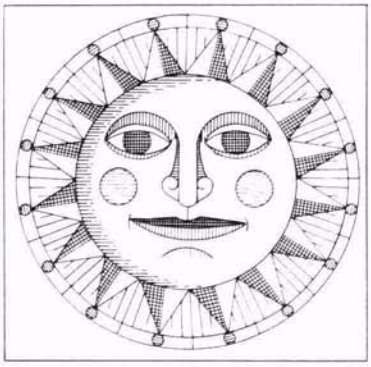
How Important is Summer School ?



RALPH HOEPFNER

New Research says there is no "summer drop-off" in educational growth, and summer school has little effect on scholastic achievement.

In the last several years, summer school has been promoted as a mechanism for boosting the academic growth of deprived students. It easily and cleanly meets the requirement, in the case of Title I, that compensatory education (comp-ed) services must be supplemental. Except for summer school or extended-day instruction, the supplemental nature of comp-ed is difficult to demonstrate. Add to this obvious advantage the additional qualities that summer school has long been remedial in nature, is relatively inexpensive as usually provided, and gets the kids out of the house; no wonder the idea enjoys wide popularity.

To make a popular idea even more popular, some researchers rather hastily or carelessly concluded from their analyses that achievement actually declined during the summer. A research finding that supports a popular idea is bound to be accompanied by more and similar findings. Sure enough, the same folks who brought us "summer drop-off" also showed that deprived students suffered most from it—thereby adding considerable support to the then-popular idea of summer comp-ed programs. These folks also said that deprived students in successful comp-ed programs during the school year suffered from summer drop-off even more—thereby explaining why the remarkable yearly growth of comp-ed students so often failed to result in a large population of disadvantaged whiz kids. The time was ripe for these ideas, and as could have been predicted, someone could be counted on to give them scientific credibility—at least for a while.

Then data from System Development Corporation's Sustaining Effects Study began coming in that consistently failed to support those initial research findings. This failure forced us to examine the previous research very carefully in order to determine if their methods had influenced their findings. We found that the previous studies almost invariably used one or more of the following:

—Fall test norms that were extrapolated from empirical spring norms

—Grade-equivalent scores

—Groups of students selected on the basis of extreme levels of achievement.

Any one of these, we contend, could account for the original findings.

Ralph Hoepfner is Design and Analysis Manager for the Sustaining Effects Study of System Development Corporation in Santa Monica, California.

When tests are empirically normed in the spring and then normed for the fall through extrapolation, the publisher must make some assumptions. The assumptions are, generally, that achievement growth is linear over the nine school months (equal growth in each month), and that it continues over the three summer months at a rate equal to one school month (if each month equals one unit on a graph and the three summer months equal one additional unit, achievement growth will be a straight line). This is a very convenient assumption to make because it allows grade-equivalents to be expressed in one decimal place. The assumptions, to my knowledge, have not been empirically shown to be radically incorrect. But it doesn't take radical error for faulty assumptions to result in research findings that are statistically meaningful but actually misleading.

Here's what happens: if during the three months of summer, students do not grow one school-year month of achievement (and the evidence is that they don't), then they lag behind the phony norm so that, for example, the real 50th percentile is a bit lower than that in the extrapolated norm. In the typical case for spring-normed tests then, the students are artificially low in normed achievement in the fall (which is, incidentally, a perfect time to get pretest scores because the artificial deflation gets added into the school-year growth when the students are once again graded on a real norm the following spring, resulting in almost inevitable instructional success). The artificial school-year improvement comes with the price of equally artificial "summer drop-off"; otherwise we could just norm our way to high achievement for all. So the bottom line is that the early studies interpreted the artificial drop-off as a real phenomenon.

Because the early studies had to depend on data already collected by schools, they fell into another trap. School people like grade equivalents (even Title I people used to like them) because they're so easily understood (and misunderstood). But scaling test scores into the much coarser grade-equivalent units depends on the same extrapolations; the results are merely exaggerated. Therefore, we observe even more "summer drop-off."

The next step is to use this error-ridden data to evaluate the summer growth of disadvantaged students. These students may be expected to grow even less during the summer than the average students, so their artificial "summer drop-off" will be greater. Then compound things one final step: select those comp-ed kids or programs that have shown unexpectedly high achievement growth in the previous school year. Sure enough; that great school-year growth was partly the result of measurement error, and regression will pull those errors right back down on a second testing. If the second testing is in the fall, the artificial "drop-off" is enhanced by the regression effect. The product of two artifacts is not likely to be the truth, and neither is "summer drop-off."

We came to this revelation early in the Sustaining Effects Study, when we were asked to calculate school-year and summer growth indexes from our non-extrapolated CTBS norms for the first year of the study. What we found and reported was that achievement levels were generally maintained over the summer and, in fact, there generally was some growth. This was true for regular students, comp-ed students, and low-achieving students who did not get comp-ed. In summary, we found no evidence for an absolute decline in achievement over the summer for any group. We did find relative decline—lower achieving and deprived students gained less over the summer than their peers.

By the following year, the data collected specifically to study the effects of summer school were analyzed. Among the most pertinent findings were:

—Students who attend summer school tend to be low-achieving and comp-ed students.

—Summer school does not provide a very intensive academic experience.

—There is no tendency for students to lose school-year gains over the summer. This is true for comp-ed students, low-achieving students, and minority students. Comp-ed students grow at a slightly lower rate over the summer than regular students.

—Growth during the summer is larger for reading than it is for math. (There were some small declines in math means.)

—Students who attend summer school grow at the same rate as similar ones who don't go to summer school.

Both our initial analyses and those supporting the study of summer school were based on achievement data collected in the fall, spring, and following fall of the beginning of the study. We now have data for three consecutive falls and springs. The samples of students are restricted to those who were in the study all three

Figure 1.

Summer Growth in Reading and Math (in Percentile Scores) for Three Groups of Students, by Attendance at Summer-School Reading and Math Programs

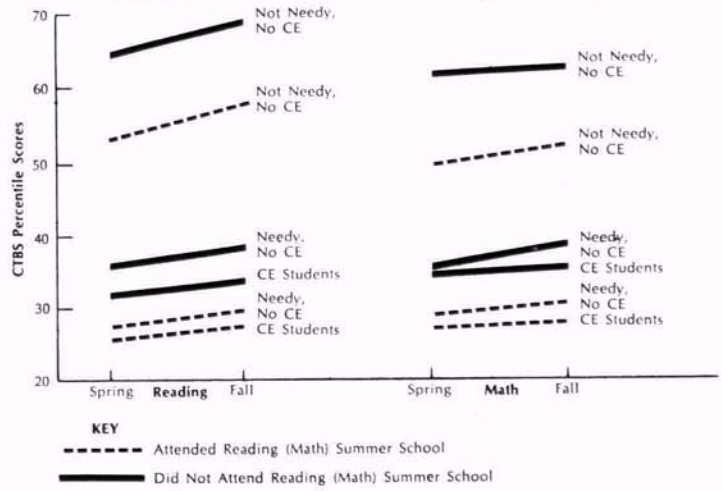


Figure 2.
Growth for the Summer and Following School Year for Three Types of Students, by Attendance at Summer School

Type of Student	Judged Not To Need Reading CE And Not Participating In It		Judged To Need Reading CE But Not Participating In It		Participating In Reading CE For 1 To 3 Years	
Summer School With Reading Instruction	Attended	Did Not Attend	Attended	Did Not Attend	Attended	Did Not Attend
Summer Growth	8.8	9.5	0.4	4.4	2.6	3.5
Following-Year Growth	26.1	26.8	31.0	28.9	25.6	26.7
Type of Student	**Judged Not To Need Math CE And Not Participating In It**		**Judged To Need Math CE But Not Participating In It**		**Participating In Math CE For 1 To 3 Years**	
Summer School With Math Instruction	Attended	Did Not Attend	Attended	Did Not Attend	Attended	Did Not Attend
Summer Growth	−2.2	−3.6	−4.0	−3.9	−2.0	−1.2
Following-Year Growth	48.8	51.5	49.5	47.1	43.8	44.6

years and who started the study in grades three and four, but a great deal of evidence indicates they are truly representative of the nation's students.

For those students, we had reading and math achievement scores in both percentile and vertical-scale units, records of participation in comp-ed programs, records of teacher judgments of need for comp-ed, and data on summer school attendance. These data were obtained for each student and separately for reading and for math.

Figure 1 provides summer growth curves in reading and math for three types of students grouped by their need for and participation in comp-ed. Achievement growth for each summer has been combined. The dotted lines indicate attendance at summer school for reading (or math) instruction. From the figure we can draw the following conclusions:

1. Summer-school reading and math programs are attended mostly by low-achieving students. (Within each group of students in Figure 1, the dotted line is considerably below the solid line.)

2. Summer growth is generally positive. (All the lines in Figure 1 slope upward, left to right.)

3. Lower achievers gain less during the summer than regular students. (The slopes of the lines in Figure 1 are steeper for the regular students.)

4. Attendance at summer school has no large effect on achievement growth. (The slopes of the dotted lines in Figure 1 are generally not steeper than their respective solid lines.)

Because lower-achieving students generally attend summer school more, when the students were grouped by how many summers they spent in summer school (none to three), we found that the more frequently the group attended summer school, the lower was its achievement; both before and after the summer school. This selection bias might be erroneously interpreted to mean that summer school is counter-productive. From Figure 1, however, we can see that when similar students are compared, summer school does not have a negative effect; it appears to have no effect at all.

The conclusion regarding what happens in the summer is that achievement is generally maintained for all groups of students. Second, summer school, as presently implemented, appears not to be helpful at all, even though this conclusion is based partly on data suffering from selection bias. This bleak conclusion may be short-sighted, however, because we looked at the effects of summer school only during the summer in which it was attended. It could be that summer school sets the stage for greater achievement in the following year. If this were true, we would have to change our overall evaluation of the effectiveness of summer school.

Figure 2 presents data bearing directly on this point. The data include summer-school attendance prior to the fall of the first year of testing, and the scores are expressed in vertical-scale units. In Figure 2 each student's scores are calculated at three different times as three pairs of summer-and-following-year growth. In this manner, we could sort each summer into attendance vs. nonattendance at summer school, and then average the summer growth and the following-year growth. Vertical-scale scores were summed over the two cohorts because doing so did not alter the findings obtained separately.

As shown in the top half of Figure 2, students who did not attend reading summer school gained more in the summer than those who attended. The differences are not large, however. In the following school year, the summer-school attendees don't enjoy any significant advantage in achievement gain. In math, all groups show small absolute losses in the summer (not inconsistent with the findings in Figure 1, because Figure 2 includes data from an additional summer and is expressed in a finer measurement scale), but there are no major differences associated with attendance or nonattendance in summer school. In the following school year the summer-school attendees generally show slightly less growth.

In summary, our data indicate that absolute summer achievement decline is not common. When it is observed, the decline is very small and likely to be in math. Relative decline, where low achievers do not keep pace over the summer with their peers, is common. Finally, attendance at summer school appears to have no strong ameliorative effect on achievement, either short-term or longer-term.