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SUMMER LEARNING LOSS: WHY ITS EFFECT IS STRONGEST AMONG LOW-INCOME STUDENTS AND HOW IT CAN BE COMBATED

At a Glance

Summer vacation is one of the predominant causes of the achievement gap in America's schools. While middle- and higher-income children spend their summers engaged in activities and enrolled in programs that strengthen and reinforce learning, the vast majority of children in low-income communities have little or no access to such opportunities. By the time school begins each year, low-income children's lack of access to enriching summer activities results in their falling weeks, if not months, behind their more advantaged peers.

This Information Capsule summarizes research indicating that low-income students experience greater learning loss over the summer months than their higher-income peers because they are less likely to participate in summer enrichment activities. This report also reviews the characteristics of effective summer learning programs and provides a brief summary of research suggesting that participation in these programs helps students maintain or even increase their academic skills over the summer months, especially in reading. Finally, research conducted on summer book reading programs is discussed. Studies suggest that providing books to low-income children and encouraging them to read is a cost-effective and replicable approach that can help to develop their reading skills over the summer.

For some children summer vacation includes camp, visits to museums and libraries, family trips, and a variety of enriching activities; for other children, especially low-income children, summer means months of boredom, inactivity, and isolation. The vast majority of low-income children find that when schools close for the summer, learning opportunities, healthy meals, and medical care are no longer available. Deprived of healthy stimulation, these children lose a significant amount of the skills they learned during the school year. Researchers call it summer learning loss and while it impacts students at all grade and income levels, its effect is strongest among low-income children (Afterschool Alliance, 2010; Von Drehle, 2010; The Wallace Foundation, 2010; Wongkee, 2010; National Summer Learning Association, 2009a; Miller, 2007).

Research on Summer Learning Loss

Summer learning loss is a documented phenomenon. Studies dating back to 1906 have consistently found that most students receive lower scores on the same standardized tests at the end of summer vacation than they earned at the beginning of summer (Afterschool Alliance, 2010; Wongkee, 2010; McLaughlin & Smink, 2009; National Summer Learning Association, 2009a).

A number of researchers have concluded that nearly all of the differences in achievement between low-income students and their more advantaged classmates are due to inequities in their experiences during the summer months. This conclusion is based on studies that indicate that children in all income groups learn basic skills at similar rates during the school year; however, low-income children's skills regress more than those of middle- and high-income children during the summer (Von Drehle, 2010; Terzian et al., 2009; Alexander et al., 2007; Miller, 2007; Chaplin & Capizzano, 2006).

Studies have also found that the effect of summers without learning is cumulative and that low-income children fall further and further behind their peers who participate in summer learning opportunities every year (Children, Youth and Families Education and Research Network, 2010; Terzian et al., 2009).

Three studies on the impact of summer vacations, all considered to be methodologically sound, are reviewed below. Each of the studies found that low-income students experienced greater learning loss over the summer months than their higher-income peers.

- Cooper and colleagues (1996) reviewed 39 studies of children's learning over the summer months and conducted a meta-analysis on 13 of the highest-quality studies. They found that summer learning loss was more pronounced in math than in reading. All students, regardless of income level, lost roughly equal amounts of math skill (an average of about one month of progress) over the summer. However, substantial economic differences were found in reading. The reading comprehension scores of all income groups declined, but more so for low-income children. On other types of reading measures, middle- and higher-income children posted gains over the summer, while disadvantaged children posted losses. Cooper and colleagues speculated that math skills declined more than reading skills over the summer because children's home environments tend to provide more opportunities to practice reading than math. In addition, the researchers found little evidence to suggest that students' prior achievement levels, gender, or ethnicity had a consistent influence on the amount of summer learning loss they experienced.

- Alexander, Entwisle, and Olson's (2007) study of summer learning loss used data from the Baltimore Beginning School Study. Their sample included a representative random sample of 790 school children whose educational progress was monitored from first grade through age 22. The researchers analyzed data from reading comprehension tests administered to the same students twice yearly (fall and spring), enabling them to isolate gains made during the school year from those made during the summer. They found that when test scores reflected mostly school year learning, low-income students kept pace with their higher-income classmates. In contrast, higher-income students' reading skills continued to improve during the summer, while lower-income students lost ground. By the end of fifth grade, summer learning among students in higher-income homes had added a total of about 47 points to their test scores; the test scores of students from low-income homes were reduced by about two points over the same time period. The researchers concluded that by ninth grade, more than half of the achievement gap between lower- and higher-income youth was explained by unequal access to summer learning opportunities during the elementary school years.

- Downey, von Hippel, and Broh (2004) used data from 20,000 children included in the Early Childhood Longitudinal Study, Kindergarten Cohort, to examine high- and low-income students' learning rates during the school year and over the summer months. Students' reading and math test score gains were split into seasons so that differences between the school year and the summer months could be analyzed. Results indicated that the achievement gap was already present before school began. It continued to increase after school started, but it grew much more slowly when school was in session than over the summer months. For example, analyses estimated a 6.90 point reading test score gap between a low-income and a high-income student on the first day of kindergarten. This gap was predicted to widen to 8.44 points by the start of first grade, but if the children did not attend kindergarten,

it was estimated that the gap would be even larger at the beginning of first grade (11.37 points). The researchers concluded that schooling reduced gaps in cognitive skills between low- and higher-income students.

Participation in Summer Learning Programs

Research indicates that low-income students experience more summer learning loss than their higher-income peers because they are less likely to participate in summer learning programs.

- Based on responses from over 6,600 households to the *National Survey of America's Families*, Terzian and colleagues (2009) reported that children living in non-poor households (200 percent or above the federal poverty line) were more likely than children from poor households (below 200 percent of the poverty line) to participate in summer programs (29 percent versus 18 percent).

- Meyer and colleagues (2004) analyzed data from the Early Childhood Longitudinal Study, Kindergarten Class, and found that during the summer, a lower percentage of children from low-income households reported that they attended day or overnight camp, took family vacations, attended concerts or plays, and visited the following locations: libraries; bookstores; state or national parks; art, science, or discovery museums; zoos, aquariums, or petting farms; and historic sites. Table 1 displays the percentage of children who reported participating in various activities during the summer after kindergarten, by income level. For example, 20 percent of low-income children reported visiting arts, science, or discovery museums over the summer, compared to 38 percent of middle-income children and 62 percent of high-income children.

Table 1. Percentage of Children Participating in Summer Activities*

	Low-Income**	Middle Income	High-Income
Library	46%	66%	80%
Bookstore	31%	53%	77%
State or national park	44%	57%	61%
Art, science, or discovery museum	20%	38%	62%
Zoo, aquarium, or petting farm	45%	64%	71%
Historic site	21%	41%	55%
Concert or play	14%	23%	39%
Vacation	54%	77%	93%
Day or overnight camp	5%	18%	43%

Source: Meyer et al., 2004.

* All findings are based on parent reports.

** Low-income signifies the bottom 20 percent of the variable's distribution, middle-income is the middle 60 percent, and high-income is the top 20 percent.

- Wimer and colleagues (2006) examined participation in a variety of out-of-school contexts, including summer camps, after-school programs, sports teams, and extracurricular activities. Based on their analysis of data from the *Panel Study of Income Dynamics* (PSID) and the *National Survey of America's Families* (NSAF), they found a pattern of higher participation among children and adolescents with higher family incomes. This finding was consistent across both data sets. For example, PSID data

indicated that four percent of the lowest-income youth reported participating in summer camps, compared to 18 percent of the highest-income youth. NSAF data indicated that 31 percent of low-income children ages 6-11 reported participating in any out-of-school clubs or activities, compared to 58 percent of the highest-income children.

Studies have also found differences in how children of different ethnic backgrounds spend their summers. The Wallace Foundation (2010) analyzed responses from nearly 30,000 households to the *2009 America After 3PM* survey. Data indicated that White students (61 percent) were more likely to report that they participated in summer learning programs than Black students (18 percent), Hispanic students (14 percent), Asian students (5 percent), and Native American students (2 percent). Other researchers have confirmed this inequality in summer program participation rates by ethnicity. Across most types of programs and activities, Hispanic youth have been found to be consistently underrepresented and White youth have been found to be consistently overrepresented, with Black youth falling in between the two groups (Terzian et al., 2009; Miller, 2007; Wimer et al., 2006).

Summer Learning Programs

High quality summer programs are emerging as an important strategy to prevent summer learning loss. Programs have been developed for students with a variety of interests and needs. Many students participate in programs that not only boost their achievement, but also promote character development and interpersonal skills, career development, or health and fitness. Examples of summer learning programs include newly envisioned summer school sessions, summer reading programs, outdoor adventure camps, arts and music camps, sports camps, college preparatory programs, apprenticeships, and paid internship programs (The Wallace Foundation, 2010; McLaughlin & Smink, 2009; National Summer Learning Association, 2009a; Terzian et al., 2009).

Based on the results of research and evaluations, as well as program providers' experiences, researchers have determined that effective summer learning programs share the following characteristics:

- **Summer programs are affordable and accessible.** Researchers have concluded that summer programs should be affordable and accessible to all students, regardless of income level. Programs should be offered free of cost or fees should be subsidized or waived when necessary. In addition, transportation to and from the program location should be available to participants (Terzian et al., 2009).

  Researchers also agree that summer programs should provide children with the same nutritious meals and snacks they receive during the school year (Afterschool Alliance, 2010). The Food Research and Action Center (2010) reported that on an average day during the 2008-09 school year, 17.5 million children relied on the National School Lunch Program (NSLP) for free or reduced-price lunches. However, in July 2009, an average of 2.8 million children participated in the NSLP, representing only 16 percent of children served by the program during the school year.

- **Summer programs are offered at early grade levels.** Researchers have found that students at all grade levels benefit from summer learning programs, but students in the earliest grades appear to benefit the most (Miller, 2007; Cooper et al., 2000). Schacter (2001) noted that many summer programs are offered too late in children's academic careers to be effective, usually at the end of third grade. For example, he stated that the summer before or after first grade is the optimum time for reading interventions because reading skills develop twice as fast in first grade than they do in third grade.

- **Summer programs differ from traditional school year programs.** Most researchers agree that summer learning programs should offer children a different set of experiences than those provided

during the regular school year. Unlike school-year instruction, which is often lecture-based, summer programs should offer innovative approaches to learning. Academic content should complement curricular standards, not rehash material covered during the school year (Afterschool Alliance, 2010; Terzian et al., 2009; Bell & Carrillo, 2007; Schacter, 2001). McLaughlin and Smink (2009) stated: "Summer presents an untapped opportunity - a time of year when youth and families seek programs that look and feel different from the traditional school year." Wimer and Gunther's (2006) review of 34 program evaluations found that summer programs reported greater success when they incorporated a "summer vacation spirit" into their programming.

Researchers suggest that schools create separate summer learning programs instead of simply extending the school year. They note that studies on the effects of adding additional days to the school calendar and providing students with "more of the same" type of instruction have produced inconsistent results (Miller, 2007). Earl Phalen, a U.S. education reformer, stated: "If you want to drive the dropout rate even higher, just extend the school year by another 30 days." Instead, he argues, we should recognize that summer is the opposite of school and take the opportunity to provide children and adolescents with truly innovative educational programs (Von Drehle, 2010).

- **Academic instruction is blended with enrichment activities.** Successful summer learning programs integrate instruction with physical, recreational, cultural, and youth development activities. For economically disadvantaged students, who often miss out on extracurricular activities such as sports and music during the school year, combining academic instruction with other types of enrichment activities is especially effective (Afterschool Alliance, 2010; McLaughlin & Smink, 2009; Terzian et al., 2009; Bell & Carrillo, 2007; Miller, 2007). The National Summer Learning Association (2009a) recommended that summer learning programs include both academic instruction in core subject areas and hands-on activities that foster skills such as collaboration, innovation, creativity, and communication.

- **A safe place is provided for children.** Summer programs can provide a safe place for children to explore, learn, and grow while their parents are at work. During the summer months, many low-income families are without childcare and one in 10 children regularly spend time in self-care, either alone or with a sibling younger than 13. In fact, the number of hours children spend in self-care increases from 4.8 hours per week during the school year to over 10 hours per week during the summer. Many researchers recommend establishing summer programs in the schools that students attend during the year. An added benefit of conducting summer programs at school sites is that it sends the message to community members that schools are available to students on a year-round basis. College campuses are another option (Afterschool Alliance, 2010; Terzian et al., 2009; Capizzano et al., 2002).

- **Experienced staff are hired.** Terzian and colleagues' (2009) review of summer learning programs found that the programs that produced favorable outcomes for reading and math achievement used experienced teachers who had at least a Bachelors degree, whereas less effective programs either hired college students and provided them with training or did not rely on live instructors to deliver academic content. To manage costs, Wimer and Gunther (2006) suggested that non-academic program activities could be placed under the direction of community volunteers, including parents and college or high school students.

- **Class sizes are small.** Cooper and associates' (2000) meta-analysis of 93 studies on summer school outcomes revealed that the programs providing small group or individualized instruction had the largest impact on student achievement. Terzian and colleagues' (2009) review of summer learning programs found that, in general, class sizes of about 10 to 15 students were usually the most effective for small-group instruction. Wimer and Gunther (2006) reported that daily operations ran more smoothly when

summer programs maintained smaller staff-to-youth ratios and provided opportunities for small-group or individualized learning. They noted, however, that it was important to consider the nature of the activity as well as the age of the participants when determining appropriate staff-to-youth ratios. For example, higher staff-to-youth ratios were more acceptable for some activities, such as sports programs and programs for older youth.

- **Positive relationships are promoted.** Research points to the importance of young people's relationships with caring adults as well as good peer relationships, especially as children enter adolescence. Studies have found that strong relationships between adults and children and among peers are attributes of quality summer programs. Unlike the regular school year, when much of the attention is focused on academic achievement, summer programs can provide a more relaxed atmosphere in which youth can develop strong relationships with both adults and peers (McLaughlin & Smink, 2009; Terzian et al., 2009; Miller, 2007; Wimer & Gunther, 2006).

- **Parent involvement is encouraged.** Studies have found that summer programs that develop strong, positive connections with parents have a greater impact on student achievement. Programs should encourage parents to support their children's learning and development, create strategies for coping with parents' schedules and child care issues, and involve parents as volunteers and decision makers (Terzian et al., 2009; Wimer & Gunther, 2006; Cooper et al., 2000). Miller (2007) noted: "Summer programs are . . . a place where parents often feel welcome, partly because of their more informal nature and partly because of a greater emphasis on connection and community."

- **Community partnerships are established.** Effective summer learning programs have strong community partnerships. Community partners can offer valuable resources such as financial contributions, physical space, volunteers, and technical assistance. Researchers suggest that summer programs develop connections with libraries, parks, community-based organizations, colleges and universities, local and state government entities, museums, civic and religious organizations, small businesses, recreation centers, and sports facilities (National Summer Learning Association, 2009b; Terzian et al., 2009; Miller, 2007; Wimer & Gunther, 2006).

  Von Drehle (2010) suggested that instead of establishing a "vast new initiative," summer programs should build on their community's network of day camps, community centers, sports camps, and summer jobs programs. He described a 10-week summer program operating in the Appalachian town of Corbin, Kentucky that was a model of community involvement. The school district provided lessons in the core content areas and the entire community pitched in to provide children with other enriching experiences. For example, restaurants hosted meals at which students practiced etiquette; the community swimming pool was open to participants once a week; the local hospital offered fitness and wellness programs; and the Department of Fish and Wildlife led sessions on conservation and took children fishing.

Research on the Effectiveness of Summer Learning Programs

Research indicates that summer learning programs can help students maintain or even increase their academic skills over the summer months, especially in reading. Several studies are summarized below.

- Cooper and colleagues (2000) conducted a meta-analysis of 93 studies of summer school programs. They concluded that the average student who attended summer school gained about five to 10 percent on standardized reading and math tests compared to similar students who did not attend summer school. Although all students were found to benefit from summer school, programs had a larger positive effect on students from middle-income homes, compared to those from disadvantaged homes. The

researchers speculated that summer school had less of an impact on disadvantaged children because these children often have multiple impediments to learning. A finding of special interest was that summer school programs that required attendance were found to be no more effective than voluntary programs.

- Terzian and colleagues (2009) reviewed research conducted on summer learning programs. Eleven of the 43 studies they reviewed used random assignment and were considered methodologically sound. Results from these 11 studies indicated:

  - Reading gains were possible. Of the eight summer programs targeting reading achievement, three were found to have a positive impact on students' reading skills, four produced mixed findings, and one was not found to be effective.

  - Math gains were less likely. Of the three summer programs targeting math achievement, only one was found to have a positive impact on students' math skills.

  - Only one out of four summer programs targeting educational outcomes led to an increase in high school completion rates.

  - Summer learning programs did not appear to influence college enrollment or future employment. Only one out of three programs led to an increase in college enrollment and only one out of four programs led to improved employment outcomes.

- Chaplin and Capizzano (2006) studied the impact of the Building Educated Leaders for Life (BELL) summer program on low-income students entering grades 1-7. Acceptance to the program was determined by random assignment and students not assigned to the program comprised the control group. The program, which provided supplemental learning activities to low-income youth in Boston and New York City, was found to have a positive impact on students' reading test scores. BELL program students' scores on the Gates-MacGinitie reading test were found to be significantly higher than those of the control group, with BELL participants learning about one extra month worth of reading skills. The program also led to increases in BELL students' summer reading and participation in academic activities.

- Borman and colleagues (2007) assessed the effectiveness of the KindergARTen Camp in preventing summer learning loss for students from four high-poverty schools in Baltimore. Students and their parents volunteered to participate in the program and they were compared to a group of students who did not enroll in the program. The six-week enrichment camp was designed to increase students' literacy skills by integrating art and science activities into the curriculum. Administrations of pre- and post-tests on five measures of reading found that the program had positive and significant effects on two outcomes: Dictation and DIBELS Letter Naming Fluency. For the other three outcome measures (Developmental Reading Assessment, Word Lists, and DIBELS Phoneme Segmentation Fluency), KindergARTen Camp students made greater gains than control group students, but these differences did not attain significance.

Summer Book Reading

Several studies suggest that providing books to low-income children and encouraging them to read is a relatively cost-effective and replicable approach that develops their reading skills over the summer (Miller, 2007). Research has shown that low-income children have less access to books and other printed material than their more advantaged peers (Toppo, 2010; Lundstrom, 2005). Celano and Neuman (2008) reported that the average U.S. middle-income child has access to 12 books, but in low-income neighborhoods, there is only about one book for every 355 children.

Researchers have also found differences in children's use of resources depending on their income level. For example, Celano and Neuman's (2008) research into students' use of books and the Internet in public libraries suggests that even when low-income children are given equal access, they don't use the resources in the same way as middle-class children. Their study found that low-income children chose "books with less print and computer applications with more entertainment and less information" than middle-class children. They also reported that "for every one line of print read by low-income children, middle-class children read three." The researchers concluded that discerning utilization of resources allowed middle-class children to make greater progress in their reading abilities.

Allington and colleagues (2010) provided 852 first and second grade students with 12 self-selected books each summer over a three-year period. Students were from 17 high-poverty Florida schools in two districts and were randomly assigned to treatment and control groups. After three years, the researchers compared the FCAT reading scores of students provided with books to a control group of 478 low-income students who received no books. They found that students who received books had significantly higher FCAT reading scores than students who had not received books. The program worked best for students from the poorest households. It was not effective, however, for the worst readers, possibly because they self-selected books that were too difficult.

Kim and White (2008) looked at different approaches to summer reading and concluded that voluntary summer reading programs were most effective when adults helped students choose appropriate books and provided guidance on how to improve their skill and understanding. The researchers conducted a study in which they randomly assigned 400 grades 3-5 students from two elementary schools to one of four intervention groups (no books; books only; books with oral reading scaffolding; or books with oral reading and comprehension scaffolding). They found significant differences in the Iowa Test of Basic Skills reading post-test scores between students who received no books and those who received books along with oral reading and comprehension scaffolding. Most notably, Black, Hispanic, and low-income students who received oral reading and comprehension scaffolding with their books gained an average of four months of additional learning, enough to offset the three months of summer learning loss that this population typically experiences. Students who received books, without feedback and support, did not improve their reading fluency or silent reading ability. The researchers concluded that having appropriate books was a necessary but not sufficient condition for promoting reading skills.

Researchers have suggested the following strategies school staff can use to encourage children to read over the summer (Allington et al., 2010; White & Kim, 2008; Lundstrom, 2005; Viadero, 2004).

- Teach and model oral reading and comprehension strategies toward the end of the school year.
- Send eight or more level-matched books home with students for the summer.
- Mail packets of books to students' homes at regular intervals during the summer.
- Keep school libraries open during the summer months.

- Have regular book fairs at which children buy, borrow, or exchange books.
- Set up a "take a book/leave a book" rack filled with inexpensive paperbacks outside the front doors of the school.
- Drive a bookmobile around community neighborhoods. Studies have found that bookmobiles are a surprisingly low-cost, successful way to increase students' summer reading.
- Send postcards to students' homes over the summer recapping good reading strategies, such as summarizing and making text-to-self connections.
- Send letters to parents asking them to listen to their children's oral reading and provide them with feedback.

Lundstrom (2005) cautioned that mandating specific books can "turn kids off reading for pleasure, particularly if the books are difficult." Similarly, Allington and colleagues (2010) stated: "The research has absolutely nothing good to say about forcing hard reading on kids."

Summary

Summer vacation is one of the primary causes of the achievement gap in American schools. While children with access to summer learning programs are provided with a variety of enriching educational experiences, most low-income children's summers are characterized by boredom, inactivity, and isolation. By the time school begins each year, low-income students have fallen weeks, if not months, behind their higher-income peers. The effect of summers without meaningful learning opportunities is cumulative and the achievement gap between economically advantaged and disadvantaged students grows wider and wider with every passing year.

High quality summer programs for all students are emerging as an important strategy to prevent summer learning loss. Researchers have identified certain characteristics shared by effective summer learning programs. For example, successful summer programs are accessible and affordable to all students, regardless of family income level; begin at the early grade levels; offer children a different set of experiences than those provided during the regular school year; blend academic instruction with enrichment activities; involve parents; and establish strong community partnerships.

Research indicates that summer learning programs can help students maintain or even increase their academic skills over the summer months, especially in reading. Several studies also suggest that providing books to low-income children and encouraging them to read is a relatively cost-effective and replicable approach that can help to develop their reading skills over the summer.

All reports distributed by Research Services can be accessed at http://drs.dadeschools.net.

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