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For the Rich It's Richer: Print Experiences and Environments Offered to Children in Very Low- and Very High-Socioeconomic Status First-Grade Classrooms

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This study investigates whether there are differences in the print environments and experiences offered to children in 20 first-grade classrooms chosen from very low- and very high-socioeconomic status (SES) districts. Each classroom was visited for 4 full days over the course of a school year. On each visit, information was recorded about the classroom library, classroom environmental print, and any activity during the school day that involved print in any way. Data indicate that there are substantial differences between the low- and high-SES classrooms in all major areas examined, including the amount, type, and uses of print. Literacy can be added to the list of domains for which meaningful differences in instruction have been observed in schools serving different socioeconomic groups. Literacy is another domain through which schools may contribute to lower levels of achievement among low-SES children and may begin to do so quite early in the schooling process.

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Equality of opportunity is a fundamental value of American society, and American public schooling has long been viewed as an essential means of assuring this value. However, throughout the history of American schooling, there have been clear differences in the educational achievement and outcomes of children from different socioeconomic and cultural groups. Rather than being the great equalizer they have been conceived to be, American public schools have often maintained or even exacerbated in educational terms already extant social and economic differences. Studies routinely find relationships between socioeconomic status (SES) and educational achievement and outcomes. Indeed, this relationship has become so unquestioned that contemporary research is more likely to employ SES as a control variable than as the subject of inquiry. It is a near-truism in American education that children with relatively less socioeconomic capital tend to develop relatively less formal educational capital; children who enter school with relatively more socioeconomic capital tend to develop relatively more formal educational capital.

One of the areas in which there continue to be marked differences in achievement along socioeconomic lines is literacy (Kaestle, Damon-Moore, Stedman, Tinsley, & Trollinger, 1991). On the National Assessment of Educational Progress, for example, low-SES students performed less well on tasks requiring them to read and write several forms of text important to school success, citizenship, and work (Applebee, Langer, Mullis, Latham, & Gentile, 1994; Langer, Applebee, Mullis, & Foertsch, 1990). Much of the work on SES differences in literacy achievement has sought to explain these differences by the homes, cultures, and communities of low-SES children. As explanations for low-SES children's lower levels of literacy achievement in school, scholars cite factors such as the relatively less time parents in low-SES communities typically spend reading aloud to children (see Teale, 1984, for a review), the relatively poor phonological awareness skills of many low-SES children (e.g., Raz & Bryant, 1990), or the language and dialects used in low-SES communities (e.g., Hudson, 1980). This study differs from these lines of research because it considers the hypothesis that low-SES children's lower levels of literacy achievement may derive, at least in part, from the schools they attend. I examine whether there are differences in the print environments and experiences offered to children in low-SES schools that may help explain their lower levels of print-related achievement.

Important Aspects of Print Environments and Experiences

For the purposes of this study, I focus on three aspects of print environments and experiences that literacy educators widely agree are important to literacy development and achievement. As detailed below, there is widespread agreement that successful literacy development requires experience with a substantial amount of print, experience with particular types of print, and experience that fosters student agency as print users.

Amount of Print Experience

There is general agreement in the field of literacy that the amount of print experience will have an important impact on one's literacy development (The New London Group, 1996). Scholars recommend extensive reading practice, daily read-aloud, and routine writing (e.g., Anderson, Hiebert, Scott, & Wilkinson, 1985; Calkins, 1986; Oliver, 1970). Qualifiers such as "substantial" and "ongoing" are frequently used to suggest the quantity of textual experience necessary for acquisition of a particular form of text. Students who have more experience with print typically perform better on literacy tasks (e.g., Purcell-Gates, 1995). Less experience with print at home is often cited as a reason that particular groups of children have relatively greater difficulty developing print literacy at school (e.g., Delpit, 1988; Purcell-Gates, 1996).

In this study, the amount of print experience offered to children in first-grade classrooms was assessed in a number of ways. First, the amount of print, in the form of books and magazines, available to students in their classroom libraries was recorded. This included both books and magazines available to students on the first visit to the classrooms and books and magazines newly available to students on subsequent visits to the rooms. It also included an account of the extent to which books and magazines from the classroom library were displayed in the classroom and the degree to which there were opportunities for students to actually use them. Second, the amount of print found on classroom walls and other surfaces on each visit to the classrooms was recorded, as well as the extent to which students and teachers referred to this print in their daily activities. Third, I recorded the amount of time in which print was involved in classroom activities was recorded, the centrality of print to these activities, and the extent to which these activities occurred across the curriculum, as many scholars have recommended (e.g., Lipson, Valencia, Wixson, & Peters, 1993). Finally, I observed any "specials" (e.g., art, music, physical education) that students attended, noting the amount of books, magazines, and classroom environmental print and print activity there.

Type of Print Experienced

In addition to the amount of print experience, scholars agree that the type of print experienced has an important impact on literacy development. Implied in much work on literacy development is the assumption that students must have experience with the particular types of text we wish them to be able to read and write. Most fundamentally, if we wish students to learn to read and write extended text forms (e.g., books, newspapers, magazines), students must have experience reading and writing extended text. Reading solely at the letter, word, phrase, or single sentence level is widely discouraged (Adams, 1990; National Council of Teachers of English & International Reading Association, 1996; Snow, Burns, & Griffin, 1998).

To ascertain whether there were differences in the type of print to which students were exposed in low-SES versus high-SES classrooms, texts were

coded for their level—extended, phrasal/sentential, word, or letter/digraph. Texts coded included those on classroom walls and other surfaces and those involved in classroom written language activities.

Nature of Print Experience: Student Agency With Print

In recent years, a substantial body of research has focused not so much on learning to read and write, in the narrow sense, but on learning to be a reader and a writer, in the sense of becoming a user of print, a member of the literacy club (Smith, 1988). It is from this body of work that the third aspect of print experiences and environments examined in this study is drawn. Specifically, the literature demonstrating the importance of students' autonomy and control over their academic work in general (Deci, Vallerand, Pelletier, & Ryan, 1991; Ryan & Grolnick, 1986), and their literacy-learning in particular, is most relevant in framing this endeavor. Recent research in literacy suggests that providing students with some choice about what they read and some control over what they write fosters the development of their reading and writing abilities as well as their motivation to be readers and writers (Guthrie & McCann, 1997; Turner, 1997).

I use a cluster of variables to tap the degree to which students are provided opportunities to develop agency as print users. One variable represents the amount of time in which students have some choice about what they are reading. Another variable notes the degree of authorial control students have in writing activities—whether, for example, the activity involves writing a single correct answer or whether there are many acceptable written responses to the task. A third variable examines the extent to which student-authored texts are involved in written language activities, as when an individual student's composition is read aloud to the class or is displayed on the classroom walls and other surfaces. A fourth variable records occasions in which classroom written language activities provide opportunities for students to write for audiences beyond the teacher, another way in which students may be encouraged to see themselves as real writers.

Why Look to Schools for Socioeconomic Differences in Print Environments and Experiences?

Over the years, a number of explanations for socioeconomic differences in educational outcomes and achievement have been proffered. With few exceptions, these explanations locate the problem within low-SES children, their homes, and communities. Many explanations are grounded in an intellectual deficit model. Most prevalent in the 1960s and before, intellectual deficit models explain SES differences in academic achievement as stemming from the supposed lower levels of overall intelligence and innate ability of low-SES children (Jensen, 1973). Other explanations are more concerned with believed cultural deficits. These models attribute socioeconomic differences in achievement to differences in the quality of the cultures of low-SES

children. This suggests that attributes of low-SES, particularly low-SES non-Caucasian cultures, are inferior to those of children from other economic and cultural groups (Bernstein, 1960; Deutsch, 1960).

Over time, some scholars have rejected the explanations for SES achievement differences described above. Some began to look for explanations not in low-SES children, their homes and communities, but in the schools and other organizations that serve them (Baratz & Baratz, 1970; Bowles & Gintis, 1976; Rist, 1973). In more recent years, much of the research focusing on schools as sources of SES differences in achievement can be divided into two categories. The first category, led by Jeannie Oakes (1985), considers how tracking and other forms of so-called ability grouping in schools result in different educational experiences for different children. These researchers have found that low-SES and minority children are disproportionately represented in lower tracks in schools and that these tracks provide different, inferior educational opportunities to children. Thus, transitively, low-SES and minority children are disproportionately offered poorer quality educational experiences than those of their higher-tracked and often higher-SES counterparts in the same school. Research on ability grouping in the area of literacy in particular has also shown that children in lower reading groups are often offered poorer quality literacy experiences (see Morgan, 1989, for a review). To the extent that children in the lower reading groups are disproportionately of lower SES, the pattern identified by Oakes is also seen in literacy education.

The second category implicating schooling as a potential source of socioeconomic inequities in educational achievement and outcomes is grounded in cultural mismatch theories. Proponents of these theories depart from cultural deficit models in assuming that no one culture is inherently better than another. Instead, they believe that mismatches between the culture(s) of schooling and those of low-SES and nonmainstream groups are to blame for achievement differences. In the realm of early literacy, studies of differences in dialect (Smitherman, 1981), classroom discourse practices (Cazden, 1988), and definitions of literacy (Heath, 1983) are among those that consider cultural mismatches in schooling. Work on cultural mismatch and on tracking/grouping suggests ways in which schools themselves may contribute to relatively lower levels of achievement among low-SES children in literacy and other domains. This work attests to the need to look to schools for their role in SES differences in literacy achievement.

Looking Between Schools for Differences in Print Environments and Experiences by SES

Both research on cultural mismatch and on tracking/grouping consider within-school differences in educational opportunities and experiences; they examine how experiences within a school or classroom differ for various SES and cultural groups. Indeed, much of the research in this area is conducted in particularly heterogeneous, diverse schools and classrooms, thus provid-

ing sharp contrasts in within-school experiences. Less common, but also important, is work concerning differences between schools and classrooms in curricular opportunities and experiences offered to students from different socioeconomic and cultural groups. Fewer studies have examined how schools primarily serving low-SES children are different from those primarily serving middle- or high-SES youth, particularly in terms of curriculum and pedagogy. In fact, the cultural mismatch theory seems to tacitly assume that schooling experiences offered to low-SES and other nonmainstream groups are the same as those offered to other students—they simply match less well. In the following paragraphs, I suggest that there should be more research examining the differences between schools serving different SES and cultural groups. What research there has been has pointed to important differences among schools serving different populations. The increasing segregation of schooling by SES suggests that such differences may affect increasing numbers of children in the future.

Perhaps the most vivid account of schooling differences in different socioeconomic contexts is found in Jonathan Kozol's (1991) book, *Savage Inequalities: Children in America's Schools*. He examined schools and their environs in several major U.S. urban centers. Kozol's account is one of dramatic differences between schools in very low- and very high-SES environments. From the streets around the schools to the hallways within the schools, from medical care to class size, Kozol demonstrated glaring differences between the educational opportunities offered to children in wealthy, largely Caucasian school districts (e.g., Winnetka, IL) and those afforded to children in poor, largely African American and Latino districts (e.g., nearby Chicago). In another study focused on Chicago, Dreeban and Gamoran (1986) found substantial differences in instructional characteristics of schools primarily serving African American and those primarily serving non-African American students.

Several studies have shown differences in instructional materials available to students in various socioeconomic settings. For example, some studies have shown that school libraries are typically smaller in low-SES school settings (Guice, Allington, Johnston, Baker, & Michaelson, 1994). Others have found that schools in low-SES areas tend to have fewer and older computers and computer peripherals available (Becker & Sterling, 1987). Shavelson et al. (1984) cited in Michaels, Cazden, and Bruce (1985) also found differences in the ways in which computers were used in various settings. Classrooms with a high percentage of minority students reported using computers for drill and practice, whereas teachers in classrooms with a low percentage of minority students reported using computers in a variety of ways that were closely linked to the classroom curriculum.

Jean Anyon (1981) demonstrated how socioeconomic differences between schools can be manifest in specific ways in school curricula. She detailed how knowledge itself is defined differently in the various socioeconomic school settings she studied (the majority of students in all schools studied were Caucasian). In the two working-class schools Anyon studied,

knowledge seemed to be construed as “fragmented facts,” “practical,” “mechanical,” and “procedural” in nature. In the middle-class school, knowledge appeared to be more “conceptual” and “a matter of traditional bodies of ‘content,’ ” although still very much located and authorized outside of the learner. In contrast, in what Anyon termed the *affluent professional* school, knowledge is “not only conceptual but is open to discovery, construction, and meaning making; it is not always given” (p. 23). Finally, in the highest-SES school, the “executive elite” school, knowledge is “academic, intellectual, and rigorous,” with a concern not so much with personal meaning or sense as with reason and logic.

Anyon (1981) demonstrated that the differing conceptualizations of knowledge in these SES school settings result in subtle, but important, differences in curriculum. For example, although students in all settings studied history and were subject to the same state requirements in this domain, the working-class schools focused less on reform, reformers, and class issues than did students in other settings. Similarly, although all curricula included work on mathematical computation, the working-class students were taught only one right way to do a problem, devoid of any conceptual explanation; middle-class students had some choice in their computational strategies with an emphasis on understanding; students in the affluent professional school were taught largely through experiential methods with emphasis on underlying patterns and principles; and students in the executive elite school were taught computation as a decision-making process, with a focus on applying systematic reasoning and logic. Significant differences in the teaching of even basic computation were observed in different socioeconomic settings.

Although Anyon said little about literacy curricula in her discussion, the fact that she found differences in other school domains suggests that there may be socioeconomic differences in literacy instruction as well. However, there has been little research on this subject. Comparative research of literacy environments and experiences offered to students in different socioeconomic settings is rare. This study begins to address this gap, investigating whether there are differences in print experiences and environments offered to children in 20 classrooms in very-low and very-high SES school districts.

Theoretical Framework

The broad theoretical framework for this study lies in social semiotic theory (Hodge & Kress, 1988; Lemke, 1989). In particular, this study is motivated by a concept I term *semiotic capital*. The concept is that knowledge of semiotic systems, including systems of written language, has real value in largely literate societies (The New London Group, 1996). A form of cultural or social capital, semiotic capital is less concrete than monetary capital but nonetheless has currency in many institutions and settings (Bourdieu, 1991). Moreover, there are relationships between possession of monetary capital and development of some forms of semiotic capital. For example, low-SES students are less likely than higher-SES students to develop strong informational

reading and writing skills during formal schooling. This study explores some reasons why this relationship between two different forms of capital might exist. In particular, this study investigates whether students from areas with less socioeconomic capital are offered fewer opportunities to develop important forms of semiotic capital in their school environments and experiences.

Methodology

Sample

In order to compare the print experiences and environments offered to young children in two different socioeconomic settings, a sample of very low- and very high-SES classrooms was constructed. Classrooms were drawn from 10 school districts selected from over 50 school districts in the Greater Boston Metropolitan Area on the basis of measures of SES. The districts selected are the six highest- and four of the six lowest-SES districts in the area according to measures of levels of education, poverty, and per capita income (Entwisle & Astone, 1994; Table 1).¹ Being at socioeconomic extremes for the area, the 10 districts selected for the study are fairly socioeconomically homogeneous. There would be few middle- or high-SES students attending school in the low-SES districts and few low-SES students attending school in the middle- or high-SES districts.

Participating schools were selected at random from all district elementary schools in 7 of the 10 districts. Selection procedures in the other three districts were modified to help ensure the most purely low- or high-SES population possible: in one high-SES district, a school was eliminated because it served a substantially lower-SES population through a special arrangement; in one low-SES district, a subset of schools were eliminated from consideration because they contained a higher-SES population according to district administrators' judgments and information such as school lunch data; and in another low-SES district, selection was done at random from within each school zone, as zones constituted a meaningful level of organization in the district. A total of 18 of the 19 elementary schools initially contacted agreed to participate in the study; the declining elementary school was replaced by an alternate selected a random.

Within each of 17 elementary schools, one first-grade classroom was selected at random for participation in the study. In the 18th elementary school, some of the school's first-grade classrooms were bilingual; in this school, participating first-grade classrooms were selected at random from the nonbilingual classrooms only. I believed that the participation of a bilingual classroom could raise confounding issues and diminish generalizability of this study. In the 19th elementary school, two classrooms were selected at random for participation in the study due to the absence of a second elementary school in that district (that district was selected at random from all the high-SES districts to be the one with two participating classrooms within

Table 1
Socioeconomic Information About School Districts Participating in the Study, Expressed as Means

District type	Selection criteria			Other information		
	Per capita income	Percentage families below poverty	Percentage residents w/ bachelor's degrees	Elementary per pupil expenditure	MEAP reading scores	Percentage going on to 4-year college
Low-SES	14,400	11.4	17.0	3,800	1,245	40.0
High-SES	39,200	1.0	63.9	5,600	1,470	87.7
State average	17,200	6.7	27.2	4,100	1,350	52.0

Note. Means are used to obscure the identity of participating districts. Information is based on 1990 census data as reported in the Massachusetts Executive Office of Education's School District Profiles [On-line]. SES = socioeconomic status; MEAP = Massachusetts Educational Assessment Program.

a single school). In 17 of the 20 cases, the classroom teachers initially contacted agreed to participate in the study. In the other three cases (1 high-SES, 2 low-SES), alternate participating classrooms were chosen at random.

Each teacher who agreed to participate in the study was provided with a letter containing guidelines and information about the study. This letter met the need to provide teachers with general information about the study without revealing details, such as hypotheses about socioeconomic differences in the proportion of classtime spent with extended text, which might affect the teachers' instruction in ways detrimental to the validity of study findings. The letter, as well as verbal instruction, requested that, as much as possible, teachers tend to their activities as though there was no observer. The fact that I was often apparently looking at texts, rather than at the teacher herself, may have further discouraged teachers from altering their practice during observation days. At the end of each observation day, the teacher was asked to rate the day on a scale of 1–5 in terms of how typical it was (with 5 being most typical). Mean typicality ratings for high-SES classrooms were 4.44 ($SD = 0.39$); mean ratings for low-SES classrooms were only slightly less than that at 4.35 ($SD = 0.49$), $t^*(17) = 0.44$, ns (two-tailed $p = .66$) (see "Data Analysis Procedures" for detail about testing procedures).

All teachers involved in the study were female. They had an average of 18.2 years of teaching experience (15.1 for teachers in low-SES districts, 21.2 for teachers in high-SES districts) and 10.4 years experience teaching first grade (8.3 for teachers in low-SES districts, 12.4 for teachers in high-SES districts). Classrooms varied in their racial and ethnic composition: all high-SES classrooms were predominantly White, with a few students of color in some cases; all low-SES classrooms included White, African American, and Latino students, although in widely varying proportions. Other racial and ethnic groups were represented in some of the classrooms, but generally in small numbers. This sample was not designed to make comparisons among schools that serve primarily students of a particular racial or ethnic group. The sample is too small, and the composition of individual classrooms too racially heterogeneous, for such comparisons to be possible.

Data Collection Procedures

Each classroom was observed for 4 full days spread throughout the school year and across days of the week. For the first round of visits, the order of observations was determined at random. For subsequent visits, the original order was maintained as much as possible, but minor adjustments were made as needed for pragmatic reasons (e.g., vacation dates and field trips). Throughout data collection, my stance was one of observer. I limited interaction with students and avoided involvement in classroom activities.

During each visit, I made descriptive notes and conducted preliminary coding of print on classroom walls and other surfaces, print materials in the classroom library, and any classroom activities that involved print in any way. A preliminary coding system had been developed during a pilot of the

procedures; coding was refined, completed, and checked following visits to the classrooms. Because much coding did occur on site, coding procedures are discussed immediately below, in the "Data Collection" section of this article.

Classroom environmental print. Information was recorded about any texts on classroom walls or other surfaces that were (a) directed at students (as opposed to the teacher or parents), (b) semipermanent in nature (as opposed to notes appearing briefly on the chalkboard as part of a particular classroom activity), and (c) displayed in some way (as opposed to a stack of papers ready to go home). Texts were defined as "the entirety of a linguistic communication" (Harris & Hodges, 1995, p. 255) and sometimes had more than one physical piece, as in an alphabet frieze made of 26 pieces of paper but coded as one text. Authorship was considered in determining what constituted a text. For example, a set of 20 name tags made by the teacher constituted one text. However, if 20 students each made their own name tags, each one was coded as a text.² Comparison of a second researcher's coding of environmental print in four classrooms during one visit each yielded an interrater reliability of 90.5% for number of texts present. Most interrater disagreements were the result of one coder missing an item, rather than of disagreement about what actually constitutes a text.

Each text was coded for its level and origin. Text level codes were letter/digraph, word, phrasal/sentential, and extended. Texts were coded for the highest level at which the majority of the text made meaning. Therefore, a list of vowels was coded as letter/digraph level, a list of months in the year was coded as word level, a poster saying "We recycle" was coded as phrasal/sentential, and any text of more than three related sentences was coded as extended. Comparison of a second researcher's coding of classroom environmental print text levels in four classrooms for one visit yielded a mean interrater reliability of 92.7%; mean interrater reliability was 98.7% for the distinction between extended and nonextended text specifically (the primary focus of analysis).

Text origin codes refer to the author of the text (e.g., the teacher, a commercial producer, a student, or a parent). For the purposes of this article, codes referring to cases in which a student(s) at least partly contributed to the text are especially important. These include codes for cases in which text is (a) authored solely by one or more students; (b) authored by one or more students and the teacher; (c) authored by one or more students and a commercial producer (such as a story starter worksheet completed by a student); and (d) authored by one or more students, a commercial producer, and the teacher. Comparison of a second researcher's coding of whether or not a student(s) have at least partly contributed to classroom environmental print texts yielded a mean interrater reliability of 98.6% for one visit each to four classrooms.

Finally, in order to gauge the extent to which classroom environmental print was actually used, I noted any references to environmental print made by the students, teachers, or other adults in the classroom. For example,

when I observed a teacher directing students' attention to a calendar posted on the wall, I recorded it as a reference to classroom environmental print. When I observed a group of students referring to a posted school lunch menu, I recorded that as a reference to classroom environmental print. In order to prevent the reference count from being unduly influenced by large numbers of references to a single text, I counted no more than one reference per text per visit.

Classroom library. On the first visit to each classroom, all books and magazines available to the class were counted. This did not include books or magazines in storage or otherwise deemed off-limits to students. It also did not include any textbooks, basal readers, school library books, or other materials kept in individual student's desks, and available only to that individual student. However, if such materials were made available to the entire class (e.g., if they were kept on shelves and were accessible to all), then they were recorded. Books that were only temporarily stored in a student's desks were also counted (this sometimes required going into a student's desk or cubby). On the second, third, and fourth visits to each classroom, I used past notes and teacher input to determine which books and magazines, if any, were newly available to students. Only those books and magazines were counted.

On each visit to a classroom, I recorded the number of books that were fully or partially displayed in the classroom; fully displayed was defined as having all or almost all of the front cover visible and partially displayed was defined as having some part of the cover visible. I also asked teachers about the uses to which their library was put (e.g., do students use the library when their classwork has been completed?). These discussions were augmented with observations of classroom library use.

Written language activities. Information about any classroom activity during the day that involved written language in any way was recorded. Activities that took place outside of the classroom and the classroom teacher's control, such as those that occurred during specials (e.g., gym, art) or during schoolwide activities (e.g., lunch, recess, assemblies) were analyzed separately, in the case of specials, or not at all, in the case of lunch and recess. Written language activity coding was conducted during a total of 79 school days (I was unable to observe during a fourth visit to one of the high-SES classrooms). These included early release days only in cases in which this was a regular part of the district's schedule, such as in one district in which every Wednesday was an early release day. In total, I observed 27,671 min of school time. This included 19,046 min in which students were in class, rather than at specials, recess, or lunch, and 12,790 min in which students were involved with written language. This amounts to an average of 10.66 hr of written language activity observation per classroom.

Information recorded about any written language activity included: (1) the length of the activity in minutes; (2) the centrality of print to the activity; (3) the level of print in the activity; (4) the domain in which the activity occurred (e.g., mathematics, science, language arts); (5) whether the activity

involved individual student choice about the texts being read; (6) the degree of authorship afforded to students in the activity (if applicable); (7) the author or origin of the text involved the activity (e.g., the student, the teacher, a commercial producer); and (8) the apparent audience for the text involved in the activity (e.g., the teacher, a parent, a pen pal). Each coding area is described briefly below. Additional examples for each of these variables are provided in the Results section of this article.

1. The length of written language activities was measured in minutes from the time the majority of students began the activity to the time the majority of students completed the activity. Occasions in which students in the class were expected to be doing different things with written language, such as when one group of students was expected to be reading a book while another was expected to be completing a worksheet, were counted as written language activity time. However, they were not coded for any other variables listed below, as the codes would vary for different groups of students.
2. The centrality of print to each written language activity was measured using a rating scale of 1–5, from least to most central: 1, print was present in the activity, but was not read, written, or otherwise used; 2, print was present and may have been read, written, or otherwise used by at least some, as with directions on a worksheet that may or may not have been needed; 3, print was essential to the activity, but in a very minimal way, as with an activity involving putting numbers in columns labeled “ones” and “tens”; 4, print was more essential, although still not the focus of the activity, as when illustrating a story problem; 5, print was both essential and the focus of the activity, as during read-aloud.
3. The level of print used in the written language activity was coded using the same codes described above for classroom environmental print text level. When there was an equal amount of text at two different levels, I coded the level of the print that was the focus of the activity. For example, on a worksheet with an equal amount of phrasal/sentential text and word level text, the text level was coded as word level if the focus of the students’ work on the worksheet was on the word level text.
4. The domain of written language activity was defined as the curricular area(s) the activity intended to address. Domain codes included literacy/language arts, handwriting, science, social studies, mathematics, calendar, sharing, social development, discipline, classroom management, unclassifiable, various domains (when students were involved with different domains), and multiple domains. The multiple domains code was used when the activity represented multiple disciplines, such as an activity that is intended to provide both science and mathematics instruction. The classroom management code was used only for management activities that were not

embedded in another discipline. Thus, if the teacher read aloud a list when taking attendance, the domain was coded as classroom management. However, if she read aloud a list of students who had not completed their mathematics assignment during math time, the domain was coded as mathematics.

5. I noted any reading activities in which students had substantial choice over their reading material. Examples of such activities include silent reading activities in which students could choose their book(s) from among any in the classroom library, partner reading activities in which students could choose any book within a set of books to read to their partner, and so on.
6. Each activity that involved writing was coded for whether it afforded students a high, moderate, or low degree of authorship. Activities in which there were few or no restrictions on what students were allowed to write were coded as having a high degree of authorship, as when students could write anything they want or anything they want within a specified genre. In activities coded as having a moderate degree of authorship, students were given considerably more restrictions about what they could write, but still had several options as to what they could write and still stay within the bounds of the activity. For example, an activity in which students were asked to write what they believed was in a witch's mysterious brew was coded as having a moderate degree of authorship. In activities coded as having a low degree of authorship, students were very restricted in what they were expected to write, with one or two correct responses to the activity. Such activities included choosing the correct word to complete a sentence from a preset list of possibilities, copying, and taking dictation.
7. The author or origin of the text used in an activity was coded in the same way as the author or origin of classroom environmental print texts. Texts coded as having some student authorship included those written by a student or class alone or by a student or class along with another party, such as the teacher, a book author (as when students rewrote parts of a trade book), and a commercial producer (as with story-starter worksheets).
8. For each activity in which students were among the readers, writers, or discussers of the text (as opposed to activities in which only the teacher and/or a single student were reading, writing, or discussing the text), I coded the apparent audience for the activity—for whom the text was apparently being read, written, discussed, or otherwise used. In all cases, I coded only audiences of which students were aware before or during the writing activity. If students were informed of an audience only after they had completed the writing activity, such as if a teacher decided to send compositions to the principal only after students had completed them, that audience was not included in coding. Because it would vary by individual

students and activity whether parents or other family members were likely to look at students' schoolwork, parents and other family members were not coded as audiences unless the texts were explicitly for them, as with Mother's Day cards for example.

A second researcher coded written language activities during one visit each to four classrooms. She was present for 1,220 min of school time and 860 min of class time. Our mean interrater reliability for total minutes of whole class written language activity time was 97.3%. Mean agreement about total time in which groups of students were expected to be doing different things was 92.8%. Among whole class written language activity times that we both coded, 492 min in total, our interrater reliability was as follows: centrality, 92.2%; all text level codes, 87.8%; extended text level versus not, 97.1%; domain, 97.3%; degree of authorship, 93.4%; author or origin of text, 95.5%; audience for texts, 88.5%.

Specials. When specials teachers allowed it (in all but a few cases), I observed during specials as well. I recorded as much information as possible about any written language activities that occurred. In addition, when the special was held outside of the regular classroom (e.g., in an artroom), I recorded as much information as possible about classroom environmental print and any books or magazines in the classroom available to students.

Data Analysis Procedures

Results of coding were entered into three databases—classroom environmental print data, classroom library data, and written language activity data. As described below, data from each of these databases were used to address questions about the amount of print experience, the type of print experienced, and the nature of print experience in low- compared with high-SES classrooms.

Amount of print experience. Data in all three databases were used to address questions about the amount of print and print experience offered to students in low- and high-SES classrooms. From the classroom library database, means per classroom by SES were calculated for the following variables: (1) the number of books and magazines available to students on Visit 1; (2) the number of books and magazines newly available to students on Visits 2–4; (3) the number of books and magazines available per student on Visit 1; (4) the number of books and magazines newly available per student on Visits 2–4; (5) the number of books and magazines fully or partially displayed on Visit 1; (6) the number of newly available books and magazines fully or partially displayed on Visits 2–4; and (7) the number of different uses of the classroom library reported by the teacher and augmented with observation. I also conducted a later analysis of the percentage of all books and magazines in the classroom library that were fully or partially displayed, thus controlling for SES differences in classroom library size.

From the classroom environmental print database, means per classroom by SES were calculated for the number of environmental print texts present in classrooms on Visit 1; the number of environmental print texts present in classrooms on Visits 2–4 that were not present on previous visits (i.e., new environmental print); and the number of references to environmental print observed on all visits combined.

From the written language activity database, means per classroom by SES were calculated for (1) the total number of minutes spent with written language, (2) the percentage of class time spent with written language, (3) the percentage of school time spent with written language, (4) the proportion of minutes spent at each of the five centrality ratings, (5) the amount of time spent at each of the five centrality ratings, (6) the proportion of minutes spent with written language in each curricular domain, and (7) the amount of time spent with written language in each curricular domain.

I conducted a multivariate F test through multivariate analysis of variance (MANOVA) comparing low- and high-SES classrooms for the following key variables: the number of books and magazines available to students on Visit 1, the number of books and magazines available to students on Visits 2–4, the number of environmental print texts present on Visit 1, the number of new environmental print texts present on Visits 2–4, the number of minutes of written language activity time on all visits combined. This and all tests of statistical inference reported in this article were conducted at the classroom level (not by days); thus, $n = 20$. Because this is an exploratory study, I considered statistical significance for all tests to be reached when two-tailed $p < .10$. Results of this F test do indicate SES differences in amount of print at the (two-tailed) $p < .10$ level of statistical significance, $F(5, 14) = 2.86$. On the basis of this test, X^2 (in the case of centrality and domain data) and t tests (in the case of all other data) for SES differences in individual variables were conducted. They are reported throughout the Results section of this article. For all variables, population variances are, of course, unknown. I took a conservative approach in assuming these variances to be unequal and employed the Welch-Aspin t^* -test procedure for all t tests. Two-tailed p values were used in all cases.

Type of print experienced. Data from the classroom environmental print and written language activity databases were used to compare socioeconomic settings in terms of the types of print experienced. Specifically, from the classroom environmental print database, I calculated the mean number of environmental print texts that were coded as having an extended text level for low- and then high-SES classrooms. Texts present on consecutive visits were counted only once each. I also calculated the proportion of environmental print texts in each classroom that were extended in form, again counting texts appearing on multiple consecutive visits only once each.

From the written language activity database, I calculated the mean number of minutes spent with extended text forms by SES, as well as the proportion of written language activity time devoted to extended text

forms, also by SES. The use of minutes as the base unit of analysis for this and other written language activity variables identified below facilitates comparison across classrooms and settings (Durkin, 1978–1979, 1987) and avoids the difficulty of identifying less concrete units such as “activity” or “event.”

The classroom library database was not analyzed in terms of text level, as books and magazines are, by definition, extended in form. Their count was analyzed as part of the amount of print experience area.

I conducted a multivariate F test through MANOVA comparing low- and high-SES classrooms in terms of the number and proportion of extended text forms in written language activities and among environmental print texts. Results of this F test also indicate SES differences at the $p < .10$ level of statistical significance, $F(4, 14) = 2.49$. On the basis of this test, t tests for SES differences in individual extended text variables were conducted and are reported in the Results section.

Nature of print experience: student agency with print. The classroom environmental print and written language activity databases were also used to compare socioeconomic settings in terms of opportunities for students to develop agency as print users. The environmental print database was used to determine classroom means by SES for the number and proportion of environmental print texts that were at least partly authored by students. The written language activity database was used to calculate classroom means by SES for several variables: (1) the number of minutes spent with text at least partly authored by students, (2) the proportion of time devoted to text at least partly authored by students, (3) the number of minutes in which the audience for student written language activity was beyond the teacher alone, (4) the proportion of written language activity time in which the audience for the written language activity was beyond the teacher alone, (5) the number of minutes in which students had choice over their reading material, (6) the proportion of written language activity time in which students had choice about their reading material, (7) the number of minutes devoted to activities in which students had a high degree of authorship, and (8) the proportion of written language activity time devoted to activities with a high degree of authorship.

Because of the large number of variables tapping opportunities for students to develop agency with print, I conducted two multivariate F tests through MANOVA. The first included the five student agency variables that report raw numbers of texts, in the case of environmental print data, or minutes, in the case of written language activity data. The results of this test did not reach a $p < .10$ level of statistical significance, $F(5, 14) = 1.73$, ns. The second F test included the five student agency variables that report proportions of texts, in the case of environmental print data, or minutes, in the case of written language activity data. Results of this test did reach a $p < .10$ level of statistical significance, $F(5, 14) = 2.38$. Thus, t tests for SES differences in individual student agency variables were conducted and are reported for proportions of written language activity time only.

Results

Data indicate that there were differences between the low- and high-SES settings in all major areas examined—the amount of print experience, the type of print experienced, and the nature of print experience. Speaking in averages, children in a low-SES first-grade classroom encountered less print on the walls and other surfaces of their classroom and had fewer books and magazines available to them in the classroom library. They observed fewer references to classroom environmental print and had fewer opportunities to use the classroom library. They spent roughly the same proportion of school time engaged in written language activities. However, they were offered a smaller proportion of exposure to and experience with extended forms of text, and less often found print integrated across the curriculum. They had fewer opportunities to choose what they read and were less likely to have opportunities to write for audiences beyond the teacher alone. These children spent less time engaged in activities in which they had a high degree of authorship and spent more time engaged in activities such as copying, taking dictation, and completing worksheets. In short, they were offered markedly different print environments and experiences than their high-SES counterparts. Results supporting this picture are detailed in three sections below: “Amount of Print Experience,” “Type of Print Experienced,” and “Nature of Print Experience: Student Agency With Print.”

Amount of Print Experience

The data indicate differences in the amount of print available to students in the low- and high-SES districts. Low-SES classrooms had smaller classroom libraries early in the year, fewer books and magazines newly available to students over the course of the year, less display of books and magazines around the classroom, and fewer texts on classroom walls and other surfaces. Students in low-SES classrooms did spend roughly the same proportion of school and class time in activities involving written language. Because school days in low-SES districts are longer, students actually spent more time in written language activity in raw terms. However, as will be described later, the nature of the time spent with written language in low-SES classrooms was different in several ways.

Classroom libraries. As shown in Figure 1, the mean number of books and magazines in the high-SES classroom libraries was much larger than in the low-SES classroom libraries. On the first visit to each classroom, there were an average of nearly 40% fewer books and magazines in the low-SES classroom libraries. A similar discrepancy was found among books and magazines newly available to students on the second, third, and fourth visits to the classrooms. There were fewer than one half as many books and magazines newly available to students in low-SES classrooms over the course of the school year.

When the size of the classroom library is considered in terms of books per student, as Fractor, Woodruff, Martinez, and Teale (1993) suggested, the

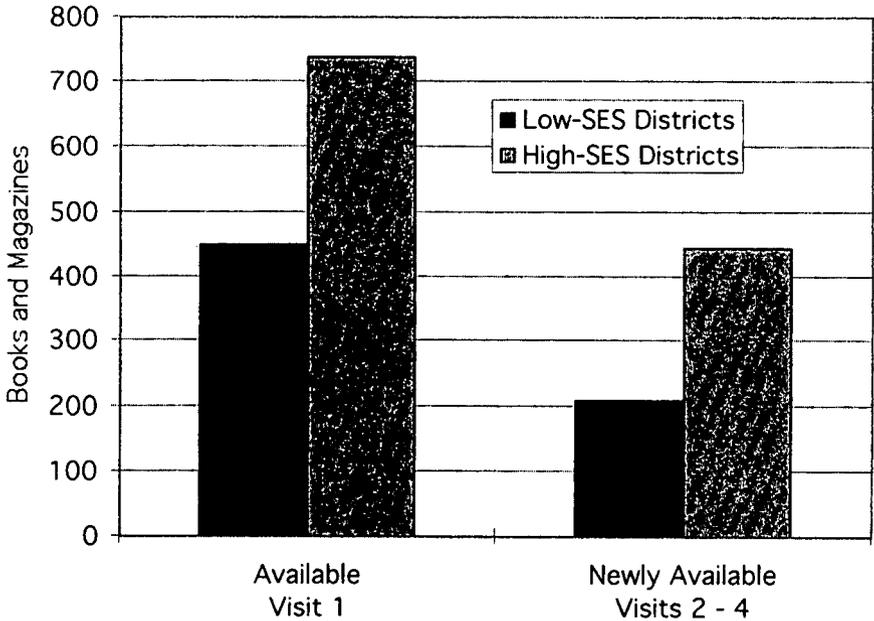


Figure 1. Mean number of books and magazines available to students on visit 1 and newly available to students on visits 2 through 4, calculated at the classroom level, shown by SES (visit 1: low-SES $M = 448.9$ ($SD = 221.4$), high-SES $M = 737.7$ ($SD = 423.0$), $t^*(14) = 1.91$, $p < .10$; visits 2-4: low-SES $M = 210.2$ ($SD = 183.6$), high-SES $M = 442.5$ ($SD = 260.4$), $t^*(16) = 2.31$, $p < .05$)

SES differences between students become even more pronounced (Table 2). This is the result of an average of three to four more students per classroom in the low-SES settings, depending on the visit.

As reported in Table 3, classrooms in high-SES districts also fully and partially displayed more books and magazines than low-SES classrooms.

Table 2
Mean Books and Magazines per Student by SES

	District type			
	Low-SES		High-SES	
Books and magazines	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
All available, Visit 1	17.7	8.0	33.4**	16.5
Newly available, Visits 2-4	10.0	8.8	19.3*	13.6

Note. SES = socioeconomic status.
Two-tailed * $p < .10$ ** $p < .05$.

Table 3
Number and Percentage of Books and Magazines Displayed, by SES

Books and magazines	District type			
	Low-SES		High-SES	
	<i>M</i> (<i>SD</i>)	<i>M</i> % (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> % (<i>SD</i>)
All available, Visit 1				
Fully displayed	10.3 (10.5)	3.0 (3.5)	20.9 (13.5)*	3.6 (3.1)
Partially displayed	3.5 (9.2)	0.7 (1.7)	33.9 (52.0)*	7.2 (11.5)
Newly available, Visits 2–4				
Fully displayed	16.3 (12.7)	15.5 (17.4)	60.2 (48.2)**	17.8 (15.2)
Partially displayed	6.3 (15.5)	2.8 (6.4)	47.4 (74.3)	6.7 (7.9)

Note. When the number of fully and partially displayed books are considered together, socioeconomic status (SES) differences are significant at $p < .10$ (Visit 1) and $p < .05$ (Visits 2–4). Two-tailed * $p < .10$. ** $p < .05$.

Given how many more books and magazines there were in the high-SES classrooms, this might be expected. However, even taking the total number of books and magazines in the classroom into account, there was a greater display of books and magazines in the high-SES classrooms, that is, a greater proportion of the classroom library was displayed. The same pattern is seen among the newly available books and magazines as recorded on Visits 2–4. A greater number and percentage of newly available books were fully or partially displayed in the high-SES classrooms. Descriptions of two classroom libraries fairly typical within their socioeconomic setting are given in Appendix 1.

Notably, it was not simply that the high-SES classroom libraries contained and displayed more materials; there were more opportunities for students to use them. Conversations with teachers augmented by observation about uses of the classroom libraries indicated a mean of 9.0 ($SD = 2.9$) different types of uses of the classroom library in the high-SES classrooms. In the low-SES classrooms, there was a mean of only 5.1 ($SD = 5.4$) different uses of the classroom library, $t^*(18) = 4.28$, $p < .001$. For example, whereas seven high-SES classrooms had a specific time during which students were to read or look at books silently, only two low-SES classrooms had that time. Classroom libraries were a richer and more frequently used resource for students in the high-SES settings.

Classroom environmental print. Students in high-SES settings also encountered more print on classroom walls and other surfaces, although differences on these variables did not reach a $p < .10$ level of statistical significance. On the first visit to classrooms, students in high-SES classrooms were exposed to just under 20 more texts, on average, than were their low-SES counterparts, $t^*(18) = 0.66$, ns. On Visits 2–4, high-SES classrooms had a mean of 227 ($SD = 91.1$) new texts on classroom walls and other surfaces. In low-SES classrooms, there were a mean of 160 ($SD = 81.5$) new

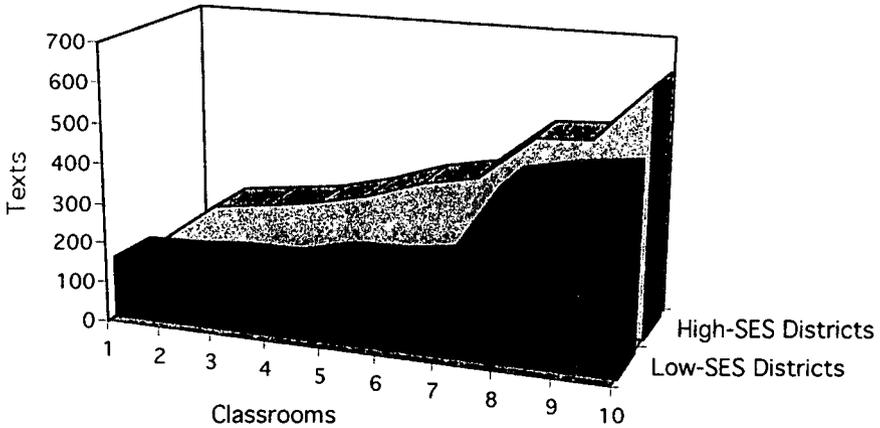


Figure 2. Total number of classroom environmental print texts (counting texts that appeared on multiple visits only once each) in each classroom, by SES (low-SES $M = 260.2$ ($SD = 134.9$), high-SES $M = 342.1$ ($SD = 149.0$), $t^*(18) = 1.29$, *ns*)

texts across the same visits, $t^*(18) = 1.73$, *ns*. Figure 2 provides a classroom-by-classroom comparison combining all environmental print recorded on Visit 1 and any new environmental print observed on Visits 2–4. As Figure 2 illustrates, high-SES classrooms typically offer more print, although there is variation within each socioeconomic setting. Again, these differences did not reach a level of statistical significance.

In the high-SES classrooms, there was more incorporation of classroom environmental print into daily classroom life. I observed an average of 52.1 ($SD = 17.2$) references to environmental print across the four visits each to high-SES classrooms; I observed only 31.2 ($SD = 25.9$) references to classroom environmental print in the low-SES rooms, $t^*(16) = 2.13$, $p < .05$. In one day in a high-SES classroom with a moderate amount of environmental print reference, students were observed looking at the posted daily schedule, a wall calendar, a displayed money project involving some print, the date on the chalkboard, a chart indicating assigned centers for centers time, a stop and go sign on the door indicating when students are allowed to leave the room to go to the restroom, a label on a tub of books, a poem displayed on an easel, and names of students on cups in which they had planted marigold seeds. In a low-SES classroom with a moderate amount of environmental print reference, students were observed looking at a wall calendar, the date on the chalkboard, their names on their desks, a posted sheet of story problems, and part of a word on the board they were trying to spell by earning letters for good behavior.

Classroom environmental print also appeared to be more commonly integrated with classroom print resources and topics of study in the high-SES classrooms. Early in the year in one high-SES classroom, for example, there

was a large wall display entitled "I Can Read Signs." Under it were posters of cities, a teacher-made sign, signs on postcards, and many photos taken of signs in the students' community. Near this were several prominently displayed books about signs, including one made by a former class of first graders. On one visit to another high-SES classroom, there were many pieces of classroom environmental print related to the topic of horses. These included several poems, some of which were cinquains written by students, a large wall display of horse jokes taken from a popular children's magazine, a class-composed list of horse-related words, a list of horses of the world, a class-composed informational text about horses, and student-made labels on various horse-related items. Accompanying this environmental print were a large number of books about horses, including many fictional narratives and information books. With few exceptions, the only occasions on which low-SES classrooms had an integrated display of environment print and classroom library resources was when they related to an upcoming holiday. For example, low-SES classrooms displayed Easter decorations along with books with bunny characters. Holidays provided a common impetus for change in environmental print in the low-SES classrooms, whereas holiday-based displays were rare in high-SES settings.

Written language activities The amount of time spent with written language through classroom written language activities was the one area examined in which low-SES classrooms appeared to offer more, not less, print exposure. In raw terms, students in low-SES classrooms actually spent an average of 27.0 min per day more with written language than students in high-SES classrooms (across the four visits: low-SES $M = 593.0$ [$SD = 96.0$], high-SES $M = 700.9$ [$SD = 124.7$], $t^* = 2.17$, $p < .05$). However, including times in which the class was organized so that some groups of students were working with written language and others were not, the difference drops to 13.7 min (across the four visits; low-SES $M = 709.7$ [$SD = 122.4$], high-SES $M = 655.1$ [$SD = 97.0$], $t^*(17) = 1.11$, *ns.*)⁴

Although students in low-SES classrooms spent more time with written language in raw terms, they did not spend a greater proportion of school or class time with written language at a level of statistical significance. Indeed, the difference in raw terms seems to be more of an artifact of the fact that, on average, students in low-SES classrooms had longer school days and spent more of their school time in class (as opposed to at recess and in specials). Calculated as a proportion of time in school, students in low-SES classrooms spent 48.7% ($SD = 7.9$) of the time with written language compared with 43.6% ($SD = 9.0$) of the time in high-SES classrooms, $t^*(18) = 1.73$, *ns.* Calculated as a proportion of time in class, students in low-SES classrooms spent 67.6% ($SD = 7.2$) of the time with written language, compared with 67.0% ($SD = 12.3$) of the time for students in high-SES classrooms, $t^*(14) = 0.13$, *ns.*

Within written language activities, there was also little difference in the centrality of print to written language activities. Students in high-SES classrooms did spend a greater proportion of time in activities in which print was

rated more central (ratings of 3, 4, 5), but the differences were only very slight (e.g., 85.4% vs. 84.4% for Rating 5) and a chi-square comparison of all ratings did not reach a level of statistical significance, $X^2(5) = 3.0$, *ns*. As one would expect given the larger amount of time low-SES children spent in activities involving print, in raw terms, differences between number of minutes in activities at each rating did reach a level of statistical significance, $X^2(5) = 13.6$ $p < .05$. Students in low-SES classrooms spent more time in activities at all ratings except Rating 3.

In terms of the curricular domains in which print was employed, overall students in high-SES settings spent 40.3% of their time with print in domains other than literacy alone, whereas students in low-SES settings spent 29.9% of their time with print across the curriculum. However, differences within each individual domain were generally small, and a chi-square comparison of all domains coded did not reach a level of statistical significance, $X^2(12) = 5.6$, *ns*. Even given the greater amount of time low-SES students spent with print overall, in raw terms, students in high-SES classrooms spent more time with print in most of the domains coded, $X^2(12) = 28.7$, $p < .01$.

With regard to specific domains, high-SES students spent a greater proportion of time with print in calendar, handwriting, sharing, social development, discipline, classroom management, science, and social studies. They also spent more time in situations in which multiple domains were addressed simultaneously, students were involved with different domains, or the domain itself was unclassifiable. For example, during science instruction in one high-SES classroom, students explored a range of fruits and vegetables with different kinds of seeds. As part of the activity, students completed a record sheet that asked for their name (under "Scientist"), the date, a picture and name of the fruit or vegetable being observed, a prediction about how many seeds they expect to find in their fruit or vegetable, an actual count of the number of seeds, an illustration of one of the seeds, and three words to describe the seeds. These sheets were used when students exchanged information about the seeds in their fruit or vegetable. Such activities were less common in low-SES classrooms.

In contrast, low-SES students spent a greater proportion of time with print only in the domains of literacy and mathematics. Even within the domain of mathematics, typical activities were very different in low- and high-SES settings. For example, in a high-SES classroom, as part of a unit on shapes, the teacher read a concept book called *Architecture Shapes* from the National Trust for Historic Preservation (Crosbie & Rosenthal, 1993). The teacher then gave students a piece of paper with different shapes drawn and labeled. Students went outside and, in groups, looked for objects that resembled those shapes. The "recorder" in each group wrote the names of the objects on the paper, although other members of the group were observed looking over the paper as well, contributing to spellings, and so on. In high-SES classrooms, it was not uncommon for mathematics to be linked to read-alouds and writing activities. By comparison, one of the most common

heavily print-involved mathematics activities in low-SES classrooms was coloring in worksheets based on number color codes (e.g., color all sections whose numbers add up to 4 in green, all the sections whose numbers add up to 5 in blue). I counted a total of seven such worksheets used over the course of 40 days of observation in low-SES classrooms; there were none seen in high-SES classrooms.

Type of Print Experienced

As described below, high-SES classrooms offered more exposure to and experience with extended text, as opposed to text at the letter, word, or phrasal/sentential levels.

Classroom library Books and magazines counted in the classroom library are, by definition, extended text. As reported above, there were many more books and magazines available to students in the high-SES classroom libraries than in the low-SES libraries, both as totaled on Visit 1 and as newly available books counted on Visits 2, 3, and 4. Thus, in this respect, there was more extended text available to students in the high-SES settings.

Classroom environment print. Low-SES classrooms contained nearly 25% fewer extended text forms among classroom environmental print than high-SES classrooms. Low-SES classrooms had a mean of 35.6 extended texts on classroom walls and other surfaces across the four visits (counting texts appearing on multiple consecutive visits only once each); high-SES classrooms included a mean of 44.3 extended text forms across the four visits. However, as with variables measuring the amount of environmental print in classrooms, these SES differences in classroom environmental print did not reach a level of statistical significance, $t^*(18) = 0.62$, *ns*. Comparisons of the proportion of environmental print texts that were extended in form also did not reach a level of statistical significance (high: $M = 12.5$ [$SD = 6.0$], low: $M = 12.4$ [$SD = 8.1$]), $t^*(17) = 0.05$, *ns*.

Written language activities. Although differences in the exposure to extended text through environmental print did not reach a level of statistical significance, differences in proportions of experience with extended text through actual written language activities did, $t^*(18) = 2.12$, $p < .05$. As shown in Figure 3, high-SES classrooms devoted a greater proportion of time to extended text, whereas low-SES classrooms devoted a greater proportion of time to text at the letter, word, and phrasal/sentential levels. In raw terms, this amounts to an average of 18.4 min more with extended text forms across the four visits (although raw differences do not reach a level of statistical significance (high: $M = 199.2$ [$SD = 78.6$], low: $M = 180.8$ [$SD = 94.1$]), $t^* = 0.47$, *ns*).

Note that the differences in proportion of time devoted to extended text in the high-SES classrooms did not seem to reflect decreased attention to graphophonic relationships or high frequency word-reading. Teachers in high-SES classrooms did provide instruction in these areas, but more often embedded this instruction in extended text forms. Consider the activities

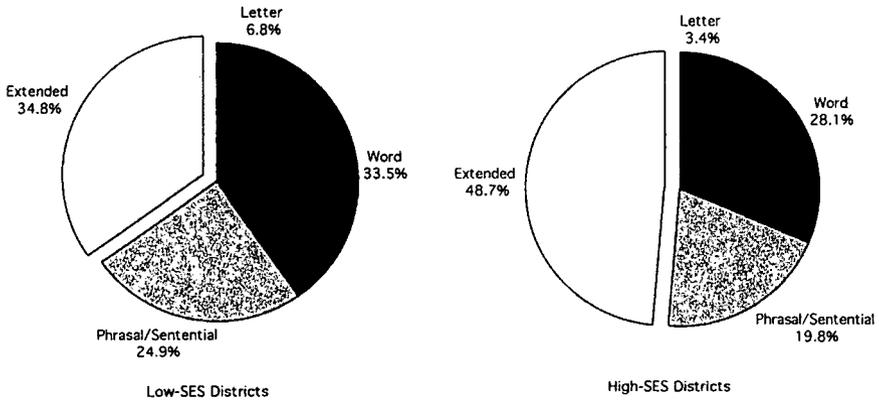


Figure 3. Mean percentage of written language activity time devoted to extended as compared to other levels of text, calculated at the classroom level, shown by SES ($t^*(18) = 2.12$, $p < .05$)

described in Appendix 2. Examination of these and other graphophonic activities within each socioeconomic setting suggests that differences in the *way* graphophonic instruction was provided—not in *whether* it was provided—is one reason why the proportion of time spent with extended text differed across SES settings.

Finally, it is interesting to note that students in high-SES classrooms much more often had extended text, in the form of novels, read aloud to them. I observed or saw evidence of read-alouds of novels in 7 of 10 high-SES classrooms, with books read including *Charlotte's Web*, *Shiloh*, *Go Free or Die: A Story About Harriet Tubman*, *Mr. Popper's Penguins*, and *Charlie and the Great Glass Elevator*. I observed or saw evidence of read-alouds of novels in only 2 of 10 low-SES classrooms, the titles being *Beezus and Ramona* and *Mr. Popper's Penguins*.

Nature of Print Experience: Student Agency With Print

The final major aspect of print experiences and environments, that is, student agency with print, also showed substantial SES differences (Table 4). There was a greater proportion of time in which students in high-SES classrooms could choose what they read, exercise a high degree of authorship in what they wrote, and read and write for audiences beyond the teacher. There were no differences at a level of statistical significance in the extent to which student-authored texts were included in classroom written language activities and among classroom environmental print.

Agency as a reader. As shown in Table 4, high-SES classrooms devoted a greater proportion of time to activities in which students could exercise substantial choice over their reading material. For example, there was more time for activities such as looking at or reading silently a book of one's choice from the classroom library.

Table 4

Proportion of Whole-Class Written Language Activity Time Devoted to Activities Likely to Encourage Development of Agency as Print Users, by SES

Activity	District type			
	Low-SES		High-SES	
	<i>M%</i>	<i>SD</i>	<i>M%</i>	<i>SD</i>
Choice in reading material	1.5	2.0	6.2	5.8**
High degree of authorship	3.5	6.2	11.6	10.0**
Having student-authored text included in activities	26.7	11.3	31.0	9.6
Writing for audiences beyond the teacher alone	37.8	16.2	58.7	15.4***

Note: SES = socioeconomic status.

Two-tailed * $p < .10$. ** $p < .05$. *** $p < .01$.

Similarly, during non-whole class written language activity times, when groups of students were involved in different written language activities, students in high-SES classrooms again spent a greater proportion of written language activity time in situations in which they could choose their reading material. For example, in one "Readers' Workshop" period (the teacher's term) in a high-SES classroom, students had a choice among one or all of the following activities: filling in missing letters in a poem, working in *Wiggle-works* (Scholastic, 1994) on a computer, listening to a book on tape, decorating a poem on an overhead projector, completing cloze passages on an overhead projector, making their own version of a book based on a chant they had learned, reading books of song lyrics, and reading a book of their choice (the teacher also read with small groups of students during this time). Students in low-SES classrooms rarely had a choice in their written language activities, and very rarely to this degree. Combining whole class and group written language activities, the mean proportion of time in which high-SES students had a choice in their reading material was over three times greater than for low-SES students, $t^*(16) = 2.53, p < .05$.

Agency as a writer. Students in high-SES classrooms also had more opportunities to exert their agency as writers. As shown in Table 4, a far greater proportion of the writing activities in the high-SES classrooms were rated as affording students a high degree of authorial control. In contrast, a greater proportion of the writing activities in low-SES classrooms were rated as affording students a moderate or, more commonly, a low degree of control over authorship of the text. For example, students in low-SES classrooms spent a considerably greater proportion of time taking dictation (low: $M = 8.1$ [$SD = 9.8$], high: $M = 2.3$ [$SD = 4.2$]), $t^*(12) = 1.71, ns$; copying someone else's text (low: $M = 6.2$ [$SD = 5.0$], high: $M = 2.5$ [$SD = 3.0$]), $t^*(15) = 2.02, p < .10$;

and working with worksheets (low: $M = 21.5$ [$SD = 10.2$], high: $M = 12.6$ [$SD = 7.1$]), $t^*(16) = 2.27$, $p < .05$.

Agency as an author. In high-SES classrooms, only a slightly greater proportion of classroom environmental print and written language activity time was devoted to text at least partly authored by students. Neither of these differences reached a level of statistical significance (for environmental print across the four visits low: $M = 49.3\%$ [$SD = 10.7$], high: $M = 52.0\%$ [$SD = 15.5$], $t^*(10) = 0.15$, ns ; for written language activity time across the four visits, see Table 4). Thus, this is the one set of variables tapping student agency with print that did not indicate SES differences at a level of statistical significance.⁵

Agency through audience. Finally, as shown in Table 4, students in high-SES classrooms spent a much larger proportion of time reading and writing for audiences beyond the teacher alone, something several researchers and theorists associate with the development of agency as a print user (see Daniels, 1990, for a review). For example, students in one high-SES classroom decorated grocery bags with proenvironment slogans for a local supermarket. Students in another high-SES classroom wrote letters to authors whose work they had studied. Opportunities to read to a partner or write for someone in the larger school community were also greater in high-SES rooms. Again, students in high-SES classrooms are treated more like real agents of print than their low-SES counterparts.

Specials

A full report of data regarding specials is beyond the scope of this article. To summarize, examination of descriptive notes about specials shows a picture similar to that seen in the rest of the school day. Specials classrooms in high-SES settings generally included more text on classroom walls and other surfaces. Several low-SES schools actually held all or some of their specials in the regular classroom, in which case students saw no new environmental print. Specials classrooms in high-SES settings were also more likely to have relevant books and magazines available to students. For example, some high-SES art classrooms contained children's books with high-quality illustrations and how-to drawing and crafts books. Print activities, such as reading the lyrics of songs in music class or referring to anatomy posters in gym class, were also more common in high-SES settings.

Variation Within Low-SES Classrooms

Although this study has focused on differences across socioeconomic school settings, there was certainly variation within low-, as well as high-, SES classrooms in this study. The relatively high standard deviations reported for many variables, particularly those around environmental print, underscore the existence of variation among classrooms. Also, few of the types of literacy events described above were found exclusively in one or the other setting. Snow, Barnes, Chandler, Goodman, and Hemphill (1991) demon-

strate not only that low-SES classrooms can be very different from one another, but that aspects of this variation are closely related to students' literacy achievement. As discussed in the following section, additional research along these lines might suggest ways in which low-SES classrooms can alter their print environments and activities to enhance student achievement.

Discussion

Summary

Data indicate substantial and widespread differences between low- and high-SES classrooms in print experiences and environments offered to students for variables in all three areas examined—amount of print experience, type of print experienced, and nature of print experience: student agency with print. Results for individual variables are summarized in Table 5. Of course, it is important to note that there was some overlap among high- and low-SES classrooms for many of these variables—not all low-SES classrooms were higher or lower than all high-SES classrooms on every variable. Moreover, there may be strong correlations among some variables and not among others. Further report of relationships among variables is beyond the scope of this article.

Limitations

At least two limitations of this study should be noted. First, the design of this study does include some clustering of classrooms within school districts. That is, there are, in some cases, multiple study classrooms located within a single school district. To the extent that the district itself influences the variables studied at the classroom level (e.g., if a reading program mandated at the district level affects the types of text observed at the classroom level), the generalizability of the data is affected. The impact of this limitation is mitigated somewhat, however, by the fact that there are several different school districts involved (four low-SES, six high-SES) and by the fact that there is little clustering at the school level (only one school had more than one classroom participating in the study). Further, there was little commonality among classrooms within a district that seemed attributable to characteristics of that district. For example, teachers within a district did not all use the same reading materials or materials in the same general distributions. Rather, this and other areas seemed to vary mainly at the classroom level. (In this study, the use of hierarchical linear modeling to handle clustering would be ill-advised.)

A second and more significant limitation of this study is its geographical specificity. All districts observed were located in the state of Massachusetts, and within a relatively small geographical area. Although the districts differ a great deal in terms of SES, the issue of concern in this study, they may have other things in common because of their geographical and political proxim-

Table 5
Summary of Results

Feature or aspect of high-SES classrooms	Statistical significance
More books and magazines available on Visit 1	*
More books and magazines newly available on Visits 2–4	**
More books and magazines available per student on Visit 1	**
More books and magazines available per student on Visits 2–4	*
More books and magazines displayed on Visit 1	*
More newly available books and magazines displayed on Visits 2–4	**
More uses for the classroom library	***
More classroom environmental print on Visit 1	
More new classroom environmental print on Visits 2–4	
More references to classroom environment print	**
Less class time spent on written language activities	**
A smaller proportion of class time with written language activities	****
A smaller proportion of school time with written language activities	
A greater proportion of time in activities in which print was more central	
A greater amount of time in activities in which print was only moderately central	**
A great proportion of time with print in domains other than literacy (i.e., across the curriculum)	
A greater amount of time with print in most domains other than literacy	***
More extended texts among classroom environmental print	
A greater proportion of extended texts among classroom environmental print	
More extended texts among written language activities	
A greater proportion of extended text among written language activities	**
A greater proportion of written language activity time devoted to activities in which students choose their reading material	**
A greater proportion of written language activity time devoted to activities in which students have a high degree of authorship	**
A greater proportion of classroom environmental print texts authored at least partly by students	
A greater proportion of written language activity time with text authored at least partly by students	
A greater proportion of written language activity time reading and writing for audiences beyond the teacher alone	***

Two tailed * $p < .10$. ** $p < .05$. *** $p < .01$. ****Including times in which some students were involved with written language and some were not, p is not significant.

ity. For example, average district spending in Massachusetts is lower than in many other states (Morgan, Morgan, & Uhlig, 1998). Therefore, schools in Massachusetts may have fewer books and other materials than schools in other states. More fundamental to the thesis of this study, socioeconomic differences in school print experiences and environments may be more or less dramatic in other parts of the country, or when comparing schools in

different parts of the country. Further research would have to be conducted to investigate these possibilities.

Conclusions

To the extent that these results are generalizable to other low- and high-SES districts, they support four important arguments.

Literacy is a Site for Differential Curricula Along Socioeconomic Lines.

First, this study indicates that just as domains such as mathematics and social studies have been shown to host different kinds of curricula in different socioeconomic settings (Anyon, 1981), so too has literacy. Aspects of print experiences and environments that are widely considered to be important to literacy development and achievement can manifest differently in different socioeconomic settings. Like studies that have found curricular inequalities along socioeconomic lines in parts of the school day in which students are grouped or tracked, this study finds curricular inequalities along socioeconomic lines throughout the school day. Like studies showing differences in literacy-related environments and experiences offered to low- and high-SES students within schools and classrooms, these data show differences in literacy-related environments and experiences offered to low- and high-SES students between schools and classrooms. Studies in these settings are particularly timely given demographic trends toward increasing socioeconomic homogenization within schools (Orfield, Eaton, & The Harvard Project on Desegregation, 1996). With respect to these school environments, available data indicate that the rich are getting richer print experiences and environments in several respects throughout the crucial first-grade year.

Socioeconomic Differences in Print Environments and Experiences Run Wide and Deep. A second conclusion supported by this study is that SES differences in print environments and experiences go beyond merely differences in materials. Although there were fewer books and magazines available to students in low-SES classrooms, there were numerous other differences in the environment and experiences that cannot be attributed to materials. For example, differences in opportunities to write for audiences beyond the teacher alone cannot be attributed to materials differences. By extension, efforts to address SES differences in literacy environments and experiences must go well beyond simply providing classrooms with more books and other materials.

Schools may Contribute to Relatively Lower Levels of Literacy Achievement Among Low-SES Children. Third, these results suggest that schools themselves may contribute to relatively lower levels of literacy and other kinds of achievement among low-SES children. This suggests that we should continue the path of those who have studied tracking/grouping and cultural mismatch, looking to schools themselves as a potential source of SES differences in educational achievement and outcomes. If schools are offering students with more socioeconomic capital more opportunities to develop important forms of semiotic capital, then they are not only failing to act as a "great equalizer" but acting as agents of further disequalization.

Differential Curricula Early in Schooling. Fourth, these results suggest that social reproduction through schooling may begin quite early. What Oakes (1985) has shown with tracking and ability-grouping, which typically become most prominent in middle and secondary schooling, and Anyon (1981) has shown with content area instruction, in late elementary and early middle-school settings, I find in the very first required year of schooling and in a domain widely considered the most fundamental to formal education. Very early in schooling, students in low-SES districts may be offered very different educational experiences than their high-SES counterparts. Indeed, these findings provide a new perspective on the fourth-grade slump and other phenomena showing widening, not narrowing, gaps among low- and high-SES students as they move through school (for a related perspective, see Snow et al., 1991). Perhaps the gaps widen not solely because of the traditional explanations offered—such as the rise in vocabulary demands and the increasing importance of expository text—but because the schools themselves offer relatively poorer print experiences and environments to low-SES children.

Areas for Future Research

One clear need for future research lies in trying to understand the relationship between research studies like this one, which show SES differences in literacy environments and experiences offered to students in school, and the much larger body of research showing SES differences in literacy environments and experiences offered to students at home. We need to understand how these bodies of literature, and the factors they represent, relate to one another and to the larger issue of lower levels of literacy achievement among low-SES students. One promising avenue for further research would focus on variation among low-SES homes (Purcell-Gates, 1996) and among low-SES classrooms (Snow et al., 1991): How do different kinds of low-SES homes and different kinds of low-SES classrooms transact to produce different kinds of literacy outcomes for children?

Although additional naturalistic research will be helpful, research on interventions designed to alter the print environments and experiences offered to young children in low-SES schools is urgently needed. Elley (1991) and Neuman (1999) investigated the impact of “book floods” on children’s literacy development, demonstrating that such interventions can indeed impact literacy development. Caution should be exercised, however, in solely materials-based interventions. As discussed earlier, SES differences in classroom print environments and experiences go well beyond materials alone; simply providing low-SES students with more and better reading materials will not be sufficient to address inequalities. McGill-Franzen, Allington, and Yokoi (1997) helped to illustrate this point. They found that increasing the amount of books available in low-SES classroom libraries did impact kindergarten students’ literacy achievement, but only when combined with

teacher training on the use and display of books (and certainly this intervention alone did not result in the equalization of low- and high-SES literacy achievement).

Most closely linked to the present study would be examination of interventions designed to reform low-SES classrooms along the specific dimensions in which they have been shown to differ from high-SES classrooms. The critical questions are: Would making low-SES classrooms more like high-SES classrooms in terms of the amount and types of print in the classroom environment and activities and increasing student opportunities to develop agency as readers and writers impact literacy development? To what degree and with what long-term effect?

A great deal more research and attention should be focused on low-SES schools and classrooms that do educate students to high levels of literacy. Although relatively few literacy researchers, and very few in the education media or general public, could even name such a school, there are low-SES schools and classrooms that either do so or are on their way to doing so (Taylor, Pearson, Clark, & Walpole, 1999). We would be wise to take as many lessons as possible from these schools and classrooms. We should examine how their classroom print environments and experiences compare with those of the high- and low-SES classrooms described in this study and elsewhere. We should pay close attention to what happens when low-SES students are provided, not just in isolated cases but en masse, with high-quality print environments and experiences in school.

APPENDIX 1

Descriptions of Two Classroom Libraries Fairly Typical Within their Socioeconomic Setting

High-SES Classroom Library: In this high-SES classroom, there were a series of tubs in which books were leveled according to their difficulty. Children were required to use books from these tubs, at their reading level, for sustained silent reading times and to take home as part of a home reading program. Students also sometimes used these books during individual reading instruction and assessment and during free times, although there were other collections of books for these purposes as well. Near the tubs were children's and adult magazines such as *Ranger Rick* and *Teddy Bear Review*. In another part of the room, there was a small set of shelves on which stood a collection of nonleveled books. This included several books popular with students but often not so popular with teachers, such as *Where's Waldo?* and *I Spy* books. Students were welcome to use these books during free times but not during sustained silent reading or reading instruction. The bottom shelf of the bookcase contained several reference books, including pictionaries and dictionaries aimed at early elementary-aged students. In still another part of the room was a crate full of books that students had selected from the school library. Each student contributed a school library book to the crate each week, where it was available for

that student and his/her peers. Behind the classroom door were several big books that the teacher had read aloud and the students could use during free times. In the front of the room were books related to the theme currently being studied. On one visit, the theme was Japan. The front display case contained fictional narratives, information books, narrative-information books, and poetry collections related to Japan. In and near the display case were enough copies of one relatively easy-to-read information book about Japan so that every student in the class could have a copy at the same time. There were also several copies of a Bank Street Readers book, *Peach Boy* (Hooks, 1992), which retells a classic Japanese folktale. During the observation, students were assigned to partner-read the *Peach Boy* books and to complete a teacher-structured book report. On a Japanese table near a rug area, there were several Japanese objects along with a special issue of *Travel and Leisure* magazine about Japan and a menu from a local Japanese restaurant. The theme-related books in the classroom were different on each visit; my impression was that themes changed frequently throughout the year. Themes reflected in the books on my four visits were bears, woodland animals, mathematical concepts, and Japan.

Low-SES Classroom Library: One low-income classroom library had a four-shelf rolling cart of books. Most of the books on the cart had been left by a previous teacher. Many were mass-market books (e.g., Golden Books, Disney, Dr. Seuss) and most were relatively old. Books were not organized by level, type, or topic. Although all books on the cart were theoretically available to the students, the cart was positioned so that one side (two-shelves) was difficult to access. Based on my observations, those books were used rarely, if at all. One of the two less-accessible shelves contained primarily old textbooks, most dating from the 1960s.³ There were also some reference books, although most were not designed for early elementary school students. In another part of the room, there was a small square of carpeting on the floor with a tape player and headphones on it. A basket next to the tape player contained books on tape on two of my four visits. Some of these were not provided by the school, but by the teacher who checked them out from a library in a nearby town. There were some books displayed in the classroom on each visit. There was no display case, books were opened so that they would stand up by themselves. Nearly all displayed books related to either an upcoming holiday or to an author currently being featured during read-aloud time; many were brought in by children from home. Three of the five authors featured on my visits could be considered mass market authors: Dr. Seuss, Jan and Stan Berenstain, and Marc Brown. The other two authors studied were Ezra Jack Keats and Tomie dePaola. None of the books in the classroom library were used for formal reading instruction; a basal reading series was used. Students did use the books during any free times (of which there were few) and during a 10-min whole-school silent reading time held at the end of each school day. (Largely because end-of-the-day logistics such as passing out papers took over. The silent reading time was actually only 8, 3, 0, and 0 min on the 4 days I observed, when counted as the time the majority of students had a book in their possession or were in the process of choosing one.) There was a separate set of books for a home reading program in which eight students in the class were officially enrolled as of my December (1996) visit. However, when I next checked on the program in May, the teacher said that students had not taken out books for the program in a long time. Other than the displayed books described earlier, books in the classroom changed very little over the course of the year. The new books that were added to the classroom collection were all or almost all purchased by the teacher with her own money or they were donated to the teacher by friends.

Examples of Typical Graphophonic Activities Within Each Socioeconomic Setting

High-SES Classroom: Teacher reads aloud the book *Nuts to You!* by Lois Ehlert (1993). Teacher reads, and then group reads, a passage from the book written on chart paper. Each student is given a notecard with a word or punctuation mark from the text. Students work together to recreate the text. Students who need to refer to the chart paper may do so, students assist one another, and the teacher provides explicit instruction regarding some punctuation elements and capital/lower case distinctions. When students have successfully reassembled the passage, they read the whole passage together.

High-SES Classroom: Each morning, students read familiar poems from their poetry anthologies. Some mornings, they learn and add new poems. The teacher also has poems written on chart paper. During poetry times, the teacher draws student attention to and provides explicit instruction about rhyming words, particular phonograms, contractions, and compound words.

High-SES Classroom: Teacher sings students a song about leaves. Students read aloud the lyrics of the song as a group. Class discusses what they notice about the words in the song. Class sings the song many more times, accompanied by instruments played by students. Following this, during reading choice time, one of students' options is to fill in missing letters in a copy of the song (e.g., Leaves are fall _ _ _ softly d_ _n. . .).

High-SES Classroom: On a morning focusing on the "short o" sound, the teacher includes the following activities: At the teacher's request, a student reads aloud to the class a (very simple) book he had been practicing called *Frogs* (Williams, 1990). The class discusses the short o sound and representations. The teacher reads aloud the book *The Popcorn Popper* (Nelson, 1992), which will be available to the class later in the week at the listening center. Students are asked to write a word with the short o sound in it during the day and put it into a "pot" for a game they will play tomorrow. On chart paper, the teacher writes the letter "a," with an apple, and the letter "o," with an octopus. Students generate words for one of the other side of the chart (e.g., pot, pat). Before going out to recess, students had to say a word with the short o sound in it.

High-SES classroom: Class reads a "decodable" poem with many "short e" words in it. Teacher reviews the short e with a high-interest word for the class—*extraterrestrial*. (Note that decodable text—text designed so that more or all words can be decoded using previously taught graphophonic relationships—was observed being used in reading instruction or practice in six high-SES classrooms but in only two low-SES classrooms.)

Low-SES Classrooms: Four classrooms in four schools in two school districts use the Won Way Phonics Program. As observed in these classrooms, the program typically takes between 30 and 50 min of class time with the following activities: listening to the teacher say sounds associated with particular letters or multigraphs, repeating the sounds after the teacher, and copying the letters from the card the teacher is holding onto a sheet of paper; taking dictation or copying individual words with a focus on particular letters or multigraphs, coding the words (e.g., writing a two above the letter if it is "the second sound of" that letter and underlining digraphs), and reading them aloud as a class; taking a sentence dictation or copying a sentence, with coding, then reading it aloud as a group, having it checked by the teacher, and illustrating it.

Low-SES Classroom: Students were to have brought in something from home beginning with the letter “p.” Class makes a list of things brought from home beginning with this letter. In groups, students think of names of things that begin with the letter “p,” then with other letters. Students practice writing upper- and lower-case ps on a paper with pictures of a pig and pumpkin on it. Students who have finished may draw something that begins with the letter “p” on the back of their worksheet.

Low-SES Classroom: Class nominates and teacher writes words that end in -an or -at. Teacher explains notion of word families for 1 min. Individual students read aloud the following sentences: “The boy *can* see. The boy likes the *van*. The girl likes *cats*. The girl has a *bat*.” From this point on, neither -an nor -at nor -a- are mentioned. Students read several texts, two of which do have more than three sentences but none of which emphasizes -an or -at or -a-.

Low-SES Classroom: Students cut and paste six consonant blends onto six matching words and pictures. Students color the shamrocks on the paper green (they are required to do so).

Notes

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¹One low-SES district was eliminated because it is over 75% Latino, which is highly unusual for a district in Massachusetts, and because it is geographically more distant and defined on only some maps as part of the Greater Boston Metropolitan Area. The other low-SES district was eliminated because it was involved in a unique and politically charged reform effort that would have made both access and generalizability difficult.

²It should be noted that this definition of “text” favors classrooms in which students more often have authorship. As reported later in the article, there was a difference between high- and low-SES classrooms in this regard.

³In general, books in low-SES classroom libraries appeared to be older (on average) than those in the high-SES classroom libraries.

⁴For these figures only, I adjusted values to compensate for my being unable to make a fourth visit to one of the high-SES classrooms. Specifically, I added for Visit 4 the mean number of minutes spent with written language during Visits 1 and 3 (I did not use Visit 2 because that was a regular early release day).

⁵Interestingly, there were statistically significant differences in other categories of authorship. High-SES classrooms devoted a greater proportion of time to texts authored at least in part by trade book authors and poets, $t^*(16) = 2.76, p < .05$. Low-SES classrooms devoted a greater proportion of time with text authored at least in part by marketers of school materials (e.g., worksheet and textbook authors), $t^*(15) = 2.93, p < .05$.

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