like a story and they're getting out some sounds that are connected with what they're saying, that's fine with me. Other kids get real frustrated because they got to get out every sound because they don't know how to spell something…like if they don't have a /ch/ and they want to spell CHIP…that really bothers them so it's so individual. Some kids need to know the sounds, and others don't. So I go with the kids…what they feel good about doing.

This description suggests that Ms. West accounted for more than children's skill levels while making instructional decisions. Indeed, by noting that some children who had not yet attained conventional writing skills were comfortable producing compositions while others were not, she indicated that issues related to motivation and self-efficacy also influenced her decision making.

To meet Montessori's call for teachers to tailor instruction, Ms. Yorke, perhaps somewhat ironically, maintained that to match instruction to students, she introduced activities that do not appear in the Montessori language curriculum: "I have done a lot of different things that I wasn't taught in Montessori and added to just because I knew that the kids needed those things to meet the standards [referring to learning goals specified by the school district] for kindergarten." More specifically, Ms. Yorke frequently supplemented the selection of activities in her classroom that appeared in the Montessori language

curriculum with activities that were not in the curriculum, which targeted skill sets measured on district-mandated assessments.

Teachers used sequences of book- and word-reading activities to target individuals' skill levels. For instance, all teachers implemented processes to track each child's standing along sequences of graded readers, which were used regularly in all classrooms. Many word-reading activities were also embedded in prescribed sequences. In general, word-reading activities that were geared toward less experienced readers featured phonetically spelled CVC words, whereas activities geared toward more experienced readers featured words with more complex spelling patterns (e.g., digraphs, phonograms). Teachers tracked each child's progress along these word-reading sequences and drew on this information while assigning activities on contracts.

All teachers adjusted instruction in response to children's behaviors and utterances within the contexts of a broad range of literacy lessons. The presence of this phenomenon across all classrooms reveals that teachers sought to tailor instruction not only across activities, but also within activities. That is, in addition to adjusting *what* activities were enacted, teachers modified *how* they were enacted. Each teacher saw one of her primary roles as tailoring instruction to meet the unique needs of each student, rather than to tailor instruction to the class as a whole. This perception aligns with Montessori's (1995) mantra to "follow the child."

All teachers tailored their approaches to dealing with children's spelling errors based on multiple factors. Teachers' responses to spelling errors varied

from correcting them by dictating conventional spellings to not bringing such errors to children's attention. Closed-ended writing activities typically targeted children's spelling skills. Outside the context of these controlled activities in which children wrote multiple words featuring the same letter combinations, children frequently made spelling errors, especially during open-ended writing activities.

Teachers appeared to determine whether to correct children's spelling errors based on the interaction of two factors: the nature of the spelling error and teachers' perceptions of students' spelling skill levels. All five focal classroom teachers demonstrated this approach. In general, teachers corrected errors that were perceived as falling within a given child's ability to spell correctly. Moreover, rather than determining whether to intervene based on general spelling ability, teachers considered the spelling patterns to which children had been exposed during other literacy activities. Ms. Selway explained that she determined which errors to correct based on which standard spelling patterns a given child had practiced during closed-ended writing activities.

I asked Ms. Selway why she had not corrected a girl's misspelling of *cake.* She responded, "I would let her write it the way she wanted because she's not there [has not learned long vowels] yet." Ms. Selway maintained that she would have corrected this misspelling by children who had been instructed in the *ace* combination, but not for this girl who had not been explicitly exposed to this letter combination. This instance demonstrates that Ms. Selway evaluated this girl's skill level within the context of this activity before determining how to approach the spelling error.

Ms. Yorke expressed how she adjusted her approach to correcting misspellings by contrasting one of her more advanced spellers with one of her less advanced. In explaining why she corrected misspellings of the more advanced child, Ms. Yorke noted, “She’s the strongest reader and writer in the class, so I’m correcting any and all sight words whenever she writes because she knows them, but she’s not retrieving them...And things [mistakes] that I corrected on her today are things that she’s done before.” Ms. Yorke described her approach to working with the less advanced child, who had, “just started writing stories.” She did not correct misspellings of such children until they demonstrated understandings of other writing conventions: “I generally don’t correct [spelling] until they are spacing, they are using capital and period at the end, and they’ve been reading.” These interactions reveal how Ms. Yorke worked through a multi-faceted decision-making process within the context of literacy activities. In these instances, she considered multiple literacy skills, rather than merely spelling ability.

Ms. Yorke also demonstrated tailoring instruction within the contexts of writing activities. For instance, all of her students participated in an open-ended writing activity in which they produced written compositions in response to a writing prompt. Characteristics of their compositions differed substantially. Some children produced compositions that were several sentences long and featured conventional spelling and punctuation. In contrast, two children produced nonphonetic letter strings (i.e., series of letters that did not phonologically reflect the writers’ intended message). Although an individualized approach was not

evident in Ms. Yorke's presentation of the activity, which she presented to all of the children at once, such an approach was apparent in conversations Ms. Yorke held with children about their writing.

Upon completing their compositions, the children individually discussed their compositions with Ms. Yorke. Taken collectively, these discussions addressed a broad range of writing conventions, including capitalization, letter-sound relationships, the spelling of high-frequency sight words, and punctuation. While working with a girl who had written one of the more sophisticated compositions, Ms. Yorke explained how to place commas in-between words in lists. While working with a boy who had produced nonphonetic letter strings, Ms. Yorke asked him to "read" what he had written. He pointed to the letters and uttered words, which did not correspond to phonological or orthographical characteristics of the letters. Ms. Yorke smiled and said, "Great job!" She later told me that his use of letters represented a "quantum leap" in his writing development. Moreover, she maintained that alluding to the disparity between the letters in his composition and his intended message would have detracted from his motivation to continue to experiment with letters. Ms. Yorke's approach with this boy, however, was not indicative of a general reluctance to critique children's creative efforts. Indeed, in addition to discussing conventions of print with other children during this assignment, she regularly corrected children's use of such conventions as spacing, punctuation, and capitalization during other writing assignments.

This writing activity demonstrates that although one-on-one and small group instruction facilitated individualized instruction, it was not essential for children to work with different activities for teachers to individualize feedback. A factor that enabled Ms. Yorke to tailor feedback within the context of this activity was that she held one-on-one conversations with children. As noted earlier in this chapter, the nature of instructional groupings during work periods allowed for many such child-teacher interactions. Ms. Yorke used the writing conferences to extend children's skill sets by addressing punctuation, spelling, and other writing mechanics.

Ms. Greenwood individualized instruction within a handwriting activity in which a small group of children formed multiple copies of letters on lined paper. Ms. Greenwood explained that although a group of several students enacted this same activity, she varied the number of different letters of which each student produced multiple copies according to her or his handwriting competencies. She instructed children who typically struggled with letter formation to write multiple rows of one letter, whereas she directed more experienced writers to practice several letters. Another way in which Ms. Greenwood individualized instruction during this activity was to use a highlighter to write outlines of letters for certain children to trace. On the papers of less competent writers, Ms. Greenwood frequently wrote such outlines, which the children traced before writing letters without the aid of outlines. In contrast, Ms. Greenwood did not use the highlighter with the more experienced writers.

All teachers employed the three-period lesson to individualize instruction within the contexts of activities that required memorization, such as the sandpaper letters, sight word activities, and nomenclature activities. To review, in the first period of this lesson, the teacher introduces something to be learned. In the case of learning sight words, a teacher might place flash cards in front of a child and read them (e.g., “This card says ‘the.’ This card says ‘an.’”). The second period involves the teacher asking the child to recognize a word read by the teacher (e.g., “Can you point to the word ‘the?’” “Can you point to the word ‘an?’”). The third period requires the children to “read” the cards (e.g., “What does this say (pointing to the word *the*)?”). The following examples illustrate how teachers employed the three-period lesson to provide responsive instruction.

Ms. O’Brien sat at a table with a boy and all 26 sandpaper letters, and she enacted the third period of the three-period lesson by placing each letter in front of the boy and asking him to utter its corresponding phoneme. Based on whether he correctly identified letter-phoneme relationships, Ms. O’Brien placed each sandpaper letter into one of two piles, one pile for letters identified correctly and the other for letters identified incorrectly. After going through all 26 letters, Ms. O’Brien picked up the stack of letters that the boy had gotten incorrect. She then reviewed the phonemes of these letters by carrying out the three-period lesson. She enacted the first period of the three-period lesson by demonstrating how to trace these letters and by uttering their corresponding phonemes, and she then enacted the second period. By enacting the first period, Ms. O’Brien provided the boy with opportunities to learn letter-sound correlations that he had not yet

mastered. By enacting the second period, she gave him opportunities to apply this knowledge in a manner (recognition) that was less demanding than the initial manner (recall).

On other occasions, teachers went to great lengths to tailor instruction to children's apparent skill levels. For instance, Ms. Selway embedded a lesson on letter-sound correspondences within a book-reading activity. During the reading of the initial pages of a phonetic reader, Ms. Selway encouraged the boy to "sound out" words that he had initially misread. With some effort, he successfully read most of these words. However, after misreading *spin* and being asked to sound it out, he still misread it. He misidentified its initial phoneme (/s/). Ms. Selway wrote an *s* on a piece of paper and asked, "What does this say?" The boy did not respond. Ms. Selway then obtained the *s*, *i*, and *n* sandpaper letters. Enacting the first period lesson with these letters, she demonstrated how to trace each one and uttered its corresponding phoneme. As she progressed through the second and third periods of the three-period lesson, he correctly recognized and recalled these letter-sound relationships, respectively. They then resumed reading the book. The boy correctly read *spin* and continued reading, managing to read other words correctly that began with the letter *s*.

In some of the examples above, I noted how teachers used assessment in the context of activities to tailor instruction. Teachers' routine use of assessment was integral to their efforts to individualize instruction. I now expand on this pattern of practice.

To tailor instruction to children's skill levels, teachers must understand where children stand in essential literacy skill sets. All teachers tracked children's progress in multiple literacy skill sets by recording which activities children enacted and noting specific characteristics of their enactments with them. All teachers recorded this information regularly. Although specific characteristics of the forms on which teachers marked children's progress varied, as the following paragraphs illustrate, forms used by all teachers held much of the same information.

Ms. Selway noted that she carried out, "a lot of assessment, a lot of observation, a lot of writing down." Ms. Yorke also expressed the centrality of assessment to classroom practice: "I'm assessing all the time." Teachers used information gleaned from observations and assessments to plan instruction, such as by drawing on this information while writing children's contracts. All focal classroom teachers tracked children's knowledge of standard spelling patterns as well as their progress along series of graded phonetic and predictable readers. All teachers also used systems to document children's knowledge of letter-sound relationships progress, as children demonstrated during enactments of the sandpaper letters.

Both Ms. West and Ms. Greenwood used index cards to record children's demonstrated letter-sound knowledge through sandpaper letter use. These teachers had written all 26 letters on a card for each student. During teacher-child enactments of sandpaper letters, Ms. West and Ms. Greenwood marked on these cards to record children's knowledge of letter-sound relationships. In

addition to tracking letter-sound knowledge, Ms. West maintained another set of index cards that she used to record children's knowledge of blends, digraphs, and phonograms. Ms. West stored all of the cards in a box that she kept on a table from where she often worked with children. In contrast, each child in Ms. Greenwood's classroom had his or her own index card box. In addition to the index cards that tracked letter-sound knowledge, these boxes held cards that tracked children's knowledge of phonograms, blends, and sight words.

During work periods, Ms. O'Brien regularly referred to folders that housed tracking forms. She maintained a folder for each child, which held forms that tracked each child's knowledge of letter-sound relationships, blends, and sight words as well as his or her progress along sequences of graded readers and word-reading activities. Ms. O'Brien marked on these forms during work periods, often doing so in the company of children and informing them of what she wrote (e.g., "You're on book seven"). Children demonstrated an awareness of the evaluative purpose of the folders. For instance, after reading a book with a boy, Ms. O'Brien marked on a form in his folder, indicating that he had read it successfully. He exclaimed, "Now I'm on number three!" Ms. O'Brien encouraged children to use their folders to monitor their own progress. I observed children referring to their folders independently to determine which books to read.

The patterns of practice that I have outlined in this section reveal how these teachers tailored instruction based on various characteristics of their students. Teachers employed multiple practices to do so. Taken collectively, these teacher practices created responsive programs that dovetail with

Montessori's recommendation to individualize instruction. That is, these teacher moves align with Montessori's call for teachers to implement instructional practices that are responsive to individual children.

The Environment Component

The environment component of Montessori's approach served as a lens through which I examined physical features of these Montessori early childhood classrooms. I examined how classrooms were furnished and organized, how reading corners and writing tables were structured and used, how print-based displays were presented and used, and how self-correcting design elements of classroom materials held the potential to provide self-corrective feedback. This section is divided into two subsections, which correspond to the two broad categories of the environment component. First, I examine literacy-related elements of physical classroom environments. Second, I analyze how design features of instructional materials fostered Montessori's notion of "auto-education."

Physical Classroom Environment

> "Some of the things [instructional materials] I've used in the past, I don't use now because these kids don't need them…I cater to the needs of the children I have at the time." [Ms. Yorke described how she adjusted the selection of classroom materials from year to year.]

Before addressing environmental components related specifically to literacy activity, I explore more global elements of Montessori classroom environments. I identified two assertions related to these elements. First, all focal

classrooms featured a broad selection of books, which were readily accessible to children. Second, classrooms varied substantially regarding the extent to which they featured literacy-related environmental elements that did not pertain to book use.

The organization of these classrooms generally reflected the classroom environments that Montessori (1995) outlined. Indeed, classrooms of the present study were filled with child-sized desks and tables that, rather than being organized into rows, were scattered across the classroom. These classrooms held materials from each curricular area that Montessori addressed. Moreover, many of these materials were reproductions of those that Montessori developed and implemented in her classrooms.

Given the nature of the present study, rather than closely examining all environmental aspects, I focused on those most directly related to literacy activity. To this end, I administered the Literacy Environment Checklist (LEC) (Smith et al., 2002), a measure in the Early Language & Literacy Classroom Observation Toolkit. The LEC is divided into five categories: *book area*, *book selection*, *book use*, *writing materials*, and *writing around the room*.

The LEC measure provided a list of environmental factors that have been linked to rich literacy classroom environments, thus providing me with a framework through which to explore environmental factors. Examining environmental elements through the lens of the LEC revealed how these Montessori classrooms had environmental characteristics that have been linked to literacy skill growth. The findings also pointed to areas in which these

classrooms lacked elements that have been linked to literacy acquisition. In the following paragraphs, I describe how focal classrooms fared on the LEC by examining each of this measure's five categories.

Items in the *book area* category address the organization and contents of classroom book areas by asking LEC administers to indicate whether an area is "set aside just for book reading," whether the area is "orderly and inviting," and whether it has "soft materials," such as pillows and comfortable furniture, "so that children can look at books comfortably." All focal classrooms except one had areas devoted to book reading. The reading corners of the other four classrooms were orderly and inviting in that books were neatly organized, oriented properly, and displayed on bookshelves. However, only one of these reading corners featured "soft materials." This classroom's reading corner held cushioned rocking chairs, whereas other reading corners featured chairs without cushions.

The *book selection* category taps the "number, variety, and condition" of available books by probing whether book selections target a broad range of reading levels and whether books reflect instructional themes. This category also probes the total number of books accessible as well as the number of non-fiction books. These classrooms featured multiple sets of phonetic readers. Books that were non-phonetic readers included storybooks, picture books, and expository texts. All of these types of books were present in all classrooms. Non-phonetic books were located in various areas in classrooms, including reading corners. Expository texts were typically stored in either reading corners or in the science or geography areas of classrooms.

All focal classrooms, including the classroom that did not have a reading corner, provided book selections that were oriented to a broad range of reading levels. All classrooms attained the highest scores possible on the items that measured the total number of books and the number of non-fiction books. In addition, each classroom featured multiple books related to thematic units.

More specifically, all focal classrooms featured at least a few dozen books, which were displayed differently across the classrooms. Ms. Greenwood's classroom did not have a reading corner. Instead, varying types of books were located in multiple sections of her room, such as the science area, which held approximately 15 books that related to an ongoing science unit. The classrooms that featured reading corners also featured books in other classroom locations. Books were accessible in multiple areas in all classrooms. Sequences of phonetic and predictable graded readers, which were present in all classrooms, were stored in various areas, including on language shelves and in reading corners. The science areas in the classrooms of both Ms. O'Brien and Ms. Yorke held approximately 20 books related to ongoing science units.

The *book use* category measures, "the placement and accessibility of books." Two of the five items in this category were not applicable to classrooms of the present study. These items pertained to book availability in dramatic play and block areas, which were not present in these classrooms. Other items in this category assessed the number of books in the science area and in "other areas (not including the book area)," and whether classrooms held spaces and equipment for children to listen to recorded books or stories. All focal classrooms

attained the highest possible scores on the items that measured the number of books in science and “other” areas. Only one focal classroom, however, had a listening center.

The *writing materials* category assesses whether an alphabet display is visible, whether there are “name cards with names or familiar words,” whether tools are available to assist with letter formation, whether a designated area is set aside for writing, and how many varieties of writing paper and utensils are available. All focal classrooms attained the highest possible marks on all of these items except for the item probing whether classrooms had writing areas. Only one focal classroom, Ms. Greenwood’s, had an area exclusively devoted to writing. This finding was surprising given that the Montessori language curriculum recommends that teachers equip classrooms with writing tables. The writing table in Ms. Greenwood’s room was located in a small room within her classroom, which housed a broad array of writing supplies.

These Montessori classrooms earned less consistent scores on items in the final category, *writing around the room,* which solicits, “evidence of writing activities, such as children’s writing and teacher dictation displayed.” Two of these items were not applicable because they pertained to dramatic play and block areas, which, again, were not found in classrooms of the present study. Items in this category included those probing how many varieties of teacher dictation and children’s writing were posted, how many “charts, big books, or other evidence of full-group literacy” were posted, and whether there were alphabet puzzles and/or puzzles displaying words.

All focal classrooms featured multiple forms of print-based materials that were indicative of whole-class literacy activity, such as big books. However, to earn a maximum score on this item, it was necessary to have six or more such artifacts. Three of the focal classrooms earned this score, and the other two classrooms held between three and five of these artifacts. Three of the five focal classrooms had alphabet puzzles, and four featured puzzles with words. Another item asked, “How many varieties of teacher dictation are on display in the classroom?” Two of the five focal classrooms featured displays of teacher dictation, and four of them featured children’s writing. However, these print-based displays were not abundant, even in the classrooms in which they hung. The LEC had an item that tapped the prevalence of writing artifacts, and none of the classrooms earned a maximum score this item, which would have indicated that a classroom featured six or more various types of teacher dictation or children’s writing. Instead, the classrooms were adorned with between one and five varieties of these writing forms.

Student productions were posted in most classrooms. A bulletin board in Ms. O’Brien’s classroom was covered with approximately 20 student compositions, which were all titled “Fall Is Here.” Each composition began with the phrase “We Love” to which children added by listing elements of fall that they considered appealing. Ms. Yorke’s classroom featured a similar display. Her children had completed an “All About Me” worksheet on which they used various writing forms, including drawing and writing with letters, to describe characteristics of themselves. In addition, the written products of science and

geography activities were posted in classrooms. For instance, several pictures of trees on which children had labeled the various parts of trees adorned a wall in Ms. Selway's classroom. In addition to teacher- and child-produced displays, classrooms held ready-made displays.

All focal classrooms displayed environmental print, which took various forms. At least one alphabet display hung in each classroom. All but one classroom featured large alphabet displays, such as alphabet strips hanging above blackboards and alphabet posters. Letters on these alphabet displays were frequently matched with pictures of objects holding the same initial sounds as the letters. Ms. Greenwood had the only classroom that did not feature a large alphabet display. However, several smaller alphabet displays were posted around her classroom. Many of these displays were located beside the tables and desks where children worked. Other print-rich displays, such as maps, displays of cultural and science phenomena (e.g., flags of various countries, a diagram labeling the various parts of a tree) also hung in classrooms. All focal classrooms also featured calendars, some of which could be used interactively by manipulating magnetic labels of dates, days of the week, and months.

In addition to documenting physical elements of classrooms, I recorded how some of these elements were linked to literacy practice. Reading corners, which were present in four of the five focal classrooms, served as fertile areas for book activity. A source of variability across these four classrooms was the number of chairs held in the reading corners, and this variability appeared to

influence the nature of student engagement with books. Two reading corners were equipped with one chair and two with multiple chairs.

Having multiple chairs in reading corners afforded children with opportunities to interact with one another as they looked through books. I documented children discussing books on multiple occasions in the classrooms in which there were multiple chairs. Children in these classrooms frequently "read" books to one another by summarizing events depicted in illustrations rather than by reading the actual text. As might be expected, I documented fewer child-child interactions around books in reading corners that held only one chair. Reading corners, however, were not the only areas in which children interacted with storybooks. Indeed, even in Ms. Greenwood's classroom, which was the one classroom without a reading corner, children discussed storybooks with one another. The books in her classroom were stored on various shelves, and children typically viewed books at tables, where they frequently read and discussed books with one another.

Reading corners were not the only literacy-related environmental elements that children used, as children utilized some print-based classroom displays. Some such displays were physically interactive. Two focal classrooms featured calendars that were composed of magnetized labels of days of the week, months, and numeric dates. To use these calendars, children removed the labels, mixed them up, and then re-produced the calendar. In addition to physically manipulating these labels, children in Ms. Selway's classroom used the calendars routinely, referring to them in order to copy the date onto

assignments. Children also referred to alphabet displays during literacy activities. Ms. West encouraged children to refer to an alphabet strip that hung above a blackboard when they were having trouble forming letters or determining letter-sound correspondences. Children appeared to internalize this strategy, as I documented multiple instances of children referring to the strip independently of the teacher.

As noted above, the general environmental elements of these classrooms largely reflected the environmental characteristics that Montessori (1964) prescribed. By exploring the findings generated by the LEC, I examined specific environments that related to literacy activity. In doing so, I asserted that these classrooms featured broad selections of books. This finding does not reflect the classrooms that Montessori operated. Montessori acknowledged that her classrooms held relatively few children's books. However, this finding reflects Montessori's thoughts regarding how classrooms *should* be equipped with books. Indeed, as noted in chapter two, Montessori wanted more books for her classroom, but she reported that few children's books were available in Italian.

The inconsistency with which classrooms of the present study featured print-based classroom displays is not at odds with Montessori's thoughts on classroom environments. Indeed, Montessori held that classrooms should be adorned with aesthetically-pleasing objects and displays, rather than with displays of a more didactic nature.

Corrective Feedback of Literacy Materials

> "Friends, there are so many new works [instructional materials]…when you see a new work that I have not shown you and want to do it, you need to find a grown-up to show you how to do it because many of our new works have a lot of steps." [Ms. Selway told her students that new activities would likely require teacher support.]

Montessori (1995) viewed educational materials as being integral to classroom environments. I now explore how design elements of some enacted materials facilitated Montessori's notion of auto-education. I generated two assertions based on my analysis of this category. First, I found that even materials that featured self-correcting design elements provided limited amounts of feedback. Second, I determined that materials featuring such elements were restricted to those used in activities that targeted discrete literacy skills and did not include materials used in meaning-making activities.

Montessori (1995) strove to incorporate a built-in control of error into her materials, enabling children to recognize their own mistakes rather than to rely on teacher feedback. Her efforts to promote auto-education yielded some self-correcting materials. Her design of the *cylinder block*, as described in chapter two, exemplifies how she incorporated built-in control of error features into her materials that provided corrective feedback. The self-correcting nature of classroom materials dovetails with Montessori's view of children as active learners. Indeed, by providing corrective feedback, these materials facilitate independent activity.

Although a self-correcting design is readily apparent in some materials, such as the *cylinder block*, it is less apparent in other materials, particularly those in the language area. That said, self-correcting characteristics of materials were

evident in some literacy materials, including three-part cards, sandpaper letters, and moveable alphabets. However, as the following paragraphs demonstrate, the degree to which these materials provided corrective feedback was limited.

Montessori used the *three-part cards* to provide children with the control of error necessary to use them independently. The three-part card activities offer opportunities for children to identify mistakes that they make while working with them. Each three-part card activity is composed of three groups of cards: picture cards, label cards, and control cards. To learn botany nomenclature, for instance, children use three-part cards that depict and label the parts of plants. One group of cards depicts pictures of plant parts, such as roots, stem, leaves; one group of cards displays labels of these parts; and the remaining group features both pictures and labels. According to the Montessori language album, to use the three-part cards, children first lay out the cards that display only the picture. Children then match the labels to these pictures. Lastly, children use control cards, which depict both the picture and label, to assess whether they correctly matched the labels to the picture cards.

Three-part cards were used in all focal classrooms. These activities frequently addressed nomenclature pertaining to science and geography instructional units. Three-part card activities assumed various forms and were used differently across classrooms. Some children use three-part cards in the manner described in the above paragraph. Moreover, during some of these three-part card enactments, children initially had mismatched labels to picture cards but corrected their mistakes using the control cards. Children also used the

cards in an alternative manner. For instance, a student in Ms. O'Brien's classroom, rather than using the control cards to determine whether he had correctly matched the labels to picture cards, used the control cards to match the labels to the picture cards. By using the control cards to match the labels to picture cards before trying to match them himself, he used the control cards to match the labels to pictures without actually reading.

Children in all classrooms routinely used sandpaper letters and moveable alphabets. Like the three-part cards, characteristics of these materials held the potential to provide corrective feedback. However, these materials provide a limited amount of feedback. Although some characteristics of the sandpaper letters could be considered self-corrective, such characteristics do not allow for complete independent use. The contrast of the roughness of the sandpaper cutout with the smoothness of the wooden board on which the cutout is mounted could be considered as serving as a control. Indeed, while tracing a letter, this contrast potentially enables children to sense when their fingertips deviate from the sandpaper cutout onto the smooth board. Consequently, the sandpaper letters could be seen as having a design control that provides children with feedback regarding letter shape. However, the sandpaper letters lack a design feature that provides feedback regarding letter-sound relationships.

Children in these classrooms composed lists of words as well as composed connected text with the moveable alphabets. Like the sandpaper letters, the moveable alphabet boasts a design feature that facilitates some degree of independent use, yet the moveable alphabet does not provide

comprehensive feedback. The moveable alphabet is composed of a box that has 26 slots. Each slot holds multiple wooden copies of a letter of the alphabet. The feature of the moveable alphabet that promotes self-directed activity is that all of the letters lie within the child's field of vision. Consequently, as compared to writing with paper and pencil, which demands that children recall letters that they decide to write, composing with the moveable alphabet demands only that they recognize the letters. Although this feature of the moveable alphabet might ease the task of composition, it does not provide feedback regarding the extent to which compositions reflect standard spellings. Nor does the moveable alphabet provide feedback regarding whether compositions follows grammar conventions or whether someone else reading it can make sense of the authors intended message.

Teachers provided children with other materials that could potentially promote Montessori's notion of auto-education. For instance, children in four of the focal classrooms used *control ladders* to check their spelling accuracy in the context of word-writing activities with moveable alphabets. I describe how children used control ladders earlier in this chapter. Other materials enabled children to determine which activities to select without teacher guidance. For instance, children in some classrooms were privy to their progress along sequences of graded phonetic and predictable readers as well as along sequences of word-reading activities. Moreover, to determine which reading activities to select, children sometimes referred to forms that tracked their progress along these sequences.

Children in these classrooms used literacy materials that Montessori implemented in her classrooms. Moreover, some enacted materials held the potential to foster Montessori's notion of auto-education. For instance, such materials as the three-part cards and control ladders allowed for children to assess their performance. Students also used the sandpaper letters and moveable alphabets, which feature design elements that could potentially provide corrective feedback. In addition, other materials fostered auto-education by helping children self-select challenging activities.

However, there was a limited extent to which documented literacy materials, taken collectively, afforded children with corrective feedback. Even the materials that held the potential to provide performance feedback provided limited amounts. Moreover, these activities almost exclusively called on children to exercise discrete skills, such as letter formation and the spelling and the reading of isolated words, rather than the broad range of skills activated by more integrative activities. Indeed, materials used in meaning-making activities, such as book reading and open-ended writing, did not provide corrective feedback. Many such key literacy processes, as I argue in the following chapter, are inherently multi-faceted, making it tenuous for instructional materials to provide comprehensive feedback.

Summary of Findings

My analyses of the child, teacher, and environment components point to practices that reflect the approach that Montessori's developed and implemented

as well as to a practice that deviates from it. Among the patterns that aligned with her views were those related to how instructional groupings allowed for individual and small group activity, to how teachers tailored instruction, and to how teachers equipped classrooms with a broad range of instructional materials.

Children's use of contracts in these classrooms deviated from Montessori's stance. However, this practice did not reflect a complete departure from her approach. Teachers implemented contracts in an effort to individualize instruction, a central principle of the Montessori approach. The limited extent to which literacy activities fostered Montessori's notion of auto-education does not necessarily deviate from the approach that she put forth. These teachers, after all, used many of the same literacy materials as Montessori implemented. Montessori, however, did not implement materials that provided corrective feedback within the contexts of meaning-making activities.

CHAPTER VI

DISCUSSION

This study contributes to a limited number of empirical studies that have examined Montessori settings. Because studies have found that epistemological beliefs and teaching practices of Montessori educators vary (Chaney, 1991; Daoust, 2004; Zener, 1994), it is important to examine actual practice in Montessori classrooms rather than to base analyses solely on Maria Montessori's writings. My study offers an empirical analysis. Moreover, it does so in classrooms that serve a relatively representative sample of the population, examining an area, literacy instruction in early childhood settings, which constitutes a major focus of the broader educational community.

As I assert in the previous chapter, documented patterns of practice, taken collectively, generally reflected Montessori's views on learning and teaching. I begin this chapter by discussing which types of literacy activities were enacted across these Montessori classrooms. I then explore documented patterns of practice in relation to Montessori's views on learning and teaching. In addition to considering these patterns through the lens of Montessori's approach, I view them in relation to contemporary research.

To review, I identified the following overarching pattern regarding which activities were enacted: many literacy activities were enacted that exercised literacy skills in the areas of letter-sound knowledge, handwriting, reading, and spelling. This pattern, by and large, reflects the types of activities that Montessori (1964) developed and implemented. Indeed, many documented activities entailed the use of the particular materials and activities that she outlined. Teachers in these classrooms, however, did not routinely enact all activities emphasized by her. Although the overall preponderance of handwriting activities enacted by children in these classrooms reflects Montessori's emphasis on the mechanical aspects of writing, the use of metal insets was not prevalent in any of the classrooms. Instead, teachers implemented activities that targeted handwriting skills more directly.

This deviation in documented practice from Montessori's stance appears defensible when considering that contemporary research has not established links between handwriting instruction akin to the metal insets and young children's literacy development. Rather, research has established links between handwriting instruction that explicitly addresses letter formation and young children's literacy skill acquisition (Berninger, 1994; Graham & Weintraub, 2000). Use of the metal insets, to review, does not entail letter formation.

This overarching pattern regarding which types of activities were enacted bodes well when considered in relation to a body of contemporary research. Indeed, many documented activities addressed skills required to crack the alphabetic code. This pattern of practice appears strong when viewed in relation

to a burgeoning consensus within the early childhood education research community that to promote young children's reading development, it is critical to promote their knowledge of the alphabetic principle (NICHD 2000; Snow et al., 1998). Moreover, the explicit nature of many documented literacy activities is supported by studies that have examined how to foster knowledge of the alphabetic principle (Adams, 1990; NICHD, 2000; Snow et al., 1998).

For instance, the preponderance of closed-ended writing activities that focused on standard spelling patterns bodes well. Indeed, studies have linked explicit instruction of standard spelling patterns with gains in kindergartners' word reading, phoneme segmentation, and spelling skills (Ehri & Wilce, 1987; O'Connor & Jenkins, 1995; Vandervelden & Siegel, 1997). Teachers also explicitly addressed discrete literacy skills during book-reading activities. During book readings, teachers frequently directed children to activate word attack skills, such as by helping them sound out words. By encouraging children to sound out words, teachers provided them with an alternate strategy to supplement their use of context cues. Another practice that all teachers employed was to direct children to read books multiple times. Contemporary research has linked both of these practices to literacy learning gains. Children who struggle learning how to read have been found to over rely on context while reading (Perfetti, 1979; Snow et al., 1998; Stanovitch, 1981), and repeated readings have been found to promote fluency and comprehension in transitional readers (Dowhower, 1987).

The Child Component

The present study's nuanced account of documented literacy practice perhaps eclipses a more general characteristic of practice – these classrooms featured an abundance of activities that targeted literacy skills. This finding dovetails with Montessori's (1995) notion of sensitive periods and with her conception of the sensitive period for language in particular. Montessori conceived of the sensitive period for language, the sensitive period most closely tied to literacy acquisition, as lasting from birth through age six, an age span that covers children in the present study. She maintained that children capitalize on sensitive periods to the extents to which they actively participate in environments that afford ample opportunity to exercise oral language skills and to which they participate in structured learning activities that target literacy skills. This study examined the latter of these two areas.

To capitalize on sensitive periods, Montessori considered active engagement as necessary. An outgrowth of Montessori's (1995) view of children as active learners was an educational approach designed for independent and small-group activity. Montessori associated whole-class instruction with educational approaches that stood in opposition to children's inherent nature as active learners.

Montessori's (1995) emphasis on small group and independent activity was evidenced in literacy practice of classrooms of the present study. Indeed, rather than being enacted during whole-class instruction, most literacy activities were enacted by individual children, by child-child and child-teacher dyads, and by small groups. Whole-class instruction, on average, accounted for merely 17

percent of the duration of instructional blocks. In addition, the findings regarding the various types of activity management were in line with Montessori's view of children as active learners. Children in these classrooms enacted approximately half of all activities without teacher participation.

In addition to aligning with Montessori's views, the nature of instructional groupings appears sound when considered in regard to contemporary research. Research has linked children's literacy learning to independent child activity as well as to small-group and one-on-one instructional groupings. Taylor et al. (2000) have found that independent reading contributes to young children's reading development. Classrooms that feature flexible instructional groupings have been found to allow for teachers to tailor literacy instruction to individual children (Morrow & Ashbury, 2003). Other types of literacy activities have also been found to be effective in one-on-one and small group settings. Systematic phonics instruction has been found to produce the greatest learning gains when administered to individuals, with small-group instruction being the second most effective instructional grouping, and whole-group instruction being the least effective (NRP, 2000).

Although these classrooms featured instructional groupings that bode well when considering this contemporary research, specific patterns of teacher participation within the contexts of particular types of literacy activities warrant consideration. More specifically, teachers participated in a limited number of meaning-making activities. This was reflected in the extent to which they provided explicit reading comprehension instruction and participated in open-

ended writing activities. In the following paragraphs, I discuss findings regarding reading comprehension instruction and writing instruction.

The overall lack of teacher participation in meaning-making activities is not attributable to Montessori's (1964) *conception* of literacy learning. As my coverage of her views on literacy acquisition reveals, she recognized the complexities inherent in such meaning-making skill sets as reading comprehension. Rather, I maintain that this pattern is, in part, related to the fact that she did not outline as broad a range of activities that explicitly target meaning-making skills as she did activities that address more discrete skills. This is not to say that she ignored meaning-making skills altogether. For instance, to assess "true reading," the phrase Montessori (1964) used to distinguish mere decoding from comprehension, she reported asking children to summarize passages that they had read. Nevertheless, Montessori provided far fewer descriptions regarding how to promote "true reading" and other meaning-making skills.

The limited extent to which teachers in these Montessori classrooms participated in meaning-making activities raises questions for Montessori educators, particularly when considering the "core message" of the National Research Council (Snow et al., 1998): "that reading instruction *integrate* attention to the alphabetic principal with attention to the construction of meaning and opportunities to develop fluency…integration means precisely that learning these two aspects of skilled reading should be going on at the same time in the context of the same activities." (p. vii).

During some book-reading activities, I noted instances of teachers providing instruction that directly addressed reading comprehension, such as by asking children to predict how a story might unfold or by asking them to summarize a book. Teachers, however, participated in merely 16 percent of book-reading activities. That is, 16 percent of these activities were either teacher-involved or teacher-managed. This pattern of practice raises concerns when considering that the National Research Council (Snow et al., 1998) has determined that, “The demonstrated effectiveness of guided oral reading compared to the lack of demonstrated effectiveness of strategies encouraging independent silent reading suggests the importance of explicit compared to more implicit instructional approaches for improving reading fluency” (p. 3-4).

In addition to the overall lack of comprehension instruction, such instruction was virtually nonexistent for children who were not yet reading conventionally. Indeed, teachers rarely read *to* children. Rather, when teachers participated in reading activities during work periods, they almost always read *with* children who were already able to read conventionally. Consequently, non-readers were privy to comprehension instruction only during whole-class storybook readings. Storybook reading was a relatively common type of whole-class instruction, occurring in approximately 40 percent of instructional blocks. However, because of the overall limited amount of whole-class instruction, storybooks were read in only approximately half of instructional blocks.

This pattern of practice raises questions when considering that preschoolers, as well as school-aged children, have been found to benefit from

participating in teacher-managed storybook reading. Senechal (1997), for instance, has found that preschoolers benefited more in vocabulary growth in classrooms in which teachers encouraged them to ask and answer questions about a storybook than preschoolers in classrooms in which they participated less actively.

Practices regarding the nature of writing activity also raise questions for Montessori educators. As noted above, enacted activities targeted skills associated with a range of writing processes. Before discussing how classroom management types interacted with writing activities, I address how the types of enacted writing activities aligned with Montessori's approach to writing instruction.

Given the considerable role that Montessori (1995) assigned to writing in advancing children's literacy development, I anticipated writing activity to constitute a greater portion of overall literacy activity in these classrooms. Yet, for every one writing activity, roughly four reading activities were enacted. This apparent discrepancy in practice from Montessori's views, however, becomes more understandable by comparing Montessori's conception of writing with the coding scheme that I developed to assign activities to various categories.

In explaining her approach to writing instruction, Montessori described a broad range of activities, including those that involved the sandpaper letters and metal insets. However, I did not locate these activities in the writing category. Instead, I located them in the letter-sound correspondence and handwriting categories, respectively, because I sought to generate a coding scheme that

precisely partitioned various literacy skills. Nevertheless, had I situated handwriting and metal inset activities in the writing category, the writing category would have accounted for approximately 30 percent of total activity, rather than 10 percent.

Thus, although the findings presented here might suggest that writing activities occurred less frequently than might be expected given Montessori's stress on writing, the nature of documented activity reflected her emphasis on promoting a host of discrete skills associated with writing development. In addition, the limited amount of open-ended writing activities is fluid with Montessori's focus on the discrete skills associated with writing development. Although Montessori described children writing compositions of their own volition, she emphasized writing activities that targeted discrete skills.

Although all writing activities afforded children with opportunities to apply, and perhaps extend, discrete literacy skills, a limited number of activities encouraged children to express their thoughts through writing. Indeed, open-ended writing activities constituted merely 40 percent of all writing activities, and teachers participated in only 20 percent of open-ended writing activities. These patterns of practice warrant consideration when considering the centrality of the expressive function of writing to overall literacy development. According to Adams (1990), "As children become authors, as they struggle to express, refine, and reach audiences through their own writing, they actively come to grips with the most important reading insights of all…that the purpose of text is not to be

read but to be understood" (p. 405). Children in classrooms of the present study had limited opportunities to convey meaning through writing.

Open-ended writing activities were not the only documented activities that afforded children with opportunities to express themselves on paper. Indeed, these classrooms featured drawing activities. The proliferation of drawing activities, which at times entailed such other non-letter writing forms as scribble, might seem expected given the age range of the children in the classrooms. In addition to writing with letters, drawing is a form of written communication that children can employ to convey meaning. Vernon and Ferreiro (1999) have examined young children's writing development longitudinally and have determined that children tend to acquire writing forms in the following order: scribble, drawing, nonphonetic letter strings, invented spelling, and conventional writing.

Despite the prevalence of drawing activities, teacher participation during these activities was virtually nonexistent across the sample of classrooms. Teachers participated in merely five percent of documented drawing activities. This finding is not surprising given that the Montessori did not propose how teachers could promote children's literacy development within the contexts of writing activities that do not involve letter use.

The absence of teacher participation during drawing activities might represent missed opportunities to promote children's global understandings of print. Adams (1990) has noted the importance of children acquiring understandings of the communicative and expressive functions of print as they

explored various writing forms. The National Reading Panel (NICHD, 2000) has recommended that teachers employ a wide range of activities that foster such understandings, including with children who have not yet attained conventional literacy, rather than to enact only activities that target discrete literacy skills.

The documented use of contracts was of particular interest in relation to Montessori's (1995) view of children as active learners. This practice runs counter to her notion that children are intrinsically motivated to select optimally challenging activities. This finding is also of interest when considering contemporary research on intrinsic motivation, which has been found to promote persistence (Deci & Ryan, 2000), creativity (Deci & Ryan, 2000) and academic performance (Grolnick, Gurland, Jacob, & Decourcey, 2002). The routine use of contracts, by limiting child choice, held the potential to hinder intrinsic motivation. Deci and Ryan have found that granting children choice over classroom activities fosters a sense of autonomy. Increased student autonomy, in turn, has been associated with increased intrinsic motivation (Grolnick et al. 2002; Ryan & LaGuardia, 1999).

Although contract use appeared at odds with Montessori's (1995) notion that children are intrinsically motivated to select optimally challenging activities, it was in line with her call for individualized instruction. As I discuss in the following section, teachers designed contracts to complement each student's presumed skill levels. All teachers maintained that they used contracts to foster industrious classroom environments and to help assure that children participated in optimally challenging activities. Some teachers revealed that their decisions to use

contracts were informed, in part, by outside pressures. More specifically, these teachers employed contracts to assure that children acquired key literacy skills to meet grade-level expectations.

However, the teachers also recognized that it ran counter to Montessori's stance. All teachers regularly used contracts except for one. Even this one teacher, however, expressed conflicting views regarding whether to use contracts: "The thing I found when I used to do this [use contracts] on a more regular basis was that they [children] became very dependent upon those and when they didn't have them, they didn't know what to do."

The tension that appears inherent in this practice might be alleviated, at least partially, I maintain, by including children in the construction of contracts. That is, rather than leaving activity selection up to teachers *or* students, adopting this practice might potentially lead Montessori educators to determine how activity selection could be a co-constructed process between teachers and children.

The Teacher Component

I associated Montessori's (1964) call for teachers to individualize instruction with the teacher component. I presented findings in chapter five that reveal how teachers in these Montessori classrooms tailored instruction to multiple characteristics of their students. In this respect, these classrooms reflected the responsive classroom environments that Montessori described.

In addition to complementing Montessori's views, the documented practice in these classrooms of matching task difficulty to student ability level is supported by contemporary studies. It is prudent to consider the role of individual differences while examining early childhood programs given that differences emerge in skills sets in preschool-aged children that predict later school achievement. These differences emerge in preschool-aged children in areas that contribute to reading skill growth (Shonkoff & Phillips, 2000), including vocabulary (Adams, 1990), phonological awareness (Juel, 1988; Wagner et al., 1997), and letter knowledge (Adams, 1990). A body of research has found that individualized instruction leads to learning gains in young children's literacy development (e.g., Connor et al., 2005; Foorman & Torgeson, 2001).

Multiple patterns of practice in these classrooms combined to yield literacy activity that was responsive to individual children. Contract use, as described above, was integral to teachers' efforts to individualize instruction. Teachers used systematic processes to track children's literacy development along multiple dimensions, and they strove to assign activities on contracts that would extend children's skill levels. Teachers also employed other practices that contributed to an individualized model.

Indeed, teachers structured instructional blocks to allot for ample time to work with individual children and with small groups. Whole-class activity, as noted above, constituted less than 20 percent of the duration of instructional blocks across the sample of classrooms. Teachers equipped classrooms with a

broad range of instructional materials and books, allowing them to tailor activity to a range of skill levels.

In addition to holding the potential to promote reading and writing skills, the practice in these classrooms of matching activities to student skill levels holds potential to foster intrinsic motivation and self-regulated learning (SRL). Providing students with challenging activities has been found to promote intrinsic motivation (Deci & Ryan, 2000; Grolnick et al., 2002; Ryan & LaGuardia, 1999). According to Hunt (1964), motivation is largely a function of the degree of separation between task difficulty and an individual's ability level: "This notion of an optimal of incongruity, coupled with the notion that the standard upon which incongruity is based derives from experience, gives rise to what I have termed 'the problem of the match'" (p. xxviii). Hunt asserted that Montessori had solved the problem of the match. Practice in these contemporary Montessori classrooms reflected the individualized approach that Montessori prescribed 100 years ago.

In addition to facilitating intrinsic motivation, this practice of affording children with ample opportunities to extend their skill levels has also been found to promote self-regulated learning (SRL). SRL is the capacity to monitor and adjust cognitive, emotional, motivational processes while working toward a predetermined goal (DeCorte et al., 2000; Stone, 2000). According to Bronson (2000), "research conducted over the last 10 years has suggested that a major source of the difference between the highest- and lowest-achieving children in school settings is the degree to which they become self-regulators of their own learning" (p. 135). According to Randi and Como (2000), children develop SRL

by working with activities that require children to learn new strategies to complete them.

The patterns of practice in these Montessori classrooms could potentially inform contemporary research and perhaps practice in non-Montessori programs. Studies have pointed to benefits of non-Montessori approaches that provide individualized instruction (e.g., Connor et al., 2005; Foorman & Torgeson, 2001). Montessori is not the only approach to feature such instruction. However, the Montessori approach represents a time-tested model. Moreover, the present study demonstrates how multiple practices work in harmony to yield an individualized approach. As such, this study could potentially inform the work of contemporary researchers and educators who have interests in examining or implementing individualized approaches.

The Environment Component

In line with Montessori's (1995) description of "the prepared environment," classrooms of the present study were equipped and organized in manners that allowed for the instructional groupings described above. I administered the Literacy Environment Checklist (LEC) (Smith et al., 2002) to assess such environmental factors as book selection, writing materials, book areas, and environmental print. Based on my examination of the findings of the LEC, I determined that these classrooms, by and large, featured environmental elements that research has associated with young children's literacy gains.

Children across the sample of classrooms had access to a vast selection of books, which included books oriented toward a wide range of reading levels. Each classroom held books from multiple genres, including storybooks, graded readers, and expository texts. In addition, books were organized in manners that facilitated accessibility. These characteristics bode well when considered in relation to contemporary research.

Indeed, the availability and organization of books and other literacy tools have been found to foster children's engagement in literacy activities (Wolfersberger et al., 2004). Exposure to storybooks and independent reading have been linked to young children's literacy development (Taylor et al., 2000). Roskos and Neuman (2001) have recommended that books be in close proximity to children in early childhood classrooms.

The proliferation of books in these classrooms reflects Montessori's views, if not the actual holdings of her classrooms. Montessori (1964) considered it important for classrooms to hold many children's books. However, her classrooms held relatively few books, as a limited number of books were available in Italian, her native tongue.

Other environmental elements, however, warrant consideration when considered in relation to contemporary research, particularly those elements associated with writing and print-based displays. Although all classrooms held a broad range of writing supplies, only one classroom had an area set aside for writing. In addition, some classrooms featured few print-based displays. Montessori (1995) did not provision her classrooms with such displays. Rather,

she held that classroom décor should reflect home. Consequently, the relative lack of displays in these classrooms reflects Montessori's stance. That said, this characteristic limited the degree to which these classrooms served as print-rich environments. Moreover, this pattern warrants consideration given that research has linked print-rich literacy environments with young children's literacy acquisition (Roskos & Neuman, 2001; Wolfersberger et al., 2004).

In addition to exploring environmental factors by analyzing data generated by the LEC, I examined how literacy materials in these classrooms allowed children to self-monitor their activity. Montessori (1986) strove to incorporate self-correcting design features into materials to foster independent activity. Her contention that independent activity promotes self-regulation parallels the aforementioned contemporary notions of SRL. Pintrich (2000) has noted that for children to internalize SRL strategies, they benefit from working autonomously, actively constructing their knowledge as they work through tasks. To promote SRL, Bronson has (2000) recommended that teachers grant children as much autonomy as possible. Whereas Montessori's emphasis on fostering independent activity appears sound when considered in relation to this research, my analysis of documented activity reveals that only select activities provided corrective feedback.

In general, documented activities that held the potential to provide feedback called on children to exercise discrete literacy skills rather than to integrate multiple skills. Moreover, even materials boasting design features that provided corrective feedback, such as the sandpaper letters and moveable

alphabets, appeared to afford limited amounts of feedback. I did not witness any activities that provided feedback in the context of meaning-making activities, such as book reading and the writing of connected text.

As I noted above, teachers rarely participated in meaning-making activities. This points to a potential concern because there were not materials or processes in place that provided children with corrective feedback independent of teacher support. Because meaning-making activities require the coordination of a broad range of literacy skills, they pose more challenges than activities that are designed to exercise discrete skills. During independent book reading, for instance, a child might not realize when she misreads a word, as books do not hold design features that would necessarily inform her of a miscue. Similarly, while writing, a child might not realize when he misspells a word or uses punctuation incorrectly.

Although Montessori wrote about such meaning-making literacy domains as reading comprehension, she described few activities that explicitly targeted these domains. As such, she did not create literacy materials that provided feedback during meaning-making activities. Perhaps this explains why these classrooms did not hold meaning-making activities designed to provide self-corrective feedback.

Even when addressing literacy instruction for older children, Montessori (1991) provided a relatively limited amount of guidance regarding how teachers could provide instruction within the contexts of meaning-making activities. Indeed, the methods that Montessori (1991) proposed to promote the literacy

development of six- to nine-year-olds focused more on rather discrete skills than on those skills and strategies associated with meaning making. For instance, she advanced a range of instructional practices for promoting meta-cognitive understandings of grammar, such as those that taught children how to identify various parts of speech and how to parse sentences.

Perhaps it is not surprising that Montessori did not advance a comprehensive approach to teach comprehension given that this is an instructional area in which many educators in the current educational community feel as though they lack a firm grasp. According to Bryant, Linan-Thompson, and Ugel (2001), many teachers report feeling unprepared to provide reading comprehension instruction. Given that approximately forty percent of school-age children in the United States do not surpass basic levels of reading comprehension (Lee, Grigg, & Donahue, 2007), it is important for Montessori educators, as well as non-Montessori educators, to identify effective ways in which to provide instruction in the contexts of meaning-making activities.

Some contemporary non-Montessori approaches have prescribed how teachers can participate in and manage meaning-making activities, while also outlining practices that teach young children self-monitoring reading and writing strategies (Wharton-McDonald, Pressley, & Hampston, 1998). That is, some instructional approaches that seek to teach self-monitoring strategies within the contexts of meaning-making activities feature teacher-directed instruction *as well as* independent child activity. As such, I hold that these approaches are fluid with Montessori's epistemology. In addition, these approaches, which I address in the

following paragraphs, hold the potential to fill a void in literacy instruction that I have identified in classrooms of the present study (i.e., the lack of teacher participation in meaning-making activities combined with the lack of corrective feedback provided by these activities).

The reader's workshop (Lapp, Moore, Flood, & Nichols, 2005) and writer's workshop approaches (Calkins, 2003) employ "mini-lessons" to introduce strategies, concepts, and practices to children. These mini-lessons begin with teacher-led instruction, which typically lasts for fewer than 15 minutes. Children then engage in activities that pertain to the content at hand, receiving some teacher feedback. Teachers typically conclude mini-lessons by sharing their observations of particular children with the rest of the class, such as by describing how a given child implemented a recently-introduced reading comprehension strategy. The reader's workshop and writer's workshop approaches also feature child-teacher conferences, which teachers hold to assess what individuals gleaned from the mini-lessons and to provide students with feedback. Teachers sometimes provide instruction to small groups of children who demonstrate similar skill levels. In addition, these approaches aim to promote children's self-monitoring skills. For instance, through the writer's workshop model, children learn how to edit their own compositions.

Another instructional approach designed to allow for direct teacher support while also fostering independent child activity is the Tools of the Mind writing program (Bodrova & Leong, 2001). Three elements of the Tools of the Mind writing curriculum – scaffolded writing, written learning plans, and sound analysis

exercises – have been implemented in kindergarten classrooms. In scaffolded instructional approaches, teachers allow students to direct as much of an activity as teachers deem possible. As students demonstrate increased mastery, teachers allow students to assume greater levels of control. The Tools of the Mind program has been found to promote a range of literacy skills in preschoolers and kindergartners, such as letter recognition, letter-sound knowledge, and concepts of print (Bodrova & Leong, 2001). In addition, kindergartners who attended the Tools of the Mind classrooms produced compositions that were longer and more complex than kindergartners who attended control classrooms.

Providing teacher support within the context of activities has also been found promote self-regulation. Teacher feedback is a crucial component in the development of SRL, particularly process feedback (Stone, 2000). Stone has found that providing feedback as students are working on tasks is more helpful than providing feedback after tasks are completed. As teachers provide students with process feedback, students become better able to monitor their progress independently. Randi and Corno (2000) have noted that students often fail to implement relevant strategies that they employ at other times, and these authors have recommended that teachers demonstrate how students can better use their strategies. Bronson (2000) has reviewed research that suggests that teachers can promote self-regulation by scaffolding instruction.

The vast majority of instructional time in classrooms of the present study was devoted to work periods during which children worked individually, in dyads,

and in small groups. Given that teachers routinely worked one-on-one and in small groups with children, teachers had opportunities to provide the types of feedback with which Randi and Corno (2000), Stone (2000), and Bronson (2000) have associated gains in learning and self-regulation.

The limited extent to which literacy materials in these Montessori classrooms provided self-corrective feedback calls into question the role of the teacher during highly integrative activities. The illustrative examples of instructional approaches and teaching strategies that I have provided, I maintain, offer Montessori educators productive avenues to explore. These approaches and strategies provide means of providing direct teacher support during meaning-making activities while also encouraging self-monitored, independent child activity. As such, these approaches complement Montessori's (1995) notion of children as active learners.

Summary

Montessori put forth a nuanced account of literacy acquisition, acknowledging the multiplicity of skills that underlie reading and writing development. Accordingly, she considered it critical for children to learn discrete literacy skills as well as the more integrative skills associated with reading comprehension. Montessori outlined a broad range of activities that addressed discrete literacy skills. In contrast, she advanced far fewer methods by which teachers and children could enact meaning-making activities. By and large, patterns of practice in classrooms of the present study reflected the literacy practices advanced by Montessori.

My analysis calls into question the nature of meaning-making activities, especially in the areas of reading comprehension and open-ended writing. More than pointing to an overall lack of meaning-making activities, these findings point to a limited amount of direct teacher participation in such activities. This raises potential concerns when considering that adult-child book reading promotes young children's language development and that kindergartners benefit from explicit reading comprehension instruction (Snow et al., 1998).

Moreover, based on the patterns of practice in these classrooms, I hold that Montessori educators might benefit from considering how to address reading comprehension skills with children who are not yet reading conventionally. Children in these classrooms who were not yet reading conventionally had limited opportunities to engage in reading activities with teachers. In addition, although children had opportunities to explore various functions of print through writing activities, which often entailed children using non-letter writing forms, teachers rarely participated in such activities. It is important to teach discrete skills to emerging readers *as well as* to implement practices, such as storybook reading and guided writing, that promote children's understandings of the global functions of print (e.g., NICHD, 2000; Snow, et al., 1998).

I have pointed Montessori educators in the direction of research and educational programs that might inform how to implement practices that allow for some degree of "auto-education" in the contexts of meaning-making literacy activities. Montessori sought to create instructional materials that children could use independently of teacher participation. Rather that conceiving of the locus of

control regarding corrective feedback with *either* the teacher *or* the child, or, for that matter, instructional materials, I deem it prudent to position the loci of control with *both* teachers *and* students. Such key literacy processes as reading comprehension and the writing of connected text are inherently multi-faceted, making it tenuous for instructional materials to provide comprehensive feedback. Along this line, I have provided illustrative examples of educational approaches that feature explicit, teacher-guided instruction as well as independent student activity.

Teachers in these Montessori classrooms used contracts to assure that activity complemented children's skill levels. Teachers expressed tension regarding the use of contracts. I have proposed that Montessori educators consider how to co-construct contracts with their students. By doing so, it might prove possible to settle on an approach that does not pit Montessori's practice of allowing children to self-select activities against her emphasis on assuring that children enact optimally challenging activities.

Limitations

Limitations of the present study include factors related to the settings in which I collected data. All classrooms represented in this study were located in the same school district, limiting the extent to which these classrooms, taken collectively, served as a representative sample of Montessori education writ large. Moreover, the sample size was limited to 11 classrooms, and all teachers participated in the same Montessori teacher-training program. Taken collectively, these factors detract from the generalizability of this study, as research has

identified variability in teacher beliefs and practices across Montessori teacher-training programs (e.g., Chaney, 1991; Daoust, 2004; Zener, 1994). Another limitation of this study pertains to the lack of outcome data on measures of literacy learning. The lack of such data makes it untenable to link documented patterns of practice to children's literacy learning.

A Final Word

To take a final, condensed view of the findings of the present study, it is helpful to bear in mind that Maria Montessori, drawing on her background as a physician and an anthropologist, sought to create an educational approach by means of scientific inquiry. More specifically, she designed her approach by considering her knowledge of human development, by drawing on work of contemporary scholars, and by systematically observing children in school as well as non-school settings.

Her approach, first implemented more than 100 years ago, included a literacy strand. I believe that Montessori's approach has withstood the changing tides of education policy and practice because her thoughts on education, on the whole, embody characteristics of effective classroom practice as defined by contemporary research. The present study has examined patterns of literacy practice in contemporary Montessori classrooms in public schools. These patterns, with some exceptions, generally reflect Montessori's epistemology and corresponding instructional approach.

Central to the success of Montessori's approach writ large, I hold, is that it is designed from the ground up to individualize instruction. Many documented

practices in these classrooms, including the privileging of independent and small-group activity over whole-class activity and offering a range of activities that challenge a broad range of student ability levels, combine to yield classrooms in which teachers tailor instruction to children's unique learning profiles. The practice bodes well when considered in relation to research that has examined how children's aptitudes in various literacy skills interact with classroom instruction to influence learning (e.g., Connor et al., 2005; Foorman & Torgeson, 2001). Moreover, I presume that the individualization of instruction explains, in part, why parents, who have historically driven demand for Montessori programs, have been attracted to an educational program designed to their children's individual needs.

Although the considerations that I have raised were based on practices in these particular classrooms, these considerations broach elements that are central to Montessori's views on learning and instruction. As such, I perceive this research as being relevant to the broader Montessori community. In addition to identifying ways in which practices in these Montessori classrooms could inform contemporary research and practice in non-Montessori programs, I have pointed to ways in which contemporary research and non-Montessori programs hold the potential to inform practice in Montessori settings.

Despite the fact that many of these considerations pertain to elements of Montessori's approach, I deem it prudent not only to revisit Montessori's views on learning and teaching, but rather also to look to the broader educational community. Pressley (2002) has argued that effective literacy programs are not

based on one practice alone, but rather that such programs rely on a combination of a range of validated practices. If she were alive today, Maria Montessori, a scientist herself who drew on the work of her contemporaries, would likely seek out such sources to enhance her approach.

APPENDIX A: FOCAL CLASSROOM SELECTION

I used the following four categories to guide focal classroom selection: student demographics, type of activity management, nature of whole-group instruction, and teacher mobility. Using demographic information from each school, including the proportion of minority students and percentage of students who qualified for free or reduced lunch, I selected a proportionally representative sample based on student demographics. In the following sections, I elucidate the other three categories by defining them and by explaining both their empirical and theoretical grounds. I conclude by describing the sampling approach that I employed, maximum variation sampling.

Activity Management

Activity management refers to the extent that various participants (e.g., student, teacher, teaching assistants) participated in literacy activities. I identified four types of activity management: child-managed, teacher-managed, teacher-involved, and other adult-involved.

Child-managed activities were those that children carried out with little to no influence from teachers or other adults (e.g., teaching aides, parent volunteers). Teacher-managed activities were those that were directed primarily

by teachers. For an activity to qualify as teacher-managed, teachers remained present for at least the majority of its duration. In contrast, teacher-involved activities were those in which teachers did not manage from start to finish yet still influenced considerably, such as by showing a child how to commence an activity, by providing temporary assistance when a child was already engaged with an activity, or by reviewing the outcome (e.g., a written composition) of an activity with a child. The fourth type of activity management, other adult-involved activities, included activities that involved the participation of teaching aides, student teachers, and parent volunteers.

Given that I used two terms that capture the degree of participation (managed and involved) and identified three types of participants (children, teachers, and other adults), I could have identified six types of activity management – the four that I have outlined as well as child-involved and other adult-managed. However, I decided not to use child-involved because such an activity would necessarily include the participation of either a teacher or another adult. Thus, including child-involved would have been redundant, as activities that would have been labeled as child-involved could have also been labeled as either teacher-involved or other adult-involved depending which type of adult (teacher or other adult) participated. I did not use other adult-involved because even though I considered teaching assistants, interns and parent volunteers as serving important roles in literate activity, I did not conceive of their roles as being as central to classroom literate activity as that of the teacher. In addition, during classroom observations, I focused more on teacher-child interactions than on

other adult-child interactions. Consequently, I did not document activities that children enacted with other adults as extensively as I documented activities that children enacted with teachers, making it difficult to determine the extent of other adults' participation in some activities. This, in turn, would have made it difficult to determine whether to label such activities as other adult-*managed* or as other adult-*involved*.

Empirical Grounds

I coded each documented literacy activity for its type of activity management. I then calculated the proportion of activities in each classroom for each type of activity management by dividing the total number of literacy activities by the number of activities of each type, yielding four proportions for each classroom (child-managed activities/total activities, teacher-involved activities/total activities, teacher-managed activities/total activities, and other adult-involved activities/total activities). Because I assigned each activity to one type of activity management, these four proportions sum to 100% for each classroom.

I constructed ran descriptive statistics to examine variability across classrooms in these proportions. There was substantial variability across classrooms in terms of the proliferation of activity management types. For instance, child-managed activities constituted approximately 65% of total activities in the classroom with the highest proportion of child-managed activities and approximately 35% in the classroom with the lowest proportion.

Theoretical Grounds

Type of activity management was of interest because literacy instruction in these Montessori classrooms was typically provided to individuals and to small groups of children rather than to the entire class. Moreover, there was considerable variability across classrooms in how frequently activities were enacted for each type of activity management. Research has linked various types of participation during literate activity to children's literacy skill growth (Connor et al., 2002).

Nature of Whole-Group Literate Activity

Although work periods constituted the majority of instructional blocks, each classroom had daily meetings in which the entire class participated. These whole-group meetings lasted between five and twenty-five minutes and featured various activities, including singing, and cultural lessons as well as a broad range of literacy activities.

Empirical Grounds

I documented that the nature of whole-group literacy lessons varied across classrooms, observing a range of literacy activities, including storybook reading, letter-of-the-week activities, big book readings, and Orton-Gillingham phonics lessons. Although some activities, such as storybook reading, were enacted in all classrooms, most documented whole-group literacy activities were not enacted in all classrooms. Some teachers seemed to limit their whole-group literacy instruction to the reading of storybooks, while other enacted broader

arrays of activities. Furthermore, teachers differed according to the number of whole-group literacy lessons enacted.

Theoretical Grounds

Montessori (1995) contended that children learn at differing rates and created a program of instruction in which whole-group lessons, especially those that target academic skills, were virtually nonexistent. The Montessori teacher education program at Xavier University, in which all teachers in this study participated, promotes this component of Montessori's original program by providing little training on the presentation of whole-group literacy lessons. Storybook reading is one of the few such lessons included in Xavier's program. Despite the limited coverage that whole-group literacy instruction receives in Xavier's program, some whole-group literacy lessons were provided in all classrooms. Moreover, even though children spent a fraction of instructional blocks in whole-group meetings, they all participated in the lessons that were presented during these meetings, adding relevance to them.

Teacher Mobility

Teacher mobility refers to the extent to which teachers remained in one location from which they provided instruction during work periods. I used this characteristic of practice as a selection criterion because early on during data collection I noted that classrooms varied consistently across these lines and because teacher mobility seemed integral to one of the principles of Montessori education: individualized instruction. In the end, this characteristic of practice did not appear to play a salient role in literacy practice in these classrooms, and thus

does not factor into my final analysis. Nevertheless, because teacher mobility influenced focal classroom selection, I next outline the empirical and theoretical of this category.

Empirical Grounds

During the first half of data collection, I noted that some teachers spent the majority of their time in one location during work periods, while others moved around, delivering lessons from various classroom locations. My fieldnotes revealed that the teachers were not normally distributed in terms of the degree of mobility, but rather fell into one of two sub-categories: Each teacher either delivered the vast majority of instruction from the same location or from multiple locations distributed across the classroom. In the following paragraphs, I use the term *stationary* to describe those teachers who delivered the majority of instruction from one location. Please note that these stationary teachers did not remain in that location for the *entire* instructional block. They occasionally left that location to deal with issues related to classroom management and to provide brief instructional assistance, such as by helping children get started activities and by reviewing work with children after they complete an activity.

Teacher mobility appeared to relate to classroom management and student evaluation. For instance, two of the stationary teachers frequently referred to and wrote in their planning books during work periods. One of these teachers also kept a box that held that list the letter-sound correspondences that each of her students knew. She frequently marked on these cards after targeting letter-sound correspondences with the sandpaper letters. Anchoring themselves in one

location might have made it easier for these teachers to track their students' literacy skills by having these assessment tools at their fingertips.

Teacher mobility might have also affected classroom management. I observed that two stationary teachers typically had more students sitting near them than did mobile teachers. This might have influenced make it easier for stationary teachers to monitor more students closely. One stationary teacher typically sat along the side of a rectangular rug from where she provided the majority of instruction. She placed two pairs of adjacent tables behind this spot. This teacher explained that she placed these tables behind her because she had a few students who required excessive amounts of attention. By having these children sit at these tables, she maintained that she was able to monitor them while she provides instruction to other children at the rug. Another stationary teacher suggested two other ways in which remaining stationary might have facilitated classroom management. She said that when she is up and moving around the classroom that the children seem to do the same thing, generating noise, thus making it difficult for other children to concentrate.

I also identified potential benefits that being mobile might have presented. For instance, more mobile teachers might have possessed a better awareness of what activities students are engaged with and how the students are using them because they might get a more comprehensive view of the classroom than stationary teachers. Such an awareness could have promoted evaluation by making it easier for mobile teachers to assess a greater number of children during the course of a given work period.

Theoretical Grounds

As noted above, I perceived relationships of teacher mobility with student evaluation and classrooms management. Issues related to evaluation and classroom management are clearly relevant in all types of classrooms, but I see these issues as being particularly relevant to Montessori classrooms because they are integrally tied to individualized instruction, a central component of the Montessori approach. In order to provide individualized instruction, it is necessary for teachers to know where children stand on key skill sets, making evaluation key. In addition, it is necessary for classrooms to operate in a manner that allows for teachers to deliver lessons to individuals and to small groups of children, making classroom management key. Other factors may also relate to individualized instruction, such as having a range of teaching materials that accommodate a wide range of skill levels. Although student evaluation and classroom management are not only factors that could potentially influence the individualization of instruction, they seem to be two essential factors.

Sampling Approach: Maximum Variation Sampling

I used maximum variation sampling (MVS) to select classrooms based on student demographics, teacher mobility, activity management, and nature of whole-group instruction.

Table A.1 displays each classroom's standing on student demographics and on the three categories outlined above. I used this matrix to select a set of focal classrooms that represents a wide range of standings within each of these categories. I partitioned the following three of these categories into two sub-

categories: student demographics, teacher mobility, and nature of whole-group literacy lessons. The two sub-categories of student demographics indicate whether the classrooms are in schools that serve diverse or homogeneous populations. The two sub-categories of teacher mobility indicate whether teachers remain primarily in one location for the work periods (stationary) or provide instruction from various locations in the classroom (mobile). The two sub-categories for whole-group literacy lessons indicate whether whole-group literacy lessons serve a substantial role in organized classroom literate activity, as indicated by number, length, and variety of whole-group literacy lessons, or whether they play a more minimal role. I did not partition the activity management category into two sub-categories, as I identified four subcategories within this category. As noted above, I calculated the proportion of total literacy activities from each classroom for each type of activity management (child-managed, teacher-managed, teacher-involved, and other adult-managed), and I compared the relative standing of the classrooms along each of these four types.

The following matrix displays each classroom's standing on each of these categories. The first column lists the 11 study classrooms. The second column, student demographics, indicates whether each classroom was in a school that serves a diverse or homogeneous student body. The third column, mobility, indicates whether teachers remained stationary or were mobile during work periods. The third column, whole-group literate activity, indicates whether whole-group literacy lessons play a substantial role in the literate activity in each classroom. And the fourth column, activity management, displays characteristics

of the proliferation of the various types of activity management. The five focal classrooms are underlined.

Table A.1

Matrix of Selection Criteria

Classroom	Student Demographics (Diverse, Homogeneous)	Mobility (Mobile/ Stationary)	Whole-Group Literate Activity (Substantial, Not Substantial)	Activity Management *
1	Homogeneous	Mobile	Not Substantial	Average
2	Homogeneous	Mobile	Substantial	Average
3	Diverse	Mobile	Not Substantial	High CM
4	Diverse	Stationary	Not Substantial	High CM
5	Diverse	Stationary	Not Substantial	Low TI
6	Diverse	Mobile	Substantial	High TI
7	Diverse	Stationary	Substantial	Average
8	Diverse	Stationary	Not Substantial	High TM
9	Diverse	Mobile	Substantial	Average
10	Diverse	Mobile	Substantial	Low CM
11	Diverse	Mobile	Substantial	Average

* CM = child-managed, TM = Teacher-Managed, TI = Teacher Involved. "Average" indicates that the proportion of each type of activity management was relatively average for a given classroom. That is, the classroom was not an outlier on any level of teacher involvement. In contrast, classrooms that had outlying values on these measures are indicating by noting the types on which they were outliers and whether they were near the upper or lower extreme on these types.

In line with MVS, the set of focal classrooms represents a broad range of the variations within each category. I have selected a proportionally representative sample based on student demographics, including one of the two classrooms that serve primarily African-American children of families living in poverty in the set of focal classrooms. All of the sub-categories of the teacher mobility and whole-group literate activity categories are represented by at least

two focal classrooms. In addition, the focal classrooms vary according to proportions of the various types of activity management.

APPENDIX B: TEACHER INTERVIEW PROTOCOL

The first six questions of the following teacher interview protocol were drawn from the ELLCO Toolkit (Smith et al., 2002).

1. Please describe your approach to curriculum? How do you plan your instruction and activities?
2. In what ways do you use technology in your classroom?
3. How do you plan for children's language and literacy development when you are thinking about curriculum.
4. I notice that you have children from different backgrounds. How is diversity reflected in your classroom? How is it reflected in instruction?
5. In what ways do you interact or communicate with children's families?
6. How do you evaluate children's individual learning? What assessment techniques do you use? What resources are available? What are they? How do they help?
7. Do you use contracts? If so, how do you use them?
8. Please describe any ways in which your practice differs from the Montessori approach?

APPENDIX C: EXAMPLE OF QUALITATIVE ANALYSIS

In this appendix, I present an example of qualitative analysis by describing how I generated assertions regarding documented patterns of practice. I base this example on findings pertaining to my assertion that teachers individualized instruction. This assertion was grounded in two sources of data: fieldnote excerpts and interview comments. I approached these data sources with some predetermined analytic categories, which were guided by my accounts of the three components of Montessori's general theory of learning (the child, teacher, and environment). The predetermined category that I associated with the teacher component was the individualization of instruction.

To examine this category, I read and reread the fieldnotes and interview transcripts, using open coding (Strauss & Corbin, 1998) to identify concepts related to the overarching category of the individualization of instruction. By using this approach, I identified three key concepts: teachers individualized instruction across activities, teachers individualized instruction within activities, and teachers used assessments to tailor instruction.

Each of these concepts was grounded in multiple sources of data. For instance, the concept that teachers individualized instruction within activities was grounded in fieldnote excerpts as well as in interview transcripts. The following

interview comment, as an example, reveals how one teacher aligned her instructional approach in accordance with children's skill levels and socio-emotional characteristics:

> That's just one of those things…I do it so individually. There are some kids who can't write much of anything but they want to write a story. They want to write a story, so we get out a moveable alphabet and we…sometimes we just get out one letter. For the word DOG, they'll get out a /d/…this says dog, you know…and if they're kind of creating something and it's kind of flowing that sounds like a story and they're getting out some sounds that are connected with what they're saying, that's fine with me. Other kids get real frustrated because they got to get out every sound because they don't know how to spell something…like if they don't have a /ch/ and they want to spell CHIP…that really bothers them so it's so individual. Some kids need to know the sounds, and others don't. So I go with the kids…what they feel good about doing.

I also identified other interview comments as well as fieldnote excerpts that were tied to teachers' efforts to tailor instruction within the contexts of literacy activities. In addition to searching the data corpus for patterns of practice that exemplified teachers' efforts to individualize instruction, I sought out sources of disconfirming evidence. I determined that one such source was that all classrooms featured some whole-class literacy activities, which were not tailored to individual children. Despite identifying this source of disconfirming evidence, I asserted that documented patterns of practice, by and large, revealed that teachers individualized instruction. To evaluate the validity of this assertion, I constructed a key linkage chart (Erickson, 1986).

In Figure C.1, I present a key linkage chart (Erickson, 1986), which depicts the evidentiary warrants for my assertion that teachers tailored instruction. The top of this chart lists that overarching, or general, assertion: teachers tailored

instruction to individual children. This general assertion is supported to three subassertions, which correspond to the three concepts listed above. The key linkage chart displays the specific sources of data that support each of these subassertions. As Figure C.1 reveals, sources of qualitative data, as well as quantitative data, underlie the subassertions regarding the individualization of instruction. The key linkage chart also lists the disconfirming evidence associated with my assertion that instruction was individualized.