

Estimates show region's graduation rate improving, but still about 65 percent

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Pending the approval of superintendents, Santee-Lynches Regional Council of Governments has proposed adopting one calculation method for determining county graduation rates in the Santee-Lynches Region at this time. This formula is the Grade 8 to graduation calculation, where total diplomas issued in a county or district are measured against the spring, 135th day, Average Daily Membership of 8th graders four academic years earlier. The formula is shown below:

$$\text{Graduates with diplomas in Year } x \div 135^{\text{th}} \text{ day ADM of } 8^{\text{th}} \text{ graders in Year } x - 4$$

As discussed in a previous report, *the original goal of this research was to find the calculation that best determines how many incoming 9th graders in the region's public schools go on to earn a state-certified diploma. Due to inherent biases greater than 1 or 2 percent in determining incoming 9th graders, it was determined our most reliable calculation would instead be an "8th grade-to-graduation rate" and not a "high school graduation rate" of 9th-12th grade.* To translate the 8th grade-to-graduation rate into a high school graduation rate of incoming 9th graders, we would have to account for 8th grade retention in the region. Since these retention rates vary by school district from 0 to 8 percent through the last decade, we felt it best to calculate solely the 8th grade-to-graduation rate and not factor a varying retention bias by district and by year into a "high school graduation rate."

Of all optional graduation rate formulas research showed the Grade 8 formula suffers from the smallest bias. The only bias in the formula is population changes (migration) in the high school population. Migration adjustments can't be made at the sub-state level due to limitations in U.S. Census Bureau data. In three of the four counties in the region (Clarendon, Lee and Sumter), population levels have been relatively flat in the last decade so the migration bias would be minimal in the calculations. It's interesting to note that S.C. Kids Count also uses this formula when calculating county graduation rates. The state Department of Education also formerly used spring 8th grade, 135th day, ADM to high school completion as a measurement through the 2001-02 school year before implementing a student tracking identification system to measure graduation rates. About a dozen states across the U.S. are in the early stages of using tracking systems, but it will take several more years before many are producing accurate results.

It's important to mention, the Grade 8 formula is an **overall graduation rate and not an on-time, four-year, graduation rate** because while students who take longer than four years to graduate exit the cohort, they're replaced by older students in earlier cohorts who have also taken longer than four years to graduate. A simple example shows the merits of using the Grade 8 formula. Say, a district generally has 4 percent 8th grade retention. Then as 4 percent of first-time 8th graders exit the cohort in Year x due to retention, they're replaced in this cohort by the 4 percent who were retained in Year $x-1$ and are now moving up to 9th grade.

Therefore, the Grade 8 formula does effectively determine how many 8th graders eventually earn a state diploma in high school, regardless of the number of years it takes them. The only way to calculate an on-time, four-year, graduation rate is by a well-functioning tracking system that follows individual students throughout high school and this is only possible in a couple

states. The Grade 8 formula does provide **realistic estimates** of graduation rates and is considered to be the best compromise between tracking limitations and the need for accurate information at the sub-state level.

The need for accurate information on county graduation rates is becoming especially critical in the 21st Century economy. Given the increasingly global nature of the economy -- with greater overseas accessibility to cheap labor and the rapid pace of technological advances requiring fewer, but higher-skilled, workers -- every region in the U.S. is becoming more dependent on having access to an educated workforce in order to be more competitive. In the “knowledge economy” that is continuing to expand across the U.S., most analysts now believe that economic development is changing from assets of place (water, sewer, facilities, etc.) to assets of people, where a premium is placed on adaptive, highly skilled workers because they generate and apply knowledge through their labor.

In the emerging and long-term economic system, education and technical skill acquisition among America’s youth is a paramount concern for sustaining local and regional economies. Developing an educated, adaptive and technically skilled workforce is especially critical for rural regions that have traditionally depended heavily on the lower-skilled, lower-wage manufacturing sector. These regions in the U.S. have experienced significant manufacturing job losses and increased unemployment over the last decade resulting from cheaper labor-related overseas operating costs and technological advances. The four-county Santee-Lynches Region is no exception with a loss of 6,420 manufacturing jobs from 2000 through the second quarter of 2007 according to average monthly employment totals from the Quarterly Census of Employment and Wages, which is considered the most reliable source of employment information available.

Given these circumstances, school graduation rates are increasingly becoming a key gauge to measure the strength and sustainability of the economy in a county, region or state. After turning 17, teenagers in South Carolina are allowed to drop out of school if they desire; so measuring the graduation rates of school districts and the overall educational attainment trends of the teenage population is a critical local economic development tool. Given the likely difficult future that rural counties and regions face in the global economic environment, an accurate assessment of local graduation rates is an important tool to help both education and community leaders partner to craft targeted improvement strategies where needed.

County graduation rates through the years

Calculating graduation rates by the Grade 8 formula reveals the actual graduation rates in the region’s counties are improving in recent years as shown in Table 1.

Table 1 – Overall 8th grade-to-graduation rate estimates by county

County	‘00-01	‘01-02	‘02-03	3-yr. avg.	‘03-04	‘04-05	‘05-06	3-yr. avg.	3-yr. avg. hike	‘06-07
Clarendon	54.3%	57.5%	57.5%	56.4%	57.5%	61.3%	62.3%	60.4%	+4.0%	66.4%
Kershaw	63.2%	64.7%	67.1%	65.0%	66.0%	65.0%	67.9%	66.3%	+1.3%	68.5%
Lee	43.5%	50.6%	52.1%	48.4%	45.2%	55.8%	61.7%	54.2%	+5.8%	47.3%
Sumter	53.1%	53.2%	58.8%	55.0%	60.2%	64.7%	66.7%	63.9%	+8.9%	67.2%
REGION	55.0%	56.8%	60.2%	57.3%	60.0%	63.6%	65.9%	63.1%	+5.8%	66.0%

The calculations provide a realistic estimate of the percentage of 8th graders who eventually graduate with a state diploma from public school. For example, the data estimates 54.3 percent of Clarendon County 8th graders in the 1996-97 school year graduated in four years in 2000-01 or later. As mentioned earlier, the 54.3 percent isn't an on-time graduation rate because students who take longer than four years to graduate exit the cohort. However, these students are replaced by older students in earlier cohorts who are retained, enter the cohort and earn a diploma. As long as there is not a substantial change in the number of students in each cohort who graduate in more than four years, those students will be included as graduates in this overall graduation rate formula. To arrive at the on-time, four-year, graduation rate for the Class of 2000-01 in Clarendon County, we would have to drive down the 54.3 percent by the number of older students from earlier cohorts who were retained, entered the cohort and earned a diploma. Arriving at this total is only feasible with a well-functioning tracking system that follows individual students throughout school and this is only possible in a couple states.

It's necessary to mention that not included in the 54.3 percent for Clarendon are students who earn non-diploma certificates and those students who enter Adult Education and earn a diploma or GED. (The number of diplomas issued through Adult Education programs in the state is generally very low due to extensive course requirements.) Diploma counts do include students who earn a diploma in summer school of that school year. ***The graduation rate percentage totals for the four counties in Table 1 are biased only by migration. Since Clarendon, Lee and Sumter counties have basically flat population totals during the last decade, we would assume the migration bias would be very minimal. Kershaw's migration bias would be more due to a growing teenage population in the county.*** Specific population changes among teenagers can't be measured annually at the county level so we're unable to account for it in our formula, but we can assume since Kershaw has grown by about 5,000 residents since 2000 that some growth has occurred in the high school population. These new teenagers would enter the cohort after the 8th grade and might earn a diploma, causing an upward bias since they would be counted in the numerator but not the denominator. We would assume the bias is probably ***about 1 or 2 percent.***

In analyzing the data from the Grade 8 formula, it's apparent graduation rates have improved in each county since 2000. Looking at three-year averages shows 60.4 percent of Clarendon County students in the Classes of 2003-04, 2004-05 and 2005-06 eventually graduated with a diploma compared to 56.4 percent in the initial three-year average, representing a 4 percent increase. Lee County had a three-year average increase of 5.8 percent. Sumter County had the largest three-year trend increase at 8.9 percent for the Classes of 2003-04, 2004-05 and 2005-06. Kershaw County had the smallest trend increase at 1.3 percent but still had the highest overall graduation rates. Likewise at the region level, the latter three-year average showed an overall graduation rate of 63.1 percent, a 5.8 percent hike from the initial three-year trend. These improvements are likely due to more focus by schools on individual student instruction in the era of No Child Left Behind.

Translating graduation rates into numbers of dropouts or non-diploma recipients

Almost as important as knowing the graduation rate for a school district or county is to understand how many students are dropping out or leaving school without earning a state diploma. This total is measured in our formula as the difference between spring 8th grade enrollment and diplomas earned by the cohort four academic years later.

135th day ADM of 8th graders in Year $x-4$ - Graduates with diplomas in Year x

This formula effectively determines the number of dropouts or non-diploma recipients because students who leave the cohort because they are retained are replaced by older students who are also retained, enter the cohort and graduate. As long as there is not a substantial change in the number of students in each cohort who graduate in more than four years, those students will be included as graduates in our formula. The county totals of dropouts or non-diploma recipients for every cohort since the Class of 2000-01 are provided in the next table.

Table 2 – Cohort class dropouts or non-diploma recipients by county

County	'00-01	'01-02	'02-03	3 class total	'03-04	'04-05	'05-06	3 class total	3 class total decrease	'06-07
Clarendon	237	207	211	655	204	186	186	576	-79	164
Kershaw	292	286	256	834	258	284	258	800	-34	263
Lee	160	116	114	390	136	80	79	295	-95	116
Sumter	698	679	580	1,957	592	480	459	1,531	-426	488
REGION TOTAL	1,387	1,288	1,161	3,836	1,190	1,030	982	3,202	-634	1,031

As an example, in Kershaw County this chart shows 292 students from a total spring 8th grade enrollment of 793 in the 1996-97 year didn't go on to earn a diploma. It's important to understand county sizes in this measurement. For example, Lee County with the smallest enrollment total in the four counties has the fewest dropouts or non-diploma recipients; however, Table 1 reveals Lee has the lowest graduation rate estimate.

With the largest public school enrollment total in the region, Sumter County has the most dropouts or non-diploma recipients in each cohort. From an 8th grade enrollment of 1,487 in 1996-97, 698 students didn't earn a diploma. As graduation rates have improved in Sumter through the years, total "leavers" from the system have decreased.

The three-year cohort totals are interesting to observe. For example in Sumter, the three cohorts of the Classes of 2001, 2002 and 2003 had an estimated 1,957 students out of a total enrollment of 4,345 who didn't eventually earn a diploma from high school for an overall graduation rate of just 55 percent. Thus, an estimated 1,957 students who were 8th graders in 1996-97, '97-98 and '98-99 never graduated from high school. However, it's important to note these numbers have improved in recent years. An estimated 1,531 students who were 8th graders in 1999-00, '00-01 and '01-02 in Sumter County never graduated, representing a decrease of 426 dropouts or non-diploma recipients. Total enrollment of 8th graders over the three years did decrease by 121 to 4,224, which would reduce the leaver total some, but more importantly the three-year average graduation rate improved by 8.9 percent to 63.9 percent. Similarly at the region level, dropouts and non-diploma recipients were reduced by 634 in the latter three cohorts as the graduation rate improved by 5.8 percent to 63.1 percent.

The state's graduation rate through the years

Given the publicity the state's graduation rate has received in recent years by various published reports, it's important to calculate the percentage with the best possible formula measurement. At the state and national level, research shows the least biased formula is the Estimated

Completion Rate (ECR). The ECR is similar to the Grade 8 formula but accounts for population changes (migration) at the state and national level. The formula is shown as the following:

$$\frac{\text{Graduates with diplomas in Year } x}{(135^{\text{th}} \text{ day ADM of } 8^{\text{th}} \text{ graders in Year } x-4)} * (\text{Migration adjustment})$$

Where Migration adjustment =

$$1 + \frac{\text{Number of 17 year olds, Year } x-1 (-) \text{ Number of 14 year olds, Year } x-4}{\text{Number of 14 year olds, Year } x-4}$$

Weighing population changes is important since the state is growing overall; thus, migrating students are being added into cohorts throughout 9th-12th grade. These new students need to be factored into the denominator in some way since they are counted in the numerator if they graduate. The migration adjustment accomplishes this. Due to wide variations in comparing population totals across two different censuses, we have controlled the state’s migration adjustment at 2.1 percent growth for all measurements. This total was arrived at by calculating an average of population growth estimates among teenagers since 2000, instead of also considering 1990-based estimates.

Using the ECR with the “fixed” migration adjustment of 1.021, the state’s overall graduation rates for the seven graduating classes of 2000-01 through 2006-07 are shown in Table 3.

Table 3 – State overall 8th grade-to-graduation rate estimates with fixed migration

'00-01	'01-02	'02-03	3-yr. avg.	'03-04	'04-05	'05-06	3-yr. avg.	'06-07
56.8%	57.2%	64.8%	59.5%	60.9%	61.8%	66.2%	63.0%	67.5%

The state’s 8th grade-to-graduation rate estimates calculated by the ECR would be less biased than the region’s estimates by the Grade 8 formula due to the migration adjustment. ***The only bias in the state ECR is a minimal upward bias due to a small private school buildup into public schools in the 9th grade at the state level.*** This buildup would come from private schools that end at the 8th grade, and those students then entering public school and likely graduating. We would assume this upward bias in South Carolina would be very small, ***possibly 1 percent***, due to the relatively large number of private schools in the state that are K-12th grade. (Actually, research showed basically no private school buildup in the 9th grade occurred in the Santee-Lynches Region since the vast majority of regional private schools don’t end at 8th grade but continue through the 12th grade.)

Table 3 illustrates during the seven-year period the state’s graduation rate improved. The latter three-year average of 63.0 percent represented a 3.5 percent improvement over the first three-year average.

Accounting for bias from international immigration in state graduation rate

Research also has shown that international immigration could bias the state graduation rate downward through the migration adjustment possibly by about 2 percent. This occurs when 14 to 17-year-old immigrants enter the state and are counted in population totals but never enroll in school. In this case, these teenagers would be counted in the ECR’s denominator but never in

the numerator. ***If a 2 percent downward bias from international immigration at the state level is weighed against the aforementioned 1 percent upward bias from the private school buildup, the net effect would be the state's graduation rate estimate is downwardly biased by 1 percent. If 1 percent were added to the most recent three-year trend in the state, the graduation rate estimate would be 64.0 percent.***

The issue of international immigrant teenagers entering a county and not being enrolled in school wouldn't affect our county graduation rate calculations since the population migration adjustment isn't used in the simple Grade 8 formula. The net result of the various adjustments shows the state's graduation rate is very similar to our region's rate in recent years.

Comparing Grade 8 and ECR graduation rates to other formula measurements

When comparing the region and state graduation rates in this report to other formulas, we find our measurements are a few percentage points higher than other independent measurements. The reason for this is both the region Grade 8 formula and the state ECR are ***8th grade measurements*** and don't suffer from a downward 9th grade retention bias. Several formulas that attempt to calculate the ***high school graduation rate*** are biased downward by relatively large retention rates in the 9th grade inhibiting a determination of first-time 9th graders. Retention rates in the 9th grade in the state are generally about 15 percent, creating a significant bias in any formula calculation. As discussed in a previous report, the Grade 9 formula, Cumulative Promotion Index (CPI) and the Greene Method all suffer from this bias. When these formulas use 9th grade enrollment totals, the large number of repeat 9th graders prevent an accurate measurement of incoming 9th graders. Gauging incoming 9th graders by 8th grade enrollment can also have disadvantages due to varying retention rates in the 8th grade by school district (0 to 8 percent through the last decade.) ***Therefore, our research determined graduation rates based on 8th grade enrollment four years earlier and consider it an "8th grade-to-graduation rate."***

The CPI formula is used by *Education Week*, a leading national education publication, and its high school graduation rate calculations receive significant national media attention each year when released. However, due to the 9th grade retention bias its calculations are somewhat negatively skewed. In 2000-01 the CPI showed the state's high school graduation rate at 50.7 percent, while the 8th grade ECR without the fixed migration adjustment calculates a 54.5 percent rate. Despite their variances, both the CPI and ECR ranked S.C. 50th among all states. (We report the ECR with the "unfixed" migration adjustment here simply because this adjustment rate was used in previous research comparing all states in the U.S.)

In 2003-04 the CPI high school graduation rate for the state was 53.8 percent; the unfixed 8th grade ECR was 62.7 percent, ranking 45th of 48 states reporting. The 2003-04 ECR also accounted for international immigration. The 2003-04 national ranking by the ECR was a small improvement for the state; in the three academic years of 1999-00 through 2001-02, South Carolina was last among the 50 states.

Another source of credibility for the state ECR calculation is South Carolina Education Superintendent Jim Rex. Rex recently told the *Anderson Independent Mail* newspaper he estimated that about 60 percent of state high school students are earning a diploma or GED, a percentage in-line with the 8th grade ECR calculation.

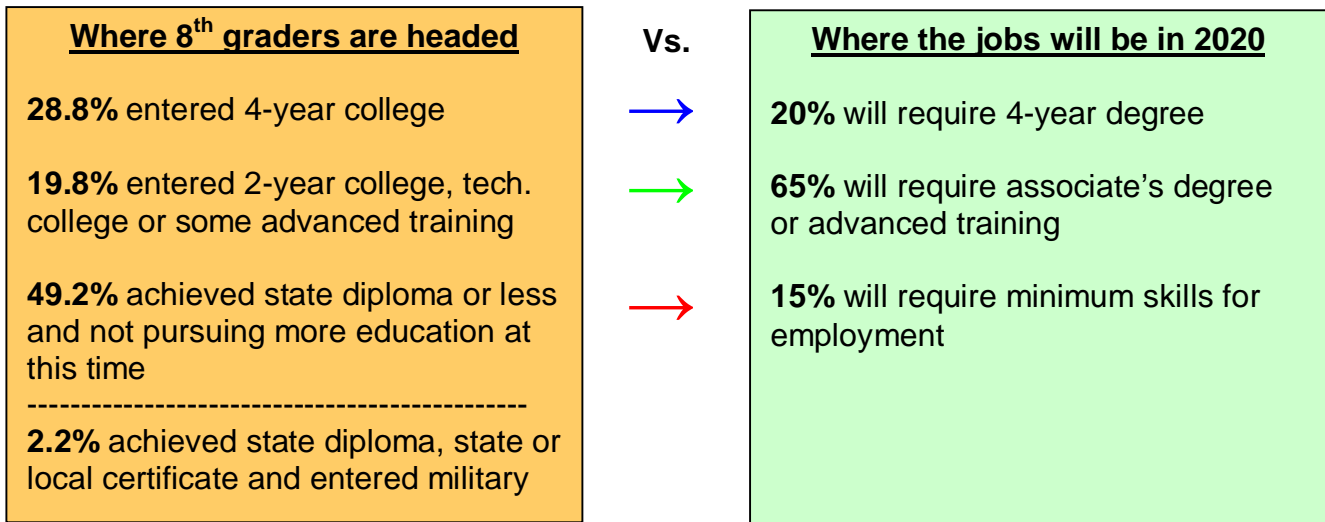
More improvement needed to fill future workforce gaps

According to Tables 1 and 2 all four counties had less dropouts or non-diploma recipients for the later cohorts, but the totals still show a need for improvement when comparing to U.S. averages. The U.S. overall 8th grade “unfixed” ECR was 72.2 percent in 2002. Using the best calculations feasible for the Santee-Lynches Region via the Grade 8 formula we arrive at a 63.1 percent graduation rate in the latest three-year trend measurement, 9.1 percent below the U.S. average. In this analysis, both the U.S. and region’s graduation rates didn’t account for international immigration. The U.S. rate is likely biased upward – as opposed to the region -- by a 2 percent private school buildup in the 9th grade since most of these students will graduate. However research shows this 2 percent is likely more than offset by the use of the “unfixed” migration adjustment on the national level, which falsely drives down the U.S. rate. Therefore, the comparison of the U.S. and region’s rates are fair and reasonable.

As Table 2 shows, with a 63.1 percent graduation rate the region had 3,202 dropouts or non-diploma recipients for the three cohorts (Classes of 03-04, 04-05 and 05-06). ***If the region’s graduation rate matched the U.S. average of 72.2 percent, the four counties would have had 787 less dropouts or non-diploma recipients for the three cohorts; those students instead would have received diplomas.***

As previously mentioned, given the ever-increasing “knowledge economy” in the U.S., local and regional economies need to get as many high school students as possible into higher education. The following chart shows where 8th graders in the Class of 2005-06 cohort in South Carolina eventually headed educationally in the first fall term after when they would have finished high school (Fall 2006), compared to expected educational requirements for jobs in the year 2020 when this group of students will have reached their early 30s. The 2.1 percent migration adjustment increase was applied to the state cohort to represent growth in the teenage population through the high school years. College and advanced training enrollment percentages were derived from the state Department of Education’s *College Freshman Report*.

Table 4 – The future workforce gap in S.C.



Employment projections for 2020 show 85 percent of non-military jobs in the U.S. will require at least an associate’s degree or advanced training, according to the Hudson Institute -- an internationally recognized research organization. If our state continues at current trends, we will

have significant workforce gaps: Out of every 100 non-military jobs we will have 50 people to fill 85 positions requiring at least some advanced training, and the state will have 50 people without any advanced training chasing 15 jobs that fit their profile. It's necessary to mention this analysis doesn't include a small percentage of high school graduates in the state who wait to enter post-secondary training more than one year after high school. Some young adults, for example, may enter a technical college several years after high school graduation for training. Even accounting for a small increase with these young adults, there is still a need for significant improvement in our state.

The necessity for additional highly skilled workers in South Carolina is made even more important given future population projections for the state. The Census Bureau projects from now through 2030 our state will have only about 2.3 percent growth in its working age population (18 to 64 year olds). Border states are projected to have much larger growth in the working age population – Georgia, 14.0 percent, and North Carolina, 17.9 percent. From an economic development perspective, with little growth in the future workforce our state must make every effort to improve school graduation rates to minimize the loss of potential workers due to a lack of skills. Provided these future economic and population trends hold true, high levels of high school dropouts and non-diploma recipients will only further erode economic development in our state, especially in rural areas.

Finding solutions to help fill the gap

To place the burden of filling the impending workforce gap in the state solely on schools is unrealistic and unfair. Certainly, schools can try to implement more creative ways to reach youth who are at-risk of dropping out, but more parental involvement and community partnership are also necessary.

A recently released study by Furman University, which has been billed as the largest, most comprehensive study of the state public school system, found broad consensus among educators, parents and business leaders on what they believe are the keys to improving K-12 education. The top three areas identified were the following:

- Making high quality early childhood education available in all schools
- Increasing after-school and summer programs for struggling students
- Developing incentives to recruit and retain effective teachers, and providing support to help them be successful

The study also emphasized the importance of improving parental involvement, especially among minority groups where parents might be much younger and lack an education themselves. Clarendon District 1 Superintendent Dr. Rose Wilder recently backed this sentiment in *The Item* newspaper.

“Parents need to meet (the district) halfway,” she said. “We give our all every day. I can't ask any more of my teachers. We need to stop making excuses for certain groups.”

In the area of community involvement, most believe more needs to be done. Ben Boozer, program director for Clemson University's Institute of Economic and Community Development, emphasized community partnership recently at a meeting among leaders in Clarendon County.

“The community needs to grab the bull by the horns and come to grips with education,” Boozer said. “The community needs to do more.”

Ralph McDonald, a member of the Greater Sumter Chamber of Commerce’s Education Committee, recently shared similar thoughts in a letter published in *The Item*.

“I place the blame on our community’s lack of desire to excel and to face up to the quality of the students many homes are sending to our schools,” McDonald said.

Given high relative percentages of single-parent families and poverty and a lack of education among many parents, more community buy-in is necessary according to McDonald.

“You cannot expect to send a child who is not properly nurtured to school and expect a teacher to make up for his lack of home life experiences,” McDonald said. “The old saying is, ‘It takes a community to raise a child.’ ... We need to start improving the root causes.”

The Santee-Lynches Workforce Investment Board is working to implement a mentoring program in the four counties to serve at-risk youth in the schools. The program is already in place in Clarendon County, and efforts are being made to implement the Sumter County program. In the future, the board hopes to put mentoring in place in Kershaw and Lee counties.

Rex, the state superintendent, recently told the *Anderson Independent Mail* about another example of community partnership. He explained he participated last fall in “Graduate Greenville,” a local initiative where educators, business people, parents and other volunteers visited the homes of students at two high schools who had not returned for the new school year. Students and their families were given information on resources and options available to help them overcome barriers to returning, and everyone was thrilled when about 60 students agreed to go back to school.

“South Carolina’s dropout prevention strategies are as diverse as the children who need them are, but all are based on the conviction that more of the same approaches will only give us more of the same results.”

JIM REX
State superintendent of education

“South Carolina’s dropout prevention strategies are as diverse as the children who need them are,” Rex said, “but all are based on the conviction that more of the same approaches will only give us more of the same results.”

“Educators recognize that keeping kids in school means finding new and innovative ways to meet the needs of every child, from pre-kindergarten through college.”