Longitudinal Analysis of Six Years of PACT Achievement Data, 2000-2005

October 2006

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Executive Summary

Palmetto Achievement Challenge Test (PACT) test results from the six-year period from 2000 through 2005 were matched longitudinally for 39,988 (75.8%) of the 52,783 students who were tested in grade 3 in the 1999-2000 school year. Data from 12,795 (24.2%) students could not be matched for all six years because their test results were unavailable or incomplete. Students whose data could not be matched were more likely to have lower PACT achievement and to have repeated a grade than students whose data could be matched. The data from the 39,988 students with complete data over the six year period was studied for the students' PACT achievement progress and for their history of promotion or retention in grade. An additional study was made of 2004-2005 grade 8 enrollment data to estimate the numbers of students who were retained in at least one grade by the end of middle school. The data were disaggregated to identify achievement levels and trends for demographic groups.

<u>Findings:</u>

1. 35,588 (89.0%) of the students had been consistently promoted to the next higher grade every year and were enrolled in grade 8 in 2005. 4,400 (11.0%) of the students repeated one or more grade levels between 2001 and 2005 and were enrolled in grades 5, 6, or 7 in 2005. Grade 3 was repeated most frequently (1,156 students), followed by grades 6 (1,077), 7 (1,012), 4 (795), and 5 (540) in descending order of frequency; 204 students repeated the same grade two or more times or repeated two or more different grade levels.

2. 4,608 (12.0%) of the students were at least one year older than expected when they were tested in grade 3 in 2000. These students either entered school a year

late or repeated one or more of the primary grades (Kindergarten, 1, 2, or 3). It could not be determined from the data which primary grade(s) the students repeated or whether they entered school late.

3. An additional study to estimate the extent to which students were retained in grade by the end of middle school suggested that nearly one in four students had repeated at least one grade by the time they were enrolled in grade 8 in 2004-2005. 13,548 (24.05%) of the students attending grade 8 in 2004-2005 were at least one year older than expected had they entered school at the legal age and been promoted each year. The data suggest that most of these over-age students repeated one or more grade levels by 2005. Previously published research studies indicate that students who repeat grades are more likely to drop out of high school than students who are promoted annually.

4. When followed longitudinally, student PACT English Language Arts (ELA) performance gradually declined over the six years studied. The decline was most notable during the middle school grades.

5. Individual PACT Math performance was relatively stable over time, with small gains for students who initially scored Below Basic in 2000.

6. In both ELA and Math, two-thirds of the students who scored Below Basic in 2000 also scored Below Basic in 2005.

7. The majority of students who scored at high levels on the grade 3 test in 2000 maintained high performance in 2005. 58.1% of the students who performed at the Proficient or Advanced levels in ELA in grade 3 in 2000 also scored Proficient or Advanced in 2005. 61.9% of students scoring Proficient or Advanced in Math in grade 3 in 2000 also scored Proficient or Advanced in 2005.

8. The performance of students who repeat one or more grades remains lower than that of students who do not repeat a grade, regardless of whether the retention occurred in the primary grades or in grades 3 through 7.

9. PACT performance at the end of the six-year period was studied to identify its relationship to the ages of students when they attended third grade. The very youngest students (those who entered school at an early age or who "skipped" one or more grades by the third grade) scored at the highest levels and the oldest students (those who entered school late or repeated one or more grades by grade 3 in 2000) scored lowest.

The study's findings indicate that there was insufficient growth in student achievement over the six year period to reach our goals. The findings also suggest that currently used intervention strategies for improving student achievement and current policies regarding grade retention and promotion should be reviewed for their effectiveness. Education Oversight Committee staff plan to disseminate the study's findings to school district superintendents and instructional leaders and to State Department of Education personnel to generate discussion and to identify needed changes in local or state policies.

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Longitudinal Analysis of Six Years of PACT Achievement Data, 2000-2005

This report continues a line of investigation of the progress of cohorts of South Carolina elementary and middle school students over time. This report updates the report, *Analysis of the Five-Year PACT Longitudinal Data: Student Mobility, Student Retention in Grade, and PACT Achievement Over Time*, (EOC, 2005, accessible at http://www.sceoc.com/PDF/Analysis_ofthe_FiveYear_PACT_Longitudinal_Data.pdf) by analyzing the results from a longitudinal database composed of six consecutive years of Palmetto Achievement Challenge Test (PACT) student data. The database is based on the cohort of students who were tested when they were enrolled in grade 3 in the 1999-2000 school year. PACT data for these students for each of the years 2000, 2001, 2002, 2003, 2004, and 2005 were matched to produce a complete record of the students' achievement over the six year period. The numbers of students and their demographic characteristics, both in the original file and in the final longitudinal file, are listed in Table 1.

Table 1
Demographics of Student Data in Original Grade 3 2000 PACT Testing File
And File Containing Matched Data for These Students Through 2005

Demographic Characteristic		Original File in 2000 (n=52,783)	Matched File in 2005 (n=39,988)
Ethnic Group	African American	42.9%	43.5%
	White	54.6%	54.4%
	Other	2.4%	2.1%
Gender	Female	48.9%	50.4%
	Male	51.1%	49.7%
Lunch	Free	45.0%	43.2%
	Reduced	8.6%	8.7%
	Pay	46.4%	48.2%

Note: Percentages may not add to 100% due to rounding.

Complete data for six consecutive years were matched for 39,988 students who were enrolled in grade 3 in the 1999-2000 school year (75.8% of the 52,783 students tested in grade 3 in Spring 2000 had complete matched data for six years).

The data from 12,795 (24.2%) students could be not followed longitudinally over the six year period. There are several possible reasons why the student data could not be identified and matched for every year:

1. Students left the state, attended private or home school, or were deceased;

2. Students did not participate in the regular testing program because of severe disability (participated in an alternate assessment);

3. Students were tested, but their identifying information was inaccurate or incomplete;

4. Students were tested, but were promoted two grade levels rather than one.

Students whose data could not be followed tended to have lower PACT achievement and were more likely to have repeated a grade than students whose data could be followed, so results of the study may be slightly more positive than if all students could be followed.

How many students repeated one or more grades during the six years studied, and how many were promoted every year?

35,588 (89.0%) of the students had been promoted to the next higher grade every year and were enrolled in grade 8 in 2005. 4,400 (11.0%) of the students repeated one or more grade levels between 2001 and 2005. Grade 3 was repeated most frequently (1,156 students), followed by grades 6 (1,077), 7 (1,012), 4 (795), and 5 (540) in descending order of frequency; 204 students repeated the same grade two or more times or repeated two or more different grade levels.

In 2005, students who had been retained in at least one grade level between grade 3 and grade 7 were enrolled in grade 7 (4,196, 10.5% - retained one time), in grade 6 (203, 0.5% - retained two times), or grade 5 (less than 10, less than 0.1% - retained three times).

Further analysis to identify the extent that the students studied had been retained either before their enrollment in grade 3 in 1999-2000 or in subsequent years revealed six subpopulations of students. The identification of these subpopulations was based on two factors: student age when initially studied in grade 3 (2000) and student retention in a grade between 2001 and 2005. Student ages were compared to the expected age of students in grade 3 who entered school at the compulsory attendance age (e.g., six years of age by September 1). The subpopulations are identified in Table 2

Table 2

Student Age & Grade Promotion/Retention Status
(n=38,511)

Grade Promotion/ Retention Status	Age When Entered Grade 3 in 1999 – Number (% of total 38,511)		
	Younger than expected 7 years or younger	At expected age 8 years old	Older than expected 9 years or older
Promoted each year, grade 3 (2000) to grade 8 (2005)	Promoted/Young 3 554 (1.4%)	Promoted/On Age 29,987 (77.9%)	Promoted/Old 3 3,771 (9.8%)
Retained in at least one grade, grade 3-grade 7	Repeat/Young 3 55 (0.1%)	Repeat/On Age 3,307 (8.6%)	Repeat/Old 3 837 (2.2%)
Totals	609 (1.6%)	33,294 (86.5%)	4,608 (12.0%)

1. **Promoted/On Age**: Students who entered school at the expected age (e.g., they would have been 6 years of age by September 1, 1990 to attend grade 3 in Fall 1999) and were promoted each subsequent school year, so they were attending grade 8 in 2005. With 29,987 students, this is the largest subpopulation (77.9% of the total population studied).

2. **Promoted/Old 3**: Students who were at least one year older than expected when they were initially identified in grade 3 in 2000. These students either entered

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school late or repeated grades Kindergarten, 1, 2, or 3 by the 1999-2000 school year. They were, however, promoted each year subsequently and attended grade 8 in 2005. This subpopulation consisted of 3,771 students (9.8%).

3. **Promoted/Young 3**: Students one or more years younger than expected for grade 3 in 1999-2000. These students either entered school early or "skipped" one or more of the primary grades. There were 554 students in this group (1.4%).

4. **Repeat/On Age**: Students who were at the expected age of 8 years in grade 3 in Fall 1999, but were retained in at least one grade level subsequent to grade 3 2000, so they were attending either grade 6 or 7 in 2005. There were 3,307 students in this group (8.6%).

5. **Repeat/Old 3**: Students who entered school late or were retained in grades Kindergarten, 1, 2, or 3 and who subsequently repeated at least one grade between grades 3 and 7. These students were most likely retained both in the primary grades and in grades 3 or above and were enrolled in grade 6 or 7 in 2005. There were 837 students in this group (2.2%).

6. **Repeat/Young 3**: Students one or more years younger than expected for grade 3 in 1999-2000 who later repeated at least one grade between 2001 and 2005. These students had entered school at an early age or "skipped" a grade before 2000 but were retained in grade in subsequent years. There were 55 students in this group (0.1%).

Students who were at least one year older than expected in grade 3 (2000) may have been "redshirted" (e.g., retained in Kindergarten for an additional year) or were retained in grade 1, 2, or 3 prior to being studied in 2000. It could not be determined from the available data why the students were older than expected.

What were the demographic characteristics of the six subpopulations?

The demographic characteristics of the six subpopulations are listed in Table 3.

Table 3
Subpopulations Based on Student Age and Grade Retention Status
Six-Year Longitudinal Study, 2000-2005

Demographic Group		Student Age/Retention Group - Number (%)					
		Promoted/ On Age	Promoted/ Old 3	Repeat/ On Age	Repeat/ Old 3	Promoted/ Young 3	Repeat/ Young 3
Gender							
	Female	16,017 (53.4)	1,534 (40.7)	1,214 (36.7)	273 (32.6)	342 (61.7)	28 (50.9)
	Male	13,970 (46.6)	2,237 (59.3)	2,093 (63.3)	564 (67.4)	212 (38.3)	27 (49.1)
Ethnic Group							
	African-American	11,934 (39.8)	1,976 (52.4)	1,979 (59.8)	532 (63.6)	254 (45.8)	38 (69.1)
	White	17,439 (58.2)	1,712 (45.4)	1,286 (38.9)	287 (34.3)	275 (49.6)	16 (29.1)
	Other	614 (2.0)	83 (2.2)	42 (1.3)	18 (2.2)	25 (4.5)	1 (1.8)
Lunch Status							
	Free	11,145 (37.2)	2,291 (60.8)	2,228 (67.4)	631 (75.4)	168 (30.3)	36 (65.5)
	Reduced	2,604 (8.7)	314 (8.3)	304 (9.2)	62 (7.4)	60 (10.8)	8 (14.5)
	Pay	16,193 (54.0)	1,159 (30.7)	765 (23.1)	141 (16.8)	326 (58.8)	10 (18.2)
Have a Disability		3,171 (10.6)	1,558 (41.3)	644 (19.5)	300 (35.8)	41 (7.4)	7 (12.7)
Total		29,987 (100)	3,771 (100)	3,307 (100)	837 (100)	554 (100)	55 (100)

Note: Percentages may not add to 100 due to rounding. Data from 1,477 students had missing or incomplete dates of birth and are not included in table.

Compared to the Promoted/On Age group, male students were over-represented in the groups composed of students who had repeated a grade at any time - before 2000 or subsequently - (Promoted/Old 3, Repeat/On Age, Repeat/Old 3, Repeat/Young 3). The proportions of African American students were also higher in the same groups (Promoted/Old 3, Repeat/On Age, Repeat/Old 3, Repeat/Young 3), and in the Promoted/Young 3 group. Students receiving free- or reduced-price lunches and students having a disability were also over-represented in the groups who had ever repeated a grade.

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What percent of students enrolled in grade 8 in 2005 have ever been retained in grade?

This question cannot be answered from the longitudinal data set because students who repeated one or more grades during the six years studied were enrolled in grades 6 or 7 in 2005. The extent to which students in the six-year longitudinal database repeated a grade by grade 8 cannot be estimated until 2007 at the earliest, when the students who were sixth graders in 2005 would be promoted to grade 8. Instead, the grade 8 Precode file for the 2004-2005 school year was used to address the question. The Precode file is downloaded from school databases and contains student enrollment data, including dates of birth, so the ages of the eighth grade students as of September 1, 2004 were calculated to identify student groups who were at the expected ages or had ages outside the expected range. It is assumed that the proportion of students who are at least one year older than the expected age for eighth graders have repeated at least one grade level prior to the 2004-2005 school year, although some students may have entered first grade late or were behind their age-mates for health or other reasons.

Table 4
Distribution of Student Ages
Grade 8, 2004-2005 School Year

| Age Level	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Students older than expected for grade 8				
16yrs, 0mos – Older	175	0.31	175	0.31
15yrs, 0mos – 15yrs, 11mos	2062	3.66	2237	3.97
14yrs, 11mos	428	0.76	2665	4.73
14yrs, 10mos	459	0.81	3124	5.54
14yrs, 9mos	756	1.34	3880	6.89
14yrs, 8mos	822	1.46	4702	8.35
14yrs, 7mos	908	1.61	5610	9.96
14yrs, 6mos	885	1.57	6495	11.53
14yrs, 5mos	965	1.71	7460	13.24
14yrs, 4mos	936	1.66	8396	14.90
14yrs, 3mos	1092	1.94	9488	16.84
14yrs, 2mos	1115	1.98	10603	18.82
14yrs, 1mo	1342	2.38	11945	21.20
14yrs, 0mos	1603	2.85	13548	24.05
Students at expected age for grade 8				
13yrs, 11mos	3723	6.61	17271	30.65
13yrs, 10mos	3741	6.64	21012	37.29
13yrs, 9mos	3516	6.24	24528	43.53
13yrs, 8mos	3623	6.43	28151	49.96
13yrs, 7mos	3684	6.54	31835	56.50
13yrs, 6mos	3329	5.91	35164	62.41
13yrs, 5mos	3584	6.36	38748	68.77
13yrs, 4mos	3224	5.72	41972	74.49
13yrs, 3mos	3356	5.96	45328	80.45
13yrs, 2mos	3192	5.67	48520	86.11
13yrs, 1mo	3233	5.74	51753	91.85
13yrs, 0mos	3235	5.74	54988	97.59
Students younger than expected age for grade 8				
11yrs, 0mos – 12yrs, 11mos	1356	2.41	56344	100.00

The expected age range for students enrolled in eighth grade is 13 years if they entered first grade at the age of six years and did not repeat a grade between grades one and eight. As illustrated in Table 4, students enrolled in grade 8 in the 2004-2005 school year ranged in age from eleven to sixteen years.

The cumulative percent of eighth graders in 2005 who were at least one year older than expected for the grade was 24.05%, indicating that approximately one in four students may have repeated at least one grade level by the time they reached grade 8 in 2004-2005.

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Although direct national comparisons of the percentage of eighth grade students who have ever been retained in grade are not available, the 2006 *Condition of Education* report by the National Center for Educational Statistics (NCES) provides similar information from surveys of 16- to 19-year olds. This report indicates that in 2004 9.6% of 16- to 19-year olds nationwide reported that they had been retained in grade at some point in their school career; 14.0% of 16- to 19-year olds in the Southern region reported they had been retained (NCES, 2006). Based on the information in the NCES study, South Carolina is retaining more students in elementary and middle schools than the nation or the Southern region.

Having been retained in grade is a strong predictor of dropping out of high school. One study estimates that students who are retained in one grade level are 40% to 50% more likely to drop out of high school than promoted students, and students who repeat more than one grade level are 90% more likely to drop out (Mann, 1987, reported in Jimerson, et al, 2002).

What was the PACT achievement of the students over the six years studied?
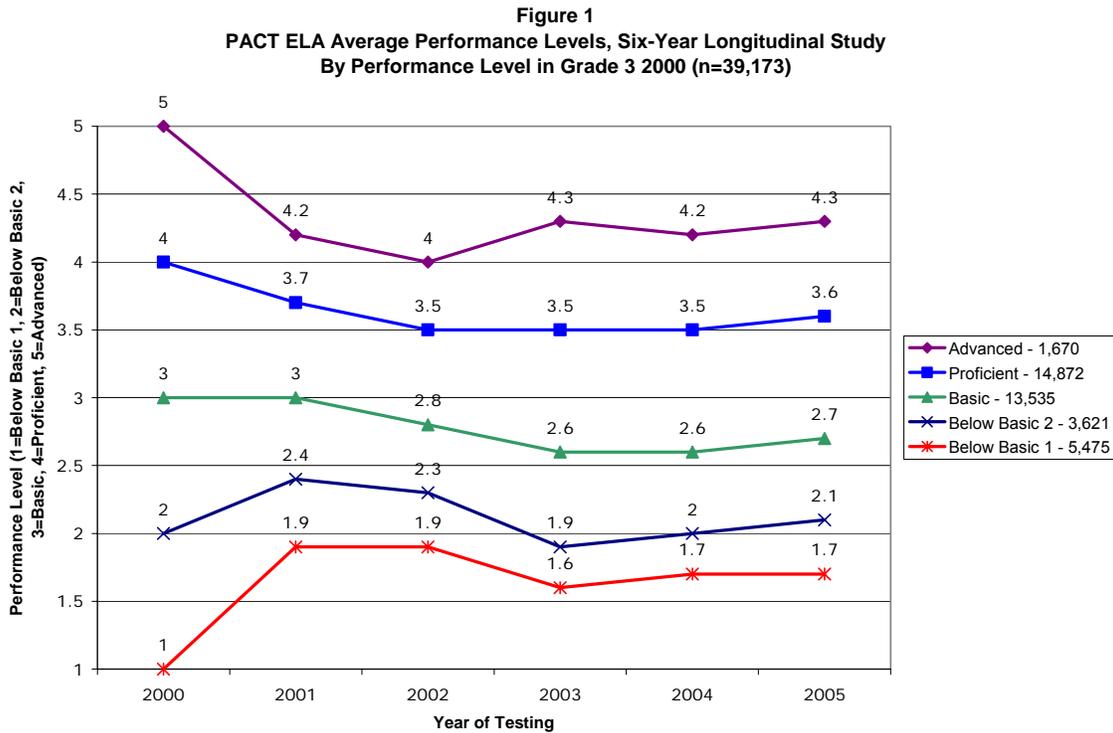
Figures 1 and 2 show the performance over time of students who performed at each of the five PACT performance levels (Below Basic 1, Below Basic 2, Basic, Proficient, or Advanced) in grade 3 in Spring 2000. The five performance levels were converted to a 1-5 numeric scale (1=Below Basic 1; 2=Below Basic 2; 3=Basic; 4=Proficient; and 5=Advanced), consistent with the report card school and district rating system. Figures 1 (English Language Arts) and 2 (Math) show the average performance on the 1-5 scale for each year for each group of students. For example, in Figure 1 the average English Language Arts (ELA) performance of the 13,535 students who scored Basic in 2000 was 3.0 in 2001, 2.8 in 2002, 2.6 in 2003, 2.6 in 2004, and 2.7 in 2005. Since the Basic performance level is assigned a "3" in the scale, one can say that the average performance of students who initially scored Basic in ELA in 2000 decreased over time.

Average ELA performance levels declined by 2005 for most groups. The average performance levels of students who initially scored Below Basic 1 or Below Basic 2 in ELA increased during the elementary school years (2001 and 2002 for most students), but then declined to lower levels in the middle school years (2003 through 2005 for most students). The average performance levels for these students did not get into the Basic range in any year.

The average performance levels of students who initially scored Basic in ELA declined during the middle school years. The average performance levels of students initially scoring Proficient dropped in the elementary years to the borderline between Basic and Proficient and stayed at that level through middle school. The average performance levels of students initially scoring Advanced in ELA also dropped in the elementary years but rose beginning in 2003 to a level between Proficient and Advanced.

Figure 2
PACT Math Average Performance Levels, Six-Year Longitudinal Study
By Performance Level in Grade 3 2000 (n=39,551)

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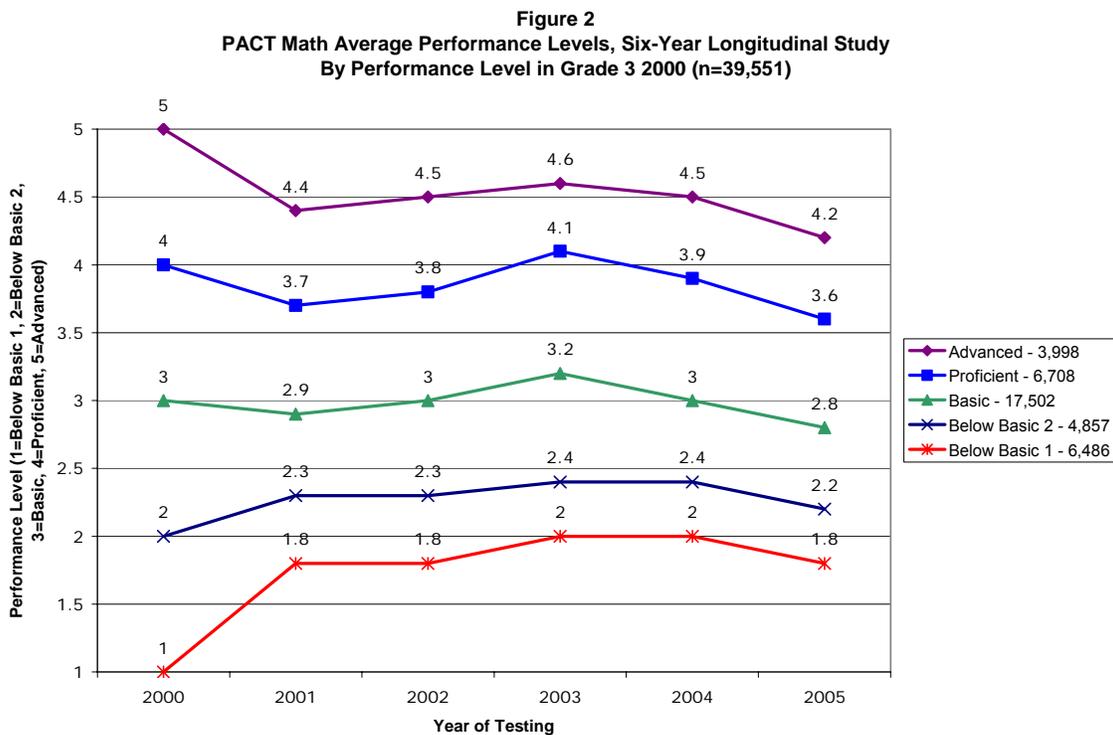
The average performance levels in PACT Math of the groups of students scoring Below Basic 1, Below Basic 2, Basic, Proficient, or Advanced in 2000 increased slightly or remained consistent over time, although performance levels dropped in 2005, which was grade 8 for most (89%) of the students studied. The average performance levels of students who initially scored Below Basic 1 or Below Basic 2 in Math increased in the elementary years and maintained that increase over time. The average performance level of the students initially scoring Below Basic 2 approached the Basic level, although they did not attain it.

The average performance level of students initially scoring Basic in Math was quite stable over time. After an initial drop, the average performance of students initially scoring Proficient or Advanced was maintained in the Proficient or Advanced range until the final middle school years, when they dropped somewhat.

What were the proportions of students initially scoring Below Basic who increased their performance to Basic or above after six years?

Table 5
PACT Performance in 2005 of Students Scoring Below Basic in 2000

Subject	Student Group		Number	Percent
ELA	Scored Below Basic in 2000	Also Scored Below Basic in 2005	6,098	67.0
		Scored Basic or Above in 2005	2,998	33.0
		Total	9,096	100
Math	Scored Below Basic in 2000	Also Scored Below Basic in 2005	7,569	66.7
		Scored Basic or Above in 2005	3,774	33.3
		Total	11,343	100

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In 2005, two-thirds of the students who performed at the Below Basic level in 2000 were also performing at the Below Basic level in 2005. The proportions for ELA (67.0%) and Math (66.7%) were nearly identical.

What proportion of students who initially scored Proficient or Advanced maintained their high levels of performance by the end of the six year period studied?

Table 6
PACT Performance in 2005 of Students Scoring Proficient or Advanced in 2000

Subject	Student Group		Number	Percent
ELA	Scored Proficient or Advanced in 2000	Scored Proficient or Advanced in 2000 & 2005	9,603	58.1
		Scored Lower than Proficient in 2005	6,939	41.9
		Total	16,542	100
Math	Scored Proficient or Advanced in 2000	Scored Proficient or Advanced in 2000 & 2005	6,623	61.9
		Scored Lower than Proficient in 2005	4,083	38.1
		Total	10,706	100

Students who initially performed at the Proficient or Advanced level in Math were slightly more likely to score at those levels again in 2005 than students who scored Proficient or Advanced in ELA in 2000 (61.9% scored at the same level in Math in 2005 compared to 58.1% in ELA).

The school report card Improvement ratings are based on the average PACT achievement growth of individual students in a school from one year to the next. The low Improvement ratings at the middle school level reflect the limited achievement growth over time observed in this study of the longitudinal data for this cohort of students. One (0.4%) of the 272 middle schools received an Excellent Improvement

rating and 30 (11.0%) received Good Improvement ratings in 2005. However, 115 (42.3%) middle schools received Unsatisfactory Improvement ratings.

What was the performance of promoted or retained students who were older than expected in 2000 compared to students at the expected age level?

For illustrative purposes, the results reported are from comparisons involving students who repeated grade 3 and students who repeated grade 6. The achievement patterns revealed in these comparisons were also studied for students who repeated grades 4, 5, and 7, with similar results.

Students who repeated grade 3 in 2001:

Figure 3
**PACT ELA Percent Basic or Above, Six-Year Longitudinal Study**
Students Repeating Grade 3 Compared to Students Not Repeating Any Grades 3-8
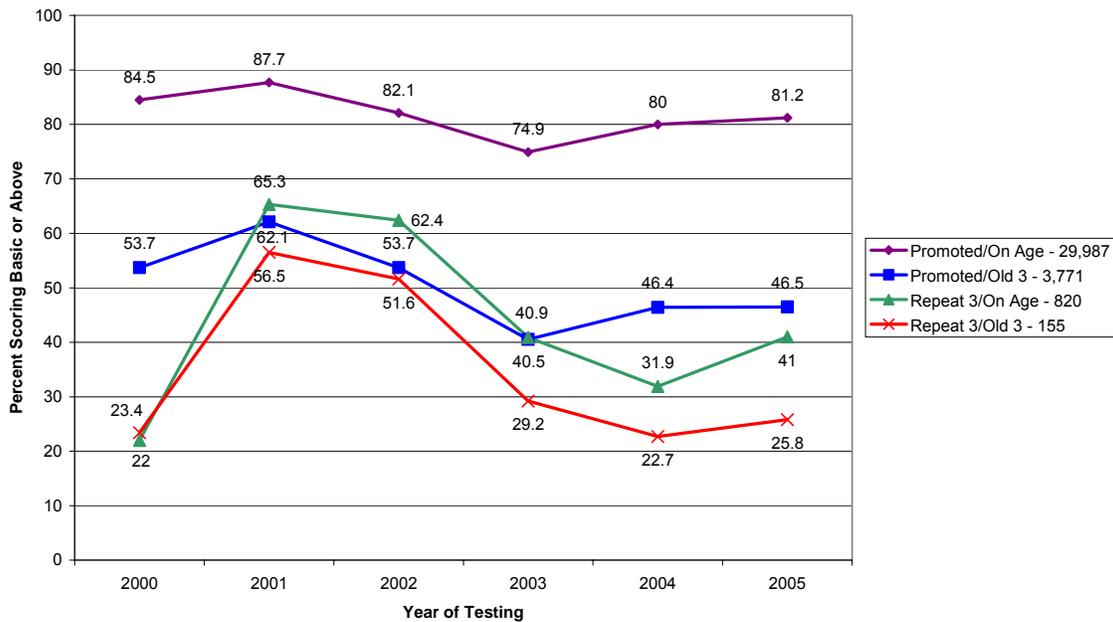
Figures 3 (ELA) and 4 (Math) show the performance over time of students who were promoted every year (Promoted/On Age); students who were promoted every year between 2000 and 2005, but were older than expected as third graders and probably

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had repeated one or more primary grades (Promoted/Old 3); students who were at the expected age as third graders but who repeated grade 3 in 2001 (Repeat 3/On Age); and students who were older than expected in third grade and also repeated grade 3 in 2001 (Repeat 3/Old 3). The percentages of each of these groups who scored Basic, Proficient, or Advanced (Percent Basic or Above) was calculated for each year and reported in the figures.

For all but one year, at least 80% of the students who were at the expected age for grade 3 in 2000 and who were promoted each year (Promoted/On Age) performed at the Basic level or higher in ELA (Figure 3). However, there was a decline between 2001 and 2005 in the percentages of these students scoring Basic or above, reflecting the overall decline in ELA performance through the middle grades. This was the largest group of students (n=29,987).

The percentages of students scoring Basic or above in ELA who were older than expected for grade 3 in 2000 and promoted each year (Promoted/Old 3) followed a similar pattern over time as that shown by the Promoted/On Age students, but were 25 to 35 percentage points lower.

The two groups of students who repeated grade 3 in 2001 (Repeat 3/On Age: students at the expected age in grade 3 in 2000; and Repeat 3/Old 3: students older than expected in 2000) showed a similar ELA achievement pattern over time. These students achieved at their highest level in 2001, when they repeated grade 3. Their achievement levels were nearly sustained when they took the fourth grade test in 2002, but then declined subsequently. The performance of the Repeat3/Old 3 group in 2005 was at nearly the same level as it was in 2000, the year before they were retained in grade.

The achievement patterns of the Promoted/Old 3, Repeat 3/On Age, and Repeat 3/Old 3 groups were similar over time. These groups all had the similar experience of having been retained in grade at least once in their school careers.

Figure 4
PACT Math Percent Basic or Above, Six-Year Longitudinal Study
Students Repeating Grade 3 Compared to Students Not Repeating Any Grades 3-8
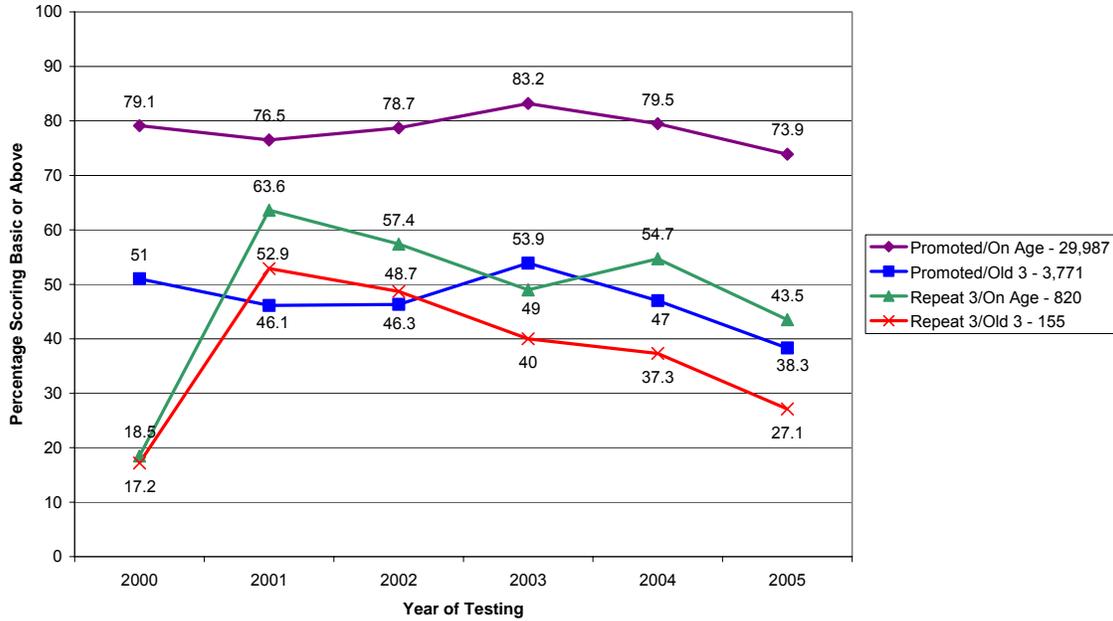
In Math (Figure 4), the Promoted/On Age group showed stable performance over time until their percentage scoring Basic or above declined on the eighth grade test in 2005. The Promoted/Old 3 group and the Repeat3/On Age and Repeat3/Old 3 groups showed similar achievement patterns over time, although the long-term decline in performance by students who repeated grade 3 was not as large as in ELA.

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Students who repeated grade 6 in 2004:

Figure 5
PACT ELA Percent Basic or Above, Six-Year Longitudinal Study
Students Repeating Grade 6 Compared to Students Not Repeating Any Grades 3-8
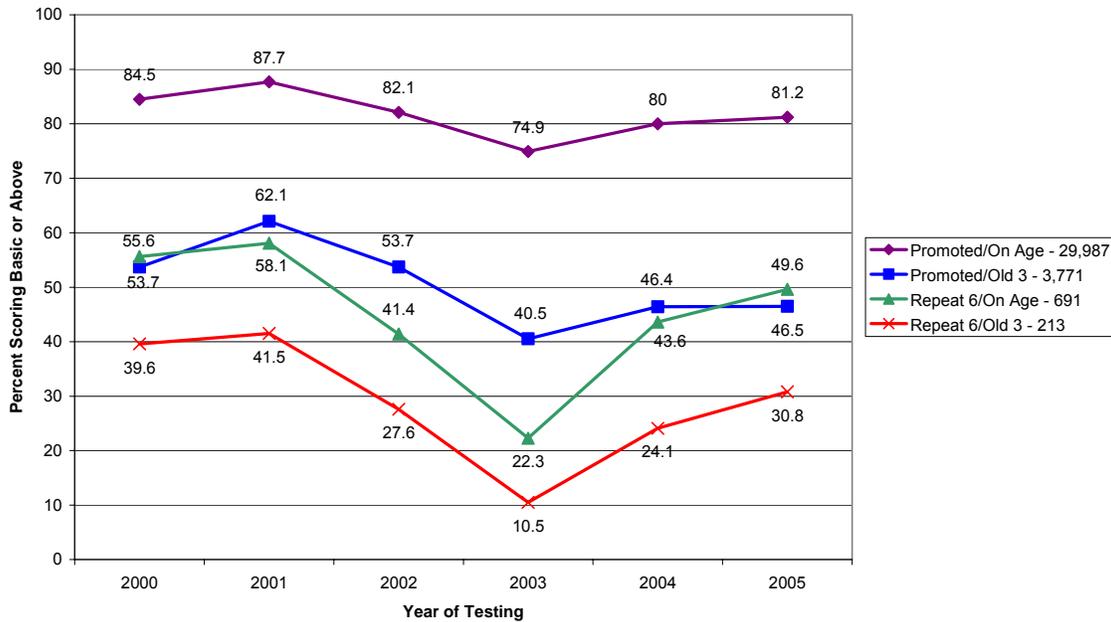
The percentages of students scoring Basic or above in ELA declined between 2001 and 2003 for all the groups of students, but the declines were larger for students who were retained in grade 6 in 2004 (Figure 5). The very low ELA scores in 2003 of the students who repeated grade 6 in 2004 suggest that the decision to retain these students may have been based at least in part on their PACT ELA performance. Interestingly, the grade 7 ELA performance in 2005 was higher for students who repeated sixth grade than their performance in 2004, when they took the grade 6 test a second time. This pattern differs from the pattern observed among students who repeat an earlier grade, whose ELA scores typically peak in the year they repeat a grade and then decline to a lower level over time. The eighth grade scores for the students who repeated grade 6 in 2004 will be available for analysis when the 2006 PACT data can be matched to the longitudinal database. It will be interesting to see if the gain in grade 7

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for these students was sustained in grade 8, suggesting that repetition of grade 6 may have been beneficial over a longer period of time for these students.

Figure 6
PACT Math Percent Basic or Above, Six-Year Longitudinal Study
Students Repeating Grade 6 Compared to Students Not Repeating Any Grades 3-8
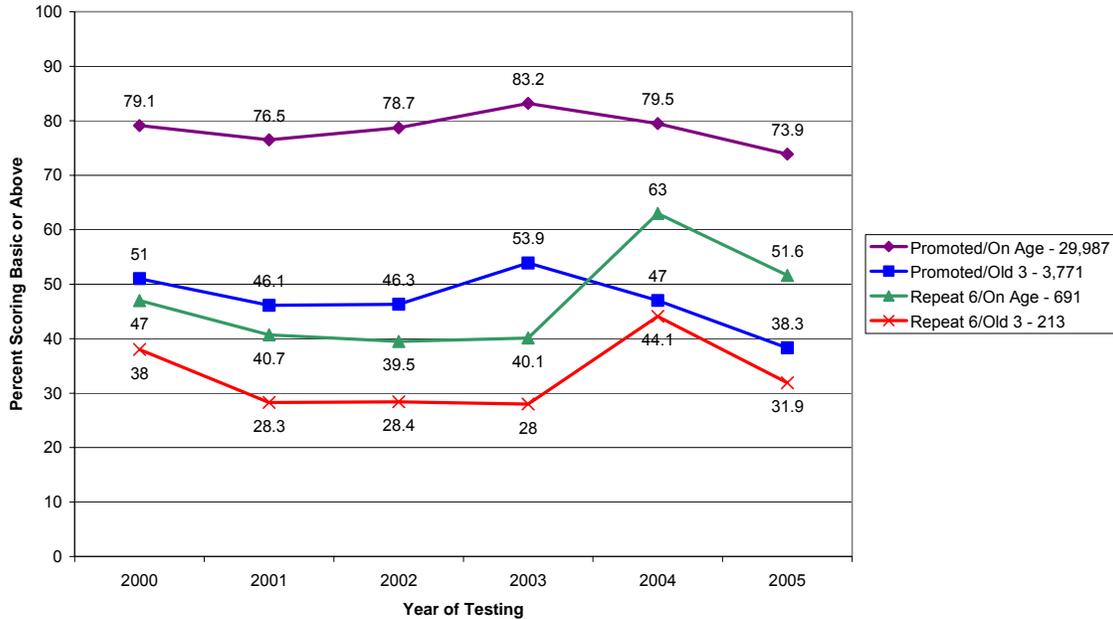
The decline in performance in the performance of sixth graders between 2001 and 2003 which was observed in ELA was not as evident in Math (Figure 6). The performance of students who repeated sixth grade in 2004 was relatively stable between 2001 and 2003. The Math performance of students who repeated grade 6 peaked in 2004, when they took the sixth grade Math test a second time, but then declined in seventh grade in 2005.

Overall, the performance of students who repeated a grade either before 2000 or between 2001 and 2005 never rose to the level of on-age students who were promoted each year. In ELA, retention in grade 3 appeared to confer little long-term advantage; it could not be determined from the data available if retention in grade 6 conferred long-

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term benefits or not. In Math, retention in grade 3 showed a short-term benefit which, while not sustained, did not decline as much as in ELA.

The performance of students who repeated a grade either in the primary grades by 2000 or subsequently in grades 3 through 7 during the years 2001 through 2005 was consistently lower than the performance of students who had never been retained. While the students who were never retained showed little progress over time, they at least tended to maintain their initial PACT performance levels in ELA and Math. It appears that the interventions provided for students who were retained in grade 3 may not have been very effective because, while short-term benefits were observed, over time the performance of these students remained unacceptable. Since the data are not yet available, it remains to be seen if retention in grade 6 provided long-term benefits in ELA for students.

What were the relationships between student age upon entrance to grade 3 in Fall 1999 and PACT ELA and Math performance in 2000 and 2005?

The longitudinal student data were disaggregated by student month and year of birth to identify the relationships between student age level and their initial PACT performance in Spring 2000 and their performance six years later in 2005. The ELA data are listed in Table 7 and the Math data are in Table 8.

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Table 7

Performance By Age Group
PACT Six-Year Longitudinal Data

ELA 2000 & 2005 Performance by Age when Entered Grade 3 in Fall 1999

Age by 9/1/99	Number of Students	2000 %Basic or Above	2005 %Basic or Above	2000 %Proficient or Advanced	2005 %Proficient or Advanced	Date of Birth
Students older than expected in grade 3 1999-2000						
11yrs, 0mos – 11yrs, 6mos	122	51.7	29.5	6.7	0.8	<9/88
10yrs, 0mos – 10yrs, 11mos	34	54.5	23.5	9.1	2.9	<9/89
9yrs, 11mos	46	53.3	39.1	15.6	4.3	9/89
9yrs, 10mos	70	50.7	33.8	10.1	1.5	10/89
9yrs, 9mos	249	46.3	36.8	9.0	4.5	11/89
9yrs, 8mos	277	44.6	36.9	12.9	4.4	12/89
9yrs, 7mos	338	45.9	38.0	8.2	4.2	1/90
9yrs, 6mos	347	42.5	39.0	12.9	5.5	2/90
9yrs, 5mos	353	45.8	40.3	10.1	7.4	3/90
9yrs, 4mos	384	47.5	41.4	11.8	6.0	4/90
9yrs, 3mos	474	49.0	45.6	14.8	7.4	5/90
9yrs, 2mos	491	51.8	45.8	16.7	6.1	6/90
9yrs, 1mo	639	51.9	46.4	17.8	10.1	7/90
9yrs, 0mos	784	57.9	52.5	22.4	14.4	8/90
Students at expected age in grade 3 1999-2000						
8yrs, 11mos	2928	81.6	77.9	50.7	33.3	9/90
8yrs, 10mos	2984	82.4	79.0	49.6	33.7	10/90
8yrs, 9mos	2778	81.4	77.0	47.9	33.5	11/90
8yrs, 8mos	2894	81.5	77.1	47.9	32.1	12/90
8yrs, 7mos	2946	79.4	77.0	46.4	31.5	1/91
8yrs, 6mos	2668	81.9	77.9	47.1	32.5	2/91
8yrs, 5mos	2844	80.9	77.6	46.7	31.2	3/91
8yrs, 4mos	2566	80.5	78.5	46.1	32.4	4/91
8yrs, 3mos	2718	80.2	78.4	43.4	31.5	5/91
8yrs, 2mos	2629	78.6	77.5	43.1	31.1	6/91
8yrs, 1mo	2647	76.9	76.4	40.7	28.7	7/91
8yrs, 0mos	2692	76.3	76.6	38.6	27.8	8/91
Students younger than expected age in grade 3 1999-2000						
7yrs, 11mos	306	83.7	83.0	49.0	37.6	9/91
7yrs, 0mos – 7yrs, 10mos	303	83.4	86.1	50.0	38.0	>9/91

     In ELA, students who were at the expected age for third graders in 2000 performed at higher levels than students older than expected (9 years of age or older) in both 2000 and 2005. As noted earlier in this report, students older than expected in third grade were likely to have repeated one of the primary grades.

     The performance of students younger than expected (aged less than 8 years) was higher than that of students at the expected age or that of students who were older

than expected. These younger students were likely to have entered school at an early age or to have "skipped" a grade during their primary grade years (students in this age range include the Promoted/Young 3 and Repeat/Young 3 subpopulations).

For most age groups, the percentages scoring Basic or above or Proficient or Advanced declined in 2005 compared to 2000.

Table 8

Performance By Age Group
PACT Six-Year Longitudinal Data

Math 2000 & 2005 Performance by Age when Entered Grade 3 in Fall 1999

Age by 9/1/99	Number of Students	2000 %Basic or Above	2005 %Basic or Above	2000 %Proficient or Advanced	2005 %Proficient or Advanced	Date of Birth
Students older than expected in grade 3 1999-2000						
11yrs, 0mos – 11yrs, 6mos	122	46.3	25.8	4.1	0.0	<9/88
10yrs, 0mos – 10yrs, 11mos	34	38.2	23.5	0.0	5.9	<9/89
9yrs, 11mos	46	58.7	30.4	6.5	2.2	9/89
9yrs, 10mos	70	44.3	33.3	8.6	4.3	10/89
9yrs, 9mos	249	47.3	31.3	6.1	3.3	11/89
9yrs, 8mos	277	42.9	31.0	6.6	3.2	12/89
9yrs, 7mos	338	43.1	33.4	4.8	2.1	1/90
9yrs, 6mos	347	44.9	32.3	8.2	3.5	2/90
9yrs, 5mos	353	45.0	37.6	7.7	4.0	3/90
9yrs, 4mos	384	45.5	35.1	7.3	4.5	4/90
9yrs, 3mos	474	48.8	36.1	8.3	4.7	5/90
9yrs, 2mos	491	48.7	39.2	9.0	5.5	6/90
9yrs, 1mo	639	46.3	41.5	12.3	8.0	7/90
9yrs, 0mos	784	52.7	42.7	14.7	11.2	8/90
Students at expected age in grade 3 1999-2000						
8yrs, 11mos	2928	76.1	71.6	34.1	26.8	9/90
8yrs, 10mos	2984	79.1	72.3	33.8	26.0	10/90
8yrs, 9mos	2778	76.6	71.9	31.2	25.7	11/90
8yrs, 8mos	2894	76.2	70.7	32.0	25.6	12/90
8yrs, 7mos	2946	75.2	70.6	29.4	24.7	1/91
8yrs, 6mos	2668	75.7	70.7	31.5	27.6	2/91
8yrs, 5mos	2844	76.0	71.7	29.9	24.8	3/91
8yrs, 4mos	2566	75.5	72.1	29.9	26.9	4/91
8yrs, 3mos	2718	73.1	71.7	28.4	25.7	5/91
8yrs, 2mos	2629	71.0	72.4	26.4	25.5	6/91
8yrs, 1mo	2647	69.7	71.5	24.6	23.9	7/91
8yrs, 0mos	2692	69.8	70.5	23.8	23.2	8/91
Students younger than expected age in grade 3 1999-2000						
7yrs, 11mos	306	72.5	75.8	27.5	30.7	9/91
7yrs, 0mos – 7yrs, 10mos	303	77.9	78.1	28.7	33.4	>9/91

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In Math, students at the expected age for grade 3 performed at higher levels than students older than expected in both 2000 and 2005.

As in ELA, the performance of younger students (less than 8 years of age) was higher than that of students at the expected age or older than expected.

With the exception of the youngest students, all of the student groups scored at lower performance levels in 2005 than in 2000.

The data reported here suggest that "pushing" younger children may not be harmful to their achievement, while "holding students back" is associated with lower achievement. The students who were retained in grade in the primary grades may have exhibited problems with achievement at an early age and retention was an intervention intended to remediate their achievement deficiencies. However, young children may be retained in grade for reasons other than poor achievement, such as for "immaturity" or for behavior considered inappropriate for the expectations of the classroom. As indicated earlier in this report, the young children in this study who were apparently retained in the primary grades were more likely to be male, to belong to an ethnic minority group, to live in poverty, or to have a disability. Many of the retained students in this study have a history of low achievement which persists after they are retained in grade. The findings from this study suggest that policies encouraging retention in grade as a primary means of remediation should be reviewed for their effectiveness.

Discussion

The initial findings from this study were presented to a group of experienced educators and educational researchers in August 2006. The discussion of the findings by this group generated several issues:

1. There are too many students whose third grade achievement was Below Basic and who continued to score Below Basic six years later.

2. There is too little improvement in achievement over time to meet our goals.

3. We should be aware of the numbers of students who are being retained in grade and should examine the effectiveness of policies encouraging retention as a primary means of remediation. While a significant body of research questions the value of grade retention for remediation, the recent study of the effectiveness of Florida's retention policies for elementary students suggests that retention may be effective in improving children's reading skills if the retention policy is clearly defined and is designed to effectively identify students who would benefit from the retention (Greene and Winters, 2006).

4. We should explore the suggestion provided by the data that challenging students when they enter school, even at a young age, may be more beneficial than holding them out of school or retaining them.

5. Children's problems with low achievement emerge at different times for different reasons: low achievement cannot be "inoculated" against in early childhood or at any other age range, but must be dealt with as it occurs.

6. The persistence of low levels of achievement over time suggests that the instructional interventions currently in use are not effective enough, and that institutional changes are needed to produce long-term achievement gains.

Education Oversight Committee staff will present the findings of this study to school district superintendents, to members of the Instructional Leaders Roundtable

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(composed primarily of school district associate and assistant superintendents of instruction), and to State Department of Education staff. The purpose of these presentations is to generate discussion and interest in the study findings as they relate to school and school district policies and practices. It is expected that needed changes in state and district policies will be identified through these discussions.

References Cited:

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