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RESEARCH REPORT

An Examination Of The Effects On Educational Outcomes From High School Consolidation: Lincoln County's Experience



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EXECUTIVE SUMMARY

The Legislative Auditor's January 2010 Department Review of the Department of Education found that the high school graduation rate was negatively related to the size of school districts and high schools. This gave rise to concerns that the effects of high schools becoming larger through consolidation have not been adequately measured in the state. Therefore, the Legislative Auditor, in conjunction with the West Virginia Department of Education, initiated a before-and-after study of the Lincoln County high school consolidation, which is the most recent consolidation in the state. This report evaluates eight educational outcomes before and after consolidation in order to develop an understanding for potential high school consolidations in the future. The highlights of this report are stated below.

Report Highlights:

An Examination of the Effects on Educational Outcomes From the Lincoln County High School Consolidation.

The Graduation Rate:

- A clear conclusion of the study is that Lincoln County's high school graduation rate has not suffered as a result of the consolidation. It may have remained the same or improved to some extent.

Academic Achievement:

- Academic proficiency levels as measured by 10th grade test scores for the consolidated school appear to have improved compared to the overall average of the four individual pre-consolidated high schools. Three of the four schools were struggling in 10th grade test scores. However, Lincoln County High School is still below state proficiency averages.

Average Class Size:

- Average class sizes in Lincoln County High School have increased compared to most of the pre-consolidated high schools, but not to the extent of being a concern.

School Bus Travel Time:

- Longer bus travel times were an immediate effect of the consolidation. The number of students exceeding the recommended guidelines for travel times increased significantly

in all grade levels of Lincoln County schools. The effects of school travel times on student achievement and experience has been insufficiently researched and could warrant further research in any future consolidation.

Attendance Rate:

- Lincoln County High School's attendance rate has been improving each year since the consolidation and has been generally higher than the four schools prior to consolidation.

Discipline:

- Lincoln County High School has had a generally lower percentage of suspensions than the pre-consolidated high schools on an individual basis. It is unclear if this can be attributed to consolidation, but it is a positive aspect.

Extracurricular Activity:

- Lincoln County High School offers all of the extracurricular activities available prior to consolidation and several activities previously unavailable. Though some activities may become more exclusive with the larger student population, many students will likely benefit from the nine new offerings. It is not clear, however, if a larger percentage of students in the consolidated school are active in extracurricular activities compared to the individual pre-consolidated high schools.

College Preparation:

- Lincoln County High School offers eight different dual-credit courses compared to four in the pre-consolidated high schools. The same amount of Advanced Placement courses are currently offered as prior to consolidation, though some courses have been replaced. Participation in college-entrance exams has also seen positive increases in most areas. These areas likely benefitted directly from the consolidation.

An Examination of the Effects on Educational Outcomes from the Lincoln County High School Consolidation

Introduction

In January 2010, the Legislative Auditor's Office issued a performance evaluation report on the West Virginia Department of Education. One of the findings of that report revealed that the high school graduation rate tended to be lower for larger school districts and high schools. The report raised concerns that the academic impacts from high schools becoming larger through consolidation have not been sufficiently evaluated in West Virginia. Although the wave of high school consolidations has subsided in West Virginia, there are a few counties in which it is a potential issue. Consequently, the Legislative Auditor initiated the current study to examine the academic effects of high school consolidation in West Virginia using Lincoln County's experience, which is the state's most recent high school consolidation. This report examines eight distinct areas that have been identified by researchers to be affected by consolidation. The eight areas examined for Lincoln County's high school consolidation are:

1. High school graduation rate
2. Academic achievement reflected by test scores
3. Average class size
4. School bus travel times
5. High school attendance rates
6. Discipline
7. Extracurricular activities
8. College preparation

It must be noted that this study is in collaboration with the West Virginia Department of Education (DOE). The staff of the Legislative Auditor's Office and the DOE worked jointly in gathering and confirming information, as well as in the analysis of the information. Some information had to be gathered by the Legislative Auditor directly from Lincoln County. Furthermore, it should be pointed out that the analysis in some areas was hampered by data limitations. The recently implemented WESTEST-2 made it difficult to compare academic achievement of previous years under WESTEST. In addition, the four high schools prior

The Legislative Auditor initiated the current study to examine the academic effects of high school consolidation in West Virginia using Lincoln County's experience, which is the state's most recent high school consolidation.

It must be noted that this study is in collaboration with the West Virginia Department of Education.

to the consolidation included 7th and 8th grade students. In some cases it was not possible to separate the 7th and 8th grade data from the high school data. Therefore, in some areas of the analysis only a reasonable estimation could be made instead of a definitive conclusion.

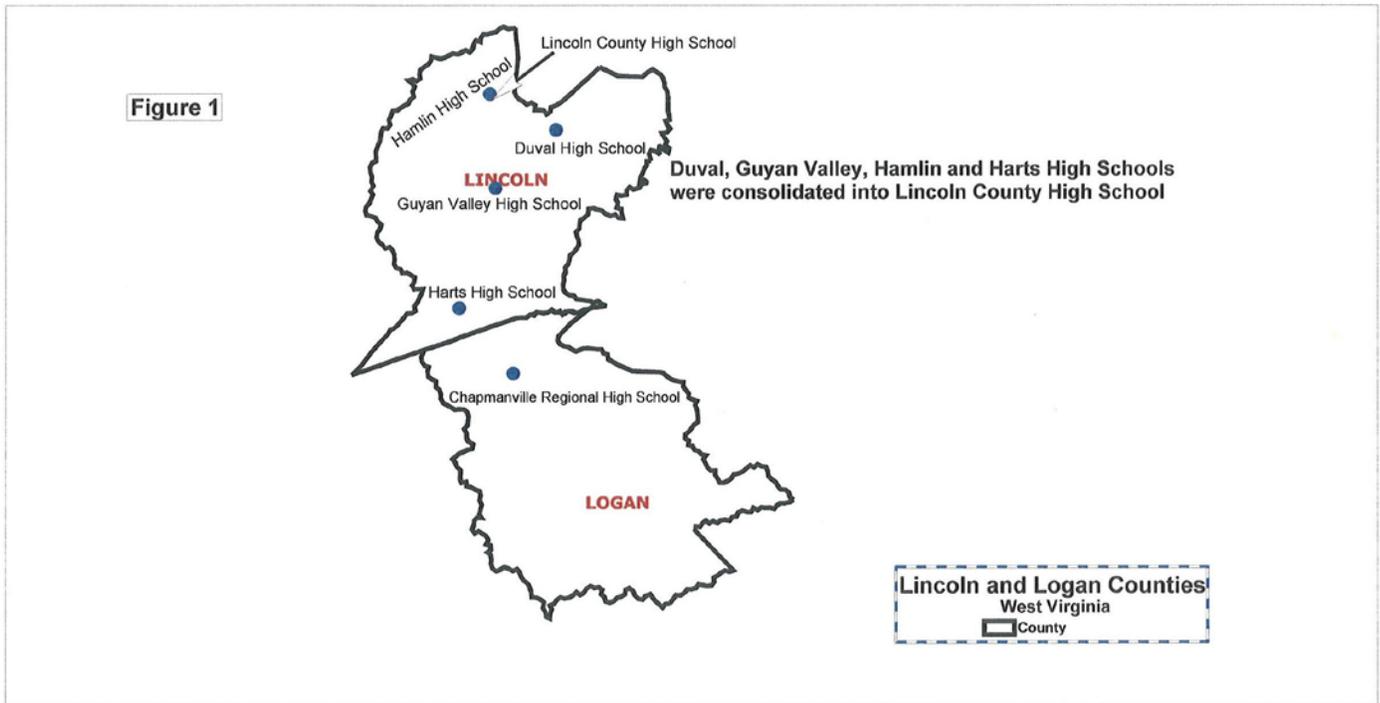
Background of Lincoln County's High School Consolidation

Beginning in academic year (AY) 2006-07, four Lincoln County high schools were consolidated to form Lincoln County High School, which is now the only high school in the county. The four high schools that were consolidated are Duval, Guyan Valley, Harts and Hamlin. These high schools were either closed or repurposed in the consolidation. Proposals for this consolidation began in the 1990's. The reasons cited for the consolidation were the disrepair of some schools and poor facility layouts.

Prior to the consolidation, the four high schools each served students from grades 7-12. Following the consolidation, Lincoln County High School was formed to serve only 9th through 12th grade students. The consolidation led to the repurposing of several school buildings, as some became middle schools and restructured elementary schools. Therefore students of all grade levels were affected by the Lincoln County high school consolidation. The restructuring allowed for the creation of middle schools in the area, and some elementary schools expanded to serve students from pre-kindergarten through 8th grade.

The proposal to consolidate the four high schools recognized that students in the Harts area would be faced with relatively long bus travel times, see Figure 1. Consequently, parents of Harts High School students were given the option to have their children attend either Lincoln County High School or Chapmanville Regional High School in Logan County, which is closer to the Harts area than is the consolidated high school. According to the Logan County School Superintendent, there were 145 Harts area students attending Chapmanville Regional High School during the 2010-11 school year. This number represents the large majority of Harts area high school students. The number of Harts High School students in the last year prior to the consolidation was 194. However, Harts High School enrollment had been declining for several years up to the consolidation. The Lincoln County School Superintendent was not able to readily provide the number of Harts area students attending Lincoln County High School.

Prior to the consolidation, the four high schools each served students from grades 7-12. Following the consolidation, Lincoln County High School was formed to serve only 9th through 12th grade students.



Analysis of the Lincoln County High School Consolidation

Summary

The following analysis provides a before-and-after examination of Lincoln County’s high school consolidation project that was effective for the 2006-07 academic year. The objective is to determine if the larger high school has resulted in negative academic attributes compared to the pre-consolidated smaller high schools. Lincoln County was chosen because it is the most recent high school consolidation, and data limitations are less of a problem compared to previous consolidations. The pre and post-consolidation comparison is focused on eight academic areas. Each of these areas is analyzed below.

Lincoln County was chosen because it is the most recent high school consolidation, and data limitations are less of a problem compared to previous consolidations.

1. Graduation Rate

A principal finding of the Legislative Auditor’s January 2010 report is the negative association of West Virginia’s high school graduation rate with the size of its school districts and high schools. This finding is consistent with educational research that revealed a negative relationship between the size of high schools and various educational outcomes. In 1997, Kathleen Cotton, of the Northwest Regional Educational

Laboratory, surveyed 103 research studies spanning a time period from 1964 through 1996. The findings from Cotton's literature survey largely supported small schools over large schools in most categories, including the high school graduation rate.¹

How a state's high school graduation rate should be calculated has been debated for the past several years. The No Child Left Behind Act (NCLB) of 2001 required states to use the high school graduation rate as an accountability indicator for high schools. However, the NCLB Act originally did not specify how the calculation should be made. Consequently, states used different formulas to calculate their respective graduation rate. West Virginia used what is known as the Completer Formula. This formula has the tendency to overstate the graduation rate primarily because the dropout rate which is used in the formula tends to be understated. Beginning with the 2010-11 school year, states are required by NCLB to use the 4-Year Cohort Method to calculate the high school graduation rate. The 4-Year Cohort Method is a longitudinal method that tracks 9th grade students and identifies those who graduate in four years. This method is considered more reflective of the true graduation rate.

For this study, the problem that exists is how to determine if the high school graduation rate in Lincoln County has been negatively affected by the development of the larger consolidated school compared to the smaller pre-consolidated schools. Table 1 shows three methods of calculating Lincoln County's graduation rate for the school years 2003 through 2010. The only graduation rate calculation that is available for the pre and post-consolidated years is the Completer Formula. The DOE is unable to use the 4-Year Cohort method for the pre-consolidated years because of data limitations. Another method of calculating the graduation rate is the Cumulative Promotion Index (CPI) formula developed by the Research Center of the Editorial Projects in Education. This method estimates the graduation rate based on the cumulative product of the promotion rates from one grade to the next, with graduation being the last promotion for 12th graders. For each year there are four grade-promotion ratios that are combined to represent that year's graduation rate. The CPI formula could not be used for the post-consolidated period for two reasons. One is that the CPI method relies on data from two separate years, the initial year of enrollment and the following year for students who were promoted to the next grade. Many students who were promoted in the last year of the pre-consolidated period (2005-06) enrolled in Chapmanville High School in Logan County. Consequently, Lincoln County High School's

West Virginia used what is known as the Completer Formula. This formula has the tendency to overstate the graduation rate primarily because the dropout rate which is used in the formula tends to be understated.

Table 1 shows three methods of calculating Lincoln County's graduation rate for the school years 2003 through 2010.

¹ Kathleen Cotton, *School Size, School Climate, and Student Performance, School Improvement Research Series, Northwest Regional Educational Laboratory, 1997, Portland, OR.*

enrollment is lower than the aggregate number of students who attended the four high schools before the consolidation. The second reason the CPI cannot be used for the post consolidated years is a reporting anomaly of 9th grade enrollment figures that the DOE was unable to resolve for this report.

As Table 1 shows, the Completer Formula overstates the 4-Year Cohort Method by 7 to 10 percentage points in two of the three years that both can be used. For the two years that the Completer Formula and the CPI Formula can be used the Completer Formula overstates the CPI Formula by 16 to 23 percentage points. It is possible that the CPI Method understates the actual graduation rate.

As Table 1 shows, the Completer Formula overstates the 4-Year Cohort Method by 7 to 10 percentage points in two of the three years that both can be used.

School Year	Completer Formula	Cumulative Promotion Index	4-Year Cohort Method
2003-04	87.8%	64.8%	n/a
2004-05	82.8%	66.4%	n/a
2005-06	83.9%	n/a	n/a
2006-07	79.3%	n/a	n/a
2007-08	79.1%	n/a	68.8%
2008-09	75.6%	n/a	80.4%
2009-10	84.4%	n/a	77.4%

Source: The statistics for the Completer Formula and 4-Year Cohort Method is from the DOE. The Cumulative Promotion Index was calculated by the Legislative Auditor using DOE data.

Nevertheless, a review of the promotion rates of pre-consolidation students suggests that it is highly unlikely that the graduation rate as a whole for Lincoln County was over 80 percent as the Completer Formula indicates for the pre-consolidated period. Table 2 shows the cumulative promotion rates of the four high schools that are used in the CPI calculations. The table shows the percentage of students of the previous grade that were enrolled in the next grade. The drop in enrollment in the next grade can be due to students being retained in a grade, transferring to another school or dropping out. In cases in which the ratio is greater than one, students may have transferred in from another school or they may have been promoted beyond one grade. As should be expected, the ratios are generally lower for the 9th and 10th grades and then steadily rise for the 11th and 12th grades. More students repeat 9th grade than any other grade, according to a Southern Regional Education Board report.² Most

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² Southern Regional Education Board, *A Critical Mission: Making Adolescent Reading an Immediate Priority in SREB States*, May 2009, pp. 1-2.

students that reach the 12th grade are likely to graduate, which is revealed in ratios well in excess of 90 percent.

Table 2
Cumulative Promotion Index Calculations
Lincoln County Pre-Consolidated High Schools

High School	9 th Grade to 10 th Grade	10 th Grade to 11 th Grade	11 th Grade to 12 th Grade	12 th Grade to Graduation	CPI Graduation Rate Calculation
2002-03 School Year					
Duval	0.697	0.688	0.857	1.026	42.1%
Guyan Valley	0.876	0.840	0.877	1.000	64.6%
Hamlin	0.754	1.000	0.865	0.855	55.7%
Harts	0.925	0.887	0.905	0.979	72.6%
2003-04 School Year					
Duval	0.922	0.887	1.114	0.870	79.3%
Guyan Valley	0.818	0.802	0.848	1.000	55.6%
Hamlin	0.718	0.942	0.896	0.956	57.9%
Harts	0.912	0.959	0.936	0.947	77.6%
2004-05 School Year					
Duval	1.039	0.747	0.982	0.959	73.1%
Guyan Valley	0.824	0.798	0.906	0.910	54.2%
Hamlin	0.811	1.078	0.980	0.860	73.7%
Harts	0.815	0.904	0.915	1.023	68.9%

Source: Legislative Auditor's analysis of DOE enrollment data.

The cumulative promotion method of estimating the graduation rate suggests that during the last few pre-consolidated years the high school graduation rate was at best in the 70 percent range for Lincoln County overall. The estimates from the 4-Year Cohort method indicate Lincoln County's high school graduation rate is between 75 and 80 percent since the consolidation, which is likely an improvement over some of the pre-consolidated schools and the county overall. **Although it cannot be stated precisely that Lincoln County's high school graduation rate has improved since the consolidation, it can be stated with reasonable assurance that it has not worsened.**

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2. Academic Achievement

To assess academic achievement, the Legislative Auditor analyzed proficiency levels for 10th graders on the WESTEST for Lincoln County pre and post-consolidation. The Legislative Auditor isolated the 10th grade proficiency levels for the pre-consolidated high schools and the state due to the fact that 7th and 8th graders were also tested in those

schools. Proficiency is the percentage of students who scored at or above Mastery level in each subject. The Legislative Auditor focused research on the math and reading scores.

Table 3 shows that the proficiency levels varied among the four pre-consolidated high schools. With the exception of Hamlin High School, Lincoln County high schools were consistently below state averages in the three years preceding the consolidation. Harts High School was significantly below state average math proficiency percentages in each year and in reading for the last two years before consolidation. Guyan Valley High School was also significantly below the statewide reading proficiency percentages in the last three years before consolidation. In AY 2005-06, the average 10th grade proficiency percentages of the four high schools were 48 percent in math and 56 percent in reading. The year following the consolidation saw a slight increase in proficiency levels for Lincoln County High School compared to the average of the four schools. However, there was a sizable increase in percentages in AY 2007-08, bringing Lincoln County High School’s proficiency levels significantly above the pre-consolidated averages, and closer to the state averages.

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High School	Subject	Pre-Consolidated High Schools			Lincoln County High School			
		2003-04	2004-05	2005-06	2006-07	2007-08		
Duval	Math	64%	63%	47%	51%	61%		
	Reading	73%	73%	59%				
Guyan Valley	Math	60%	58%	41%				
	Reading	62%	62%	42%				
Hamlin	Math	68%	63%	69%				
	Reading	91%	79%	72%				
Harts	Math	41%	32%	34%			58%	73%
	Reading	75%	34%	52%				
State	Math	64%	68%	69%	68%	68%		
	Reading	77%	75%	76%	75%	74%		

*Source: WV Department of Education Accountability Data, WV Achieves Report Card 2008-2009
10th grade data only

WESTEST-2 Data

In AY 2008-09 the DOE began administering the WESTEST-2 to measure student proficiency. The content and scoring methods were more rigorous than that of the WESTEST. Also the WESTEST-2 was administered to 9th, 10th and 11th graders. Thus, further comparison to the pre-consolidated high schools is not reasonable.

Lincoln County High School is significantly below the state averages for reading and math proficiency since the incorporation of WESTEST-2. The state as a whole has dropped substantially since then as well. This is likely due to the increased difficulty of the test. The cut scores were raised for the 2009-10 WESTEST-2 which explains the lower proficiency percentages. However, the DOE noted that when the new cut scores used in 2009-10 are applied to the 2008-09 tests, Lincoln County High School's 10th grade scores were an improvement in 2009-10 by 9 percentage points in math and 11 percentage points in reading.

Overall, before the consolidation, three of the four high schools in Lincoln County were generally below statewide proficiency averages in math and reading, with Harts and Guyan Valley High Schools often significantly below. Since the consolidation it is clear that the larger high school has fared better on average and against a few of the individual high schools of the pre-consolidated period. Therefore, there does not appear to be any negative aspects judging from the tests scores due to the high school consolidation.

Since the consolidation it is clear that the larger high school has fared better on average and against a few of the individual high schools of the pre-consolidated period.

Table 4
Lincoln County High School WESTEST-2 Proficiency
10th Grade Proficiency

Subject	2008-09	2008-09 State Proficiency	2009-10*	State Proficiency*
Math	40.5%	54.5%	29.1%	38.9%
Reading	28.3%	47.5%	34.3%	43.0%

Source: WV Department of Education, Improvement Report, for 2008-10.

**The cut scores were raised for 2009-10 resulting in lower proficiency percentages.*

3. Average Class Size

Although researchers have generally found that class size tends to increase as school size increases, it is less clear that larger class sizes are negatively related to academic achievement. In studies reviewed by William Fowler and Herbert Walberg, the results were mixed. One study concluded that either more pupils per teacher increases achievement or that no meaningful relationship exists between class size and achievement. Another study found that increases in average class size may not be

Although researchers have generally found that class size tends to increase as school size increases, it is less clear that larger class sizes are negatively related to academic achievement.

detrimental to academic achievement until it reaches a certain level. This study found that class size did not have negative effects on achievement until it exceeded 34 students for elementary classes, 32 for junior high, and 26 for high schools.³

Table 5 shows a slight increase in class size in the consolidated school compared to the pre-consolidated schools on average. It must be noted that class size statistics for the pre-consolidated schools include 7th and 8th grade classes. There is insufficient evidence to determine how the non-high school grades affect the overall average, if there is any affect at all.

The DOE has issued guidelines that encourage school districts to have bus travel time not exceed 30 minutes for elementary students, 45 minutes for middle school students and 60 minutes for high school students.

Table 5 Average Class Size Pre and Post Consolidation					
High School	Pre-Consolidation				Post Consolidation
	Duval 2005-06	Guyan Valley 2005-06	Hamlin 2005-06	Harts 2005-06	Lincoln County High School 2008-09
School Avg.*	17.0	14.2	19.8	17.4	20.6

Source: West Virginia Department of Education
**The school average class size for Duval, Guyan, Hamlin and Harts includes 7th and 8th grade students.*

4. School Bus Travel Time

A definitive impact that is attributed to Lincoln County’s high school consolidation is an increase in bus travel times for Lincoln County students. The DOE has issued guidelines that encourage school districts to have bus travel time not exceed 30 minutes for elementary students, 45 minutes for middle school students and 60 minutes for high school students. Table 6 shows that the number of students exceeding those guidelines increased significantly for all grade levels in Lincoln County following the consolidation, but most of the impact has been on high school and middle school students. The actual lengths of time over the limit range from a few minutes to almost an hour depending on grade level. Of the 46 bus routes reported by the Lincoln County School District, 30 routes currently exceed maximum travel times when accounting for all grade levels. For high school students, 16 bus routes in the morning and 11 in the evening exceed maximum travel times.

Table 6 shows that the number of students exceeding those guidelines increased significantly for all grade levels in Lincoln County following the consolidation, but most of the impact has been on high school and middle school students.

³ William J. Fowler, Jr. and Herbert J. Walberg, *School Size, Characteristics, and Outcomes*, Educational Evaluation and Policy Analysis, Summer, 1991, Vol. 13, No. 2, p. 190.

Harts area students would have experienced the largest increase in bus travel times due to the consolidation. However, these students were incorporated into the comprehensive educational facilities plan for Chapmanville high school in Logan County. This plan led to the creation of the state's first regional high school, meaning the school serves students from more than one county. Lincoln County's initial projections of students exceeding travel guidelines were much higher than what is currently reported. Estimates that included Harts area students were as high as 340 students or 259 without the Harts students. The current number of students exceeding bus travel guidelines, including Harts students attending Chapmanville, is 116.

It should be noted that the high school figures in Table 6 include 22 Harts area students who are attending Chapmanville. In Lincoln County's proposal to consolidate the four high schools, the projected travel times for some Harts area students were up to 1 hour and 45 minutes each way to Lincoln County High School. It was projected that if Harts area students attended Chapmanville High School, no students would exceed recommended guidelines and the maximum travel time to Chapmanville High would be approximately 50 minutes. However, 22 of the 145 Harts area students currently attending Chapmanville exceed the guidelines, with the maximum travel time reported being 1 hour and 16 minutes.

Table 6
Increase in Students Exceeding Maximum Bus Travel Guidelines A.M. Runs

Academic Year	High School	Middle School	Elementary School	Total
AY 2004-05	23	66	247	336
AY 2009-10	116*	115	271	480
Percent Increase	404%	74%	10%	43%

Source: Lincoln County School Superintendent Office

**Includes 22 Harts Area Students Attending Chapmanville Regional High School*

The Effects of Excessive Bus Travel Requires Further Research

A 2001 Ohio University study cited school bus travel as not adequately accounted for in discussions of school consolidation and education in general. The study focused on rural and suburban school populations in five states: Arkansas, Georgia, New Mexico, Pennsylvania and Washington. The study found there was little research on the subject of the effects of school bus transportation in regards to the effects on students' performance or well-being. However, the focus of the study was the characteristics, similarities and differences between rural and suburban school transportation across the five states.

A 2001 Ohio University study cited school bus travel as not adequately accounted for in discussions of school consolidation and education in general.

The most prominent statement of the study's recommendations calls for more specific research on the topic stating: *This study suggests that school busing is a fruitful domain to examine from a rural perspective. Very little statistically representative work has been done at either state or national levels.* The study also found that rural schools were less likely to staff a full-time Transportation Director dedicated to bus routes.⁴

Given the immediate effect consolidation has on school bus travel times, a project-specific study on the topic should be considered in discussions of future consolidations. One alternative suggested in the study was to attempt to consolidate schools by combining grade span levels as opposed to increasing the attendance area. The feasibility and benefits of this option could also be of consideration in any future consolidation proposals in the state.

Given the immediate effect consolidation has on school bus travel times, a project-specific study on the topic should be considered in discussions of future consolidations.

5. High School Attendance Rate

Attendance rates have improved at Lincoln County High School compared to the last year before consolidation. From 2007 through 2010, Lincoln County High School has maintained a higher attendance rate compared to three of the four high schools. The average attendance rate of the four pre-consolidated high schools in 2005-06 was 90.6 percent. This was well below the state attendance rate of 97.3 percent that same year. For the 2009-10 school year, the attendance rate of Lincoln County High School was 96 percent, nearly matching the state average of 96.6 percent.

From 2007 through 2010, Lincoln County High School has maintained a higher attendance rate compared to three of the four high schools.

It should be noted that state average attendance rates include all grade levels, kindergarten through 12th grade, and the attendance rates in 2005-06 includes 7th and 8th grade students. There is no way to determine if the presence of 7th and 8th grade attendance misrepresents the attendance of the pre-consolidated high school grades. The high school students represented over 60 percent of the schools' population, therefore, the 2005-06 attendance figures are likely representative for the high school students. Table 7 below shows that it does not appear that the larger school has negatively affected attendance.

⁴ Craig B. Howley, Aimee A. Howley and Steven Shamblen, *Riding the School Bus: A Comparison of the Rural and Suburban Experience in Five States*, *Journal of Research in Rural Education*, Spring 2001, Vol. 17, No. 1, pp. 56-57, 59.

Table 7
Lincoln County Attendance Rates

High School	Pre-Consolidated High Schools*	Lincoln County High School		
	2005-06 School Year	2007-08	2008-09	2009-10
Duval	91.6%	92.6%	94.8%	96.0%
Guyan Valley	89.9%			
Hamlin	93.0%			
Harts	88.0%			
State**	97.3%	96.4%	96.6%	96.6%

Source: WV Department of Education and WV Achieves Report Cards for the years 2005-2010.
**Includes 7th and 8th grade students.*
***Includes all school grades.*

6. Discipline

Another concern of high school consolidation is how students' behavior will be affected by attending a larger school. Studies indicate that disciplinary problems are higher in high schools with greater enrollment. To assess the effect of the high school consolidation on discipline the Legislative Auditor examined the suspension rate of students pre and post-consolidation. Table 8 illustrates the student suspension statistics in Lincoln County before and after the consolidation. The data are limited by the fact that 7th and 8th graders were included in the pre-consolidated high schools. However, if an increase in suspensions were noted after the consolidation, perhaps a conclusion could be made. As it stands, there was not a notable increase in suspension rates at Lincoln County High School compared to the pre-consolidated high schools. In fact, there was a decrease in the percentage of students suspended than in most of the individual high schools pre-consolidation. It could be argued that the younger students were more likely to cause disruptions and receive suspensions or perhaps there are discrepancies between disciplinary policies between certain schools. However, no definitive relationship between student discipline and high school consolidation can be attributed in this case due to the data limitations.

As it stands, there was not a notable increase in suspension rates at Lincoln County High School compared to the pre-consolidated high schools.

**Table 8
Pre and Post Consolidation Suspensions**

Pre-Consolidated High Schools*			Lincoln County High School 2009-2010	
2005-2006	Students Receiving In-School Suspension	Students Receiving Out-of-School Suspension	Students Receiving Out-of-School Suspension	Students Receiving In-School Suspension
Duval	11%	17%	14%	1%
Guyan Valley	29%	26%		
Hamlin	14%	21%		
Harts	1%	15%		

*Source: West Virginia Achieves Report Cards and WV Department of Education.
Includes 7th and 8th grade students.

7. Extracurricular Activity

Of the 103 research documents reviewed by Kathleen Cotton, 17 studied the effects of school size and extracurricular participation. These studies concurred that students in small schools were involved in a greater variety of activities and received greater satisfaction than students in large schools, as measured by the level of involvement. One study identified that large schools offered more varied activities, but the average student in the large school did not take advantage of the opportunities compared to students in small schools. Involvement in extracurricular activity relates to other desirable outcomes, such as positive attitudes and social behavior, which makes extracurricular activity important.⁵

The Lincoln County high school consolidation has led to a wider variety of extracurricular activities for students. Table 9 shows that in addition to the activities that most of the four pre-consolidated high schools offered, several sports and clubs that were not available in any of the high schools prior to consolidation are now offered at Lincoln County High School. However, data are not available to determine if the participation rate is greater at the larger school than at the four individual high schools. Although Lincoln County High School has more varied extracurricular activities that may translate to a higher participation rate than pre-consolidation, data are not available to confirm this.

The Lincoln County high school consolidation has led to a wider variety of extracurricular activities for students.

⁵ Cotton, *School Size, School Climate, and Student Performance*, p. 7.

Table 9 Extracurricular Activities Pre and Post Consolidation	
Extracurricular Activities Offered Prior to Consolidation*	Extracurricular Activities Available At The Consolidated Lincoln County High School
Football Girls Basketball Boys Basketball Softball Baseball Cheerleading JROTC Speech/Debate* Band Fellowship of Christian Athletes* Theater/Drama	Football Girls Basketball Boys Basketball Softball Baseball Cheerleading JROTC Speech/Debate Band Fellowship of Christian Athletes Theater/Drama Boys Soccer Girls Soccer Golf Wrestling Tennis Track Future Farmers of America Reading/Literacy Council Future Educators Association
	<div style="border: 1px solid black; padding: 5px; display: inline-block;"> Additional Extracurricular Activities Offered Since Consolidation </div>
<p><i>Source: Lincoln County School Superintendent's Office</i></p> <p><i>*Speech/Debate was offered only at Duval High School, and Fellowship of Christian Athletes was offered only at Duval and Hamlin High Schools.</i></p>	

8. College Preparation

Dual Credit and AP Courses

An important goal of the county's consolidation proposal was to offer Lincoln County high school students with more dual credit and advance placement (AP) courses. Table 10 shows that dual credit course offerings have expanded in the consolidated high school. Dual credit courses immediately qualify for college credits upon passing the course. Dual credit is defined in West Virginia State Code as: "a credit-bearing college-level course offered in a high school by a state institution of higher education for high school students in which the students are concurrently enrolled and receiving credit at the secondary level." Thus, students receive both high school and college credits concurrently in dual credit courses. The DOE was not able to provide complete data indicating the total number of students enrolled in dual credit courses because some of the high schools appear to have miscoded their dual credit courses.

Dual credit courses immediately qualify for college credits upon passing the course.

Table 10	
Dual Credit Course Offerings Pre and Post-Consolidation	
Pre-Consolidation Dual Credit Course Offerings	Post-Consolidation Dual Credit Course Offerings
English 101/102 Psychology Speech Computer Courses	English 101/102 Psychology Speech Computer Courses { <ul style="list-style-type: none"> Civics Chemistry Physics Careers in Education }
Additional Dual Credit Courses Since Consolidation	
<i>Source: Lincoln County School Superintendent's Office</i>	

According to State Code, AP courses are those programs offering classes that are advanced in terms of content and performance expectations of those normally available for the age/grade level of the student and providing credit toward graduation and possible college credit. Therefore, AP courses do not automatically qualify for college credit but can be eligible after being petitioned for credit at the higher education institution. Table 11 shows that there has been a trade off of AP courses offered, but not an expansion. Some courses that had not been offered prior to consolidation (Economics, European History and Psychology) are now available; but other courses (Studio Art, U.S. History and World History) that were available prior to consolidation have not been offered by the consolidated high school.

According to State Code, AP courses are those programs offering classes that are advanced in terms of content and performance expectations of those normally available for the age/grade level of the student and providing credit toward graduation and possible college credit.

Table 11
Advance Placement Course Offerings Pre and Post-Consolidation

Pre-Consolidation Advanced Placement Course Offerings	Post-Consolidation Advanced Placement Course Offerings
Biology Biology Lab Calculus AB English Language & Comp I English Language & Comp II Studio Art U.S. History World History	Biology Biology Lab Calculus AB Economics English Language & Comp I English Language & Comp II European History Psychology

Source: West Virginia Department of Education

Also, the percentage of Lincoln County high school students taking AP courses has steadily dropped compared to the individual pre-consolidated schools and the county average (see Table 12). At the pre-consolidated county level, the percentage of students taking AP courses was 17.6% in 2004-05 and 11.7% in 2005-06. Since the consolidation, the percentage of students taking AP courses has dropped each year, 9.8% in 2006-07, 8.3% in 2007-08, 6.3% in 2008-09 and 4.7% in 2009-10.

Also, the percentage of Lincoln County high school students taking AP courses has steadily dropped compared to the individual pre-consolidated schools and the county average .

Table 12
Percentage of High School Students in AP Courses

Pre-Consolidation 2005-06				Post-Consolidation 2009-10
Duval	Guyan Valley	Hamlin	Harts	Lincoln County High School
8.2%	13.5%	0.0%	28.3%	4.7%

Source: Legislative Auditor's analysis of Department of Education data.

College Entrance Exams

The DOE records data on four college entrance exams in state schools. Taking these exams is an elective choice for students. A qualifying score on the American College Test (ACT) and the Scholastic Aptitude Test (SAT) are prerequisites for many higher education institutions. The Preliminary SAT (PSAT) is a trial run for the SAT. Advanced Placement

Tests (APT) are college level exams that can possibly count toward college credit. Therefore participation in these exams is a good indicator of a school population’s interest in attending college. Table 13 below lists the participation rate for these tests of Lincoln County high school students, pre and post-consolidation.

Table 13						
Percentage of Students Taking College-Entrance Exams						
College Testing	Pre-Consolidated High Schools*			Lincoln County High School*		
	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09
ACT	47.8% (65%)	49.5% (65%)	61.2% (64%)	59.1% (66%)	55.2% (59.8%)	53.8% (60.3%)
SAT	0.5% (19.7%)	1.1% (16.4%)	0% (17.1%)	4.5% (16.8%)	5.2% (19.5%)	9.1% (15.2%)
PSAT 10th Grade	0.4% (9.4%)	1.1% (9.1%)	0% (10.1%)	0% (9%)	3.7% (9%)	44.3% (35.8%)
PSAT 11th Grade	3.2% (21%)	3.4% (20.8%)	2.9% (19.9%)	2.9% (19.5%)	5.2% (19.5%)	9.4% (18.2%)
APT 10th Grade	0% (0.3%)	1.1% (0.4%)	4% (0.1%)	0.8% (1.4%)	0% (1%)	0% (2.3%)
APT 11th Grade	6.8% (5.8%)	17.8% (9.5%)	11.5% (1.6%)	12.8% (11%)	9.4% (7.5%)	11.6% (17%)
APT 12th Grade	5.9% (8.8%)	19.6% (12.8%)	28.8% (21.7%)	19.2% (15.9%)	19.8% (9.1%)	7.2% (20%)

Source: WV Department of Education, West Virginia Achieves Report Cards from the years 2003-2009
**State percentages in parentheses*

Lincoln County has seen a significant increase in participation in some of these tests since the consolidation. The most significant being low participation of 10th graders taking the PSAT in 2005-2006 compared to 44.3% in 2008-2009. Emphasizing the value of college preparation at the earliest stages is a very positive step for Lincoln County students. Also going from zero percent, SAT participation rose to 9.1 percent. The ACT participation rate for Lincoln County High School has been consistent with pre-consolidated levels. This is an important exam, as it is a prerequisite for in-state college bound students in West Virginia.

Lincoln County has seen a significant increase in participation in some of these tests since the consolidation.

Conclusion

Due to data limitations in the research, the Legislative Auditor was unable to identify definitive relationships between high school consolidation and some of the areas analyzed. However, bus travel times having increased for all grade levels of students in Lincoln County is directly a result of the consolidation. The effects of excessive bus travel times have not been thoroughly examined in educational research and are an issue that should be considered in any future consolidation proposals in the state.

Students benefited from a wider selection of dual-credit, but not in AP course offerings. There also appears to be a greater emphasis on the participation of college entrance exams since the consolidation. Students also benefited from a wider selection of extracurricular activities offered after the consolidation, but it cannot be determined if this translates into higher participation levels compared to pre-consolidation.

Attendance has improved since the consolidation and discipline statistics appeared to not have been significantly affected. There has been no obvious aberration in graduation rates since the consolidation. It is likely that the consolidation at worst did not have any impact on the graduation rate, and at best may have improved it to some extent compared to some of the individual pre-consolidated schools.

Although national studies have found negative links between larger schools and educational outcomes, there is no strong evidence that these have occurred at least from the Lincoln County experience. It is possible that Lincoln County's consolidation in particular has not resulted in a high school that has exceeded the size threshold in which these detrimental effects manifest. Lincoln County went from four high schools averaging between 200 to 350 students, to one high school with enrollment between 800 to 900 students. Data analyzed for this project cannot definitively say that academic performance suffered due to students attending a larger high school. The Legislative Auditor concludes that the high school consolidation in Lincoln County has had both positive and negative effects on educational outcomes, and in some cases no change has occurred. No conclusion can be made that determines whether the negative impacts outweigh the positive aspects.

Although national studies have found negative links between larger schools and educational outcomes, there is no strong evidence that these have occurred at least from the Lincoln County experience. It is possible that Lincoln County's consolidation in particular has not resulted in a high school that has exceeded the size threshold in which these detrimental effects manifest.

The Legislative Auditor concludes that the high school consolidation in Lincoln County has had both positive and negative effects on educational outcomes, and in some cases no change has occurred. No conclusion can be made that determines whether the negative impacts outweigh the positive aspects.



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