What Can Be Done During the School Year to Reduce Summer Learning Loss?
: The Effect of Classroom Practices on Summer Learning

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Introduction
For decades, seasonal comparison research has examined the issue of students’ academic achievement over summer vacation. By comparing students’ cognitive growth during summer and during the school year, researchers found overall declines in student achievement during summer vacation (Cooper et al., 1996). Moreover, existing achievement gaps among students from different socioeconomic status (SES) levels are even wider during summer (Cooper et al., 1996). Children’s differential growth in summer is cumulative and becomes one of the major sources of the differences in achievement between children of different socioeconomic levels (Alexander et al., 2007).

Purpose of the study
• Recognizing the significance of the problems, researchers have focused on interventions outside of school. For example, scholars have examined the effects of summer school activity or a modified school calendar (e.g. quarter vs. semester) on the student achievement gap over summer as possible solutions for the summer learning loss. Although these interventions are important, they concern activities outside the school year.
• Examining what happens during the school year is even more important because that is where teaching and learning activities are primarily located. Moreover, what educators and policy makers mainly have control over is what happens during the school year. In this sense, the effectiveness of different instructional practices on summer learning loss is worth examining as a potential remedy to learning loss over summer. This study focuses on the impact of different pedagogical strategies on student summer loss.

Intervention: Teaching Practices

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• This paper explores whether the emphasis on reform-oriented instruction can help to sustained knowledge over summer vacation and reduce summer learning loss. Reform-oriented instruction emphasizes deep understanding which help students maintain knowledge longer (Bransford et al., 2000), apply and extend knowledge in real life situation (Kirschner et al., 2006), and stimulate students’ motivation, curiosity, and self-esteem (Bransford et al., 2000).

Research Questions
1. What are the average learning rates in reading during the third grade, the intervening summer, and the fourth grade?
2. To what extent are learning rates associated with instructional practices during the school year?

Data Sources
• Data : Study of Instructional Improvement (SII)
• Sample: 2176 third grade students followed through fourth grade. Sample students are largely from elementary schools in urban area.

Measuring Reading Scores and Time
• Terra Nova (Vertical Scale)
• I will use extrapolated scores (blue dots) that would have been obtained on the first and last day of the school year will be used.

Time (Third, Summer, Fourth)
• The exact number of months that a student has been exposed to third grade, summer, and fourth grade at each time point

Measuring Instruction Practices using Instruction logs
• Instructional logs: Information about a single day of instruction for a single student. Reduce measurement error, provide rich description.
• Log reports were representative of days of the school year because 1) all teachers completed the logs during three periods throughout the year, 2) on a given logging day, teachers randomly selected one out of the eight sample students.

Analytic Model

Results
1. What are the average learning rates in reading during the third grade, the intervening summer, and the fourth grade?
• The fully specified model revealed an average initial status outcome of 607.13 scale score points on the third grade fall. This model also indicated an average learning rate of 1.78 points per month during third grade, no gain during summer, and an average learning rate of 1.08 points per month during fourth grade.
2. To what extent are learning rates associated with instructional practices during the school year?
• Third grade achievement growth occurs at a slower rate if students have a teacher with more emphasis on student-centered instruction and at a faster rate if the teacher prefers to use close-ended questions. Both positive and negative effects disappeared during summer vacation.
• Teacher-directed instruction is not associated with third grade achievement growth, but is associated with the slowing of summer learning rates.

Discussion
This study suggests that an effective pedagogy for the immediate retention of knowledge may not ensure that knowledge will be sustained over time. When a teacher emphasizes a teacher’s role in teaching, student learning growth during third grade occurs at a faster rate, but the effects disappear or become negative over summer vacation. The findings are consistent with the argument that teacher-centered instruction is often presumed to be more effective in raising student test scores in the short term (Le et al., 2009; Nie & Lau, 2010). However, in the long term, this may bring the opposite results. When teachers emphasize the transmission of information, there is very little room for the exploration of ideas, which is necessary for the development of deeper understanding (Applebee et al., 2004). Without deep understanding, students easily forget what they have learned when instruction ends (Bransford et al., 2000). Since learning is cumulative and compounded year after year, the long-term effectiveness of teaching practices should be considered.