When Schools Close, the Knowledge Gap Grows

Both low-income and middle-income children use public libraries heavily in summer. But what and how much they read threatens to expand, not reduce, the achievement gap.

By Donna Celano and Susan B. Neuman

Teacher quality? Class size? Parental involvement? Educators have proposed many answers to the achievement gap puzzle. However, the solutions are masking the true problem: The achievement gap is not the real gap threatening our nation’s children. There is another, more pernicious gap, one that endangers any hope of equalizing student achievement.
This gap is rooted not in the classroom, but in the learning children do outside of school, including after-school hours, weekends, holidays, and summer breaks. Living in the Information Age, children today gain a remarkable amount of knowledge through their daily reading of books, computers, and other materials on their own time. The information produced each year is astounding. According to one source, the amount of digital information created, captured, and replicated just in 2006 was 161 billion gigabytes. This is about 3 million times the information in all the books ever written.1

This knowledge filters down to children, but in unequal parts. Many children, particularly children from poor communities, live in information-poor neighborhoods, where a lack of resources means they have little access to much information. In a previous study, we found that many poor children have little access to any print materials, including books, newspapers, and magazines. For example, book availability for middle-class children was about 12 books per child; in poor neighborhoods, about one book was available for every 355 children.2 Poor children traditionally have less access to computers as well. Although computer and Internet use is booming, low-income children are less likely to have access to a computer at home than are their more advantaged peers.3

The result of unequal access to information is a steadily growing knowledge gap between rich and poor children. The knowledge gap, we fear, is fueling — and overshadowing — the achievement gap. Without closing one, the other will not go away.

EQUAL ACCESS, BUT NOT EQUAL USE

The answer seems simple: Give all children equal access to books, computers, and other information sources and the knowledge gap should close. Not so, we have found. Even if poor children are given equal resources, they do not use materials in the same way their wealthier peers do.

Our research starts at the one place that offers all children, rich or poor, equal access to information: the local public library. The nation’s public libraries fill a tremendous need by providing print, computers, and other materials to many underserved populations. With more than 95% of all public libraries offering Internet access, about 10% of all Internet users now gain access to the Internet through a public library.4 And even though poor children are less likely to have computers in their homes, the number of poor children who have frequent access to the Internet through a school or the library is growing steadily.5

Physical access to a computer, however, does not always guarantee a growth of knowledge. Van Dijk worries about a "usage gap" and speculates that even when we close gaps in physical access to computers and the Internet, we are still left with "unequal practices in the way individuals use them."6 People with a high level of education, for example, use e-mail and more information, education, work, business, and shopping applications than less educated people. Those with less education use far more entertainment applications.7

We have found similar results with providing children access to books and computers. In a previous study, we documented differences in the way children from different income levels used information sources.

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such as books and computers.\textsuperscript{8} Children from low-income neighborhoods, we found, used just as many resources but often gravitated toward materials with less print and lower reading levels. For every one line of print read by low-income children, middle-income children read three.

These differences in usage are leading to an ever-widening knowledge gap between children from different income levels. This gap is another manifestation of what sociologist Robert Merton labeled the Matthew effect, ever widening gulfs between individuals with certain resources and those without. The Matthew effect, taken from a Biblical passage, loosely translates into "the rich get richer, and the poor get poorer." In this case, children from higher-income families, through the competent use of information sources, such as books and computers, will gain substantially higher levels of information over less-advantaged peers who use information sources in a different way.\textsuperscript{9}

**WHEN SCHOOL IS OUT**

This gap grows even wider during out-of-school time. Children's knowledge acquisition does not stop when the final bell rings. Alexander, Entwisle, and Olson have long documented how students from both middle-income and low-income areas achieve at the same levels during the school year.\textsuperscript{10} But in the summer, poorer children experience the so-called summer slide, as their better advantaged peers participate in specialized camps, library visits, and museum trips. Without stimulating, information-rich activities during the summer, poor children miss a wealth of knowledge that middle-class children gain.

Alexander, Entwisle, and Olson have compared this disparity to a faucet: When school is in session, the "faucet" of resources is turned on and all children can gain equally. When school is out, however, the "faucet" is turned off, and poor children are refused the resources that help their wealthier peers gain additional out-of-school knowledge and, ultimately, make greater achievements during the following school year.\textsuperscript{11}

As the following research shows, we have found a new twist to the summer slide. In our recent observations in local public libraries, we saw that poor and wealthier children can have equal access and spend equal time with information sources, such as books and computers, during the summer. But they use these resources in far different ways. Poor children use books with less print and, therefore, less information. They use the computer for more entertainment functions, rather than information-gathering activities. In addition, as they use resources, they receive less support from important mentors — parents, advisors, and peers — who could scaffold and help them absorb information.

For poor children, this all adds up to less information gained during the crucial summer months. And unless something is done, we fear this gap will only widen in the years ahead.

**TAKING A LOOK**

Our study springs from previous work with the Free Library of Philadelphia where we examined book and computer use. The library offers both wealthy and low-income children equal access to all types of information-rich resources.

As we found in previous studies, children throughout the school year use such resources as books and computers differently. This current study,
however, focuses on the longest out-of-school session: the summer.

We observed summer library use in four different branch libraries, two in middle-income areas and two in low-income areas. Together, these branch libraries serve nearly 100,000 residents, including 22,000 children. During our visits, we concentrated on the types of books children read. We calculated the amount of print children were exposed to in books as a gauge of how much information children can gain during their time away from school. We also examined computer use by preschoolers and older children, watching for differences in educational versus entertainment activities. More important, we focused on the support children receive when using these materials, particularly assistance from parents or other adults who can help them navigate through resources and glean as much knowledge as possible. We used a variety of methods, including observations, interviews, and time-on-task studies. Our findings left us with two reactions: elation and worry.

**FIRST, ELATION**

Once again, we found heavy use in both settings. Summer is the busiest time at libraries, and children from both low- and middle-income neighborhoods retreat from the summer heat to enjoy the many resources a library has to offer. During equal observation in both settings from June through August 2006, we found a slightly higher number of children in low-income areas (118) compared with middle-income neighborhoods (91). In addition, both sets of children spent about the same time using library resources, such as reading books, magazines, and newspapers, or using the computer. Again, resource use tilted slightly toward low-income children (2,529 total minutes) versus middle-income children (2,376 total minutes).

These findings are enlightening. They tell us that low-income children do indeed use information sources during the summer just as much as middle-income children. In the library setting, their access to information is similar to, if not greater than, their wealthier counterparts’ access to the same sources. The problem comes, however, when we examine differences in how they use these materials.

**THEN, WORRY**

Given a choice, poor children will pick materials that provide less information than the materials a wealthier child chooses. In observing reading activities, we found that middle-income children spent almost double the time reading (779 minutes) than did low-income children (393 minutes). In addition, wealthier children spent more time with each book (12 minutes versus 6.6 minutes). What’s more, poor children were exposed to less print because they often read books containing fewer words.

By our calculations, wealthier children were exposed to almost double the number of words (1,069 per visit) that lower-income children saw (618 per visit). For example, a typical 5th grader in a middle-income area might spend an hour reading *Charlotte’s Web*, exposing herself to nearly 7,000 words. A low-income 11-year-old might spend about 10 minutes with a Simpson’s comic book, gaining only about 250 words.

Computer usage was similar. In library areas designated for preschoolers (ages 2-7), low-income children used the computer to play entertainment activities, such as games or coloring, rather than such programs as “Reader Rabbit,” “Millie’s Math House,” “What I like about talking is that you don’t have to worry about spelling.”
and “JumpStart” that offer more opportunities to read, learn numbers or letters, or other learning activities. For example, a 5-year-old in a low-income area would often be observed playing a “Curious George” chase game, while a 5-year-old in a wealthier area would spend more time with JumpStart Kindergarten, which required him to match letters to the initial sound of objects.

The differences were significant. Middle-income children averaged 27 minutes per library visit with an educational computer activity (letters, numbers, reading stories) compared with 11 minutes spent by low-income children. As a comparison, low-income preschoolers averaged 13 minutes with computerized entertainment activities. Middle-income preschoolers spent one minute per visit on these applications.

Computer use by older children (ages 8-16) yielded even more startling results. In these findings, we see that children in both areas use the computer in the summer for entertainment purposes, particularly game websites, social networking sites (MySpace), and videos (YouTube). Indeed, we saw little use of the computer for any other use, including email, search engines, or other information activities. What differs here is the amount of library time spent on computer use. In low-income areas, older children’s computer use represented 62% of all the resource time used at the local library; at middle-income libraries, older children’s computer time represented only 28% of library resource use. Combine that with computer use by preschoolers and we see that computer use at low-income areas represents 84% of all library use, compared with 67% at middle-income libraries. On the other hand, middle-income children spend more library time reading (33%); low-income children spend only 15% of their library time reading.

These findings show us again that poor and wealthier children are not using information sources equally. Although books and computers are available, poor children choose books with less print and computer applications with more entertainment and less information. The reasons, of course, are complicated, but our final analysis might shed some light.

**LITTLE SUPPORT, LESS KNOWLEDGE**

Our final analysis focused on the adult support children receive when they attend the library during the summer. We observed the amount of time children spent with their parents, grandparents, or caregivers as they navigated through the maze of library resources.

Our findings revealed that much of children’s exposure to print while reading seemed closely linked with the amount of time they spent with an adult or significant mentor. In middle-income libraries, children spent almost seven minutes per visit with an adult who read to them, listened to them, or helped them select books. Low-income children received less than half that support, averaging less than three minutes per visit with an adult. In low-income areas, children were most often accompanied by siblings or friends, who rarely spent time, or were capable of, reading or instructing the child. The child’s reading time, therefore, would fall on the children themselves to direct. The result: Low-income children spent less time with each book than did wealthier children (6.6 minutes versus 12 minutes) and were exposed to less print and, subsequently, less knowledge.

Computer use reflected the same trend: Children’s knowledge acquisition seems closely related to the amount of time spent with adults. Al-

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though older children in both low- and middle-income areas rarely had an adult assisting them, the differences were astounding in the preschool area. At middle-income libraries, nearly all children at preschool areas had adults, such as parents, grandparents, or caregivers, assisting them. In a typical session, a parent would sit down, select an appropriate computer activity, open the program, and then hand over the mouse to the young child. The parent would then sit close by, assisting the child as needed and offering encouragement and direction.

The story at low-income libraries was much different. Here again, we saw young children floundering on their own in attempts to find their way through somewhat complicated computer programs. Sitting alone or with another preschooler, a child would often open a program, ponder for a few minutes, inevitably get frustrated, and find the “exit” icon. Occasionally, we saw children banging on keyboards or calling for help. Nearly always, children would end up with a “chase” game or coloring activity that they could perform on their own.

These scenarios are reflected in the amount of time children spent with adults. At middle-income libraries, preschool children averaged nearly 15 minutes each visit with adults who assisted them at the computers. In low-income areas, preschoolers received less than a minute (.6) of adult time. Adult assistance seemed to influence other aspects of activity as well, resulting in a “more the more, less the less” atmosphere. Middle-income children using preschool-level computer programs typically were younger (3.9 years) than were children using those programs in low-income areas (7.3 years), and they spent more time on each application (25 minutes/application) than did low-income children (14 minutes/application).

**KNOWLEDGE GAP VERSUS ACHIEVEMENT GAP**

Educators have focused much attention on the disparities of academic performance between different groups of students. Many solutions are offered, but the spotlight always seems to return to equalizing test score results through various in-school remedies.

We believe the achievement gap will not dissipate until we can deal with the underlying knowledge gap. Knowledge acquisition, as we have shown, is not limited to the classroom. Particularly in today’s information-based society, children are exposed to knowledge-gaining opportunities during much of their out-of-school time.

Unfortunately, knowledge acquisition is not equal for all children. Left to their own devices, children from lower-income families will not use information sources in the same way as their middle-class peers. Children in middle-class neighborhoods are exposed to more print in books, use more educational applications on computers, and get more support from adults. Low-income children, often left on their own, read less and spend more time playing games, all activities that limit their knowledge growth. With limited knowledge, low-income children will inevitably face equally limited job opportunities, and equally limited social mobility.

The solutions to the knowledge gap puzzle are as complicated as finding answers to the achievement gap dilemma. Low-income children certainly need access to information sources in their free time. Our nation’s public libraries deserve praise and support for the important role they play. But poor children also need enhanced direction from adult mentors if they are to keep up with their more advantaged peers. More important, we need to focus discussion on the differences in how our children gain knowledge. Without knowledge, achievement remains a distant dream.

5. Ibid.
7. Ibid.
11. Ibid.