

RECOMMENDATIONS TO STRENGTHEN NORTH CAROLINA'S SCHOOL FUNDING SYSTEM

John Augenblick and Bob Palaich
Augenblick, Palaich and Associates

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APA: Background

- Augenblick, Palaich and Associates (APA) was founded in 1983.
 - John and Bob have both worked previously at the Education Commission of the States (ECS).
- One aspect of our work is evaluating state finance systems.
 - We evaluate education programs (e.g., the Denver Preschool Program).
 - We assist school districts in developing new approaches to teacher compensation (e.g., Austin, TX).
 - We design models of the flow of funds for early childhood education (e.g., Minnesota).
- APA has designed school finance systems in Kentucky (1990), Louisiana (1994), Maryland (2002), Mississippi (2004), New Hampshire (1985), New Jersey (2009), Ohio (1998), and Pennsylvania (2006).



APA Team

- In addition to APA staff (Dr. John Augenblick, Dr. Robert Palaich, Justin Silverstein, Kathryn Rooney, Amanda Brown, and Dr. Andrew Brodsky), the following people provided assistance to us:
 - Dr. William Hartman (Pennsylvania State University)
 - Dr. Mark Fermanich (University of Colorado)
 - Public Consulting Group (Jim Flanagan and Fred Schmitt)
 - Review Panel
 - Dr. Jo Lynne DeMary (Director of the Center for School Improvement at Virginia Commonwealth University)
 - Charlotte Placide (former superintendent of the East Baton Rouge (LA) school district)
 - John Taylor (Senior Vice-President of the Delaware State Chamber of Commerce)



What APA Was Asked to Do

- APA responded to a Request for Proposals from the General Assembly and was selected based on a competitive bidding process.
- The RFP asked the contractor to, among other things:
 - “conduct a comprehensive review of North Carolina’s current system for providing State support to LEAs for K-12 education”
 - “evaluate North Carolina’s funding structure to determine whether it ...encourages efficient use of resources ... and minimizes complexity so that funding is provided in a transparent, understandable manner”
 - “describe the strengths and weaknesses of the current funding system as well as alternative funding structures”



How We Went About the Work

- Conducted an initial set of interviews with a variety of interested and knowledgeable people, including state policymakers and leaders of school district organizations and public policy groups;
- Reviewed the literature on the relationships that exist between education resources and student performance;
- Reviewed previously written work that has examined North Carolina's school finance system;
- Analyzed the equity of the revenues obtained by school districts in 2003-04 and in 2008-09;
- Analyzed individual allotments based on the revenues they provided to school districts in 2003-04 and in 2008-09;



How We Went About the Work

- Analyzed the relationships between education resources and student performance in North Carolina in 2003-04 and in 2008-09;
- Conducted on-site interviews with school district administrators in several school districts across the state that focused on identifying those resources districts believe have the strongest impact on student performance;
- Developed two indices, one designed to reflect geographic price differences across counties and the other designed to reflect the attractiveness of counties to teachers; and
- Prepared a report, which summarizes the work that was done, identifies strengths and weaknesses of the school finance system, and specifies a number of alternative approaches the state could use to improve the school finance system.

A Couple of Basic Assumptions That Drove our Work

- All of APA's work focused on the *structure* of the allotment system. By that, we mean that we were asked to determine whether changes in the structure of the allotments would improve the equity and/or efficiency with which state aid is distributed without being concerned about the amount of aid distributed.
- Our task was to examine the system at its (then) current funding level and to only recommend changes that could be implemented in a cost-neutral fashion.



Leandro

- The North Carolina Constitution requires the state to provide “by taxation and otherwise for a general and uniform system of free public schools” under which “equal opportunities shall be provided for all students.” (Article IX, Section 2)
- The *Leandro* case was filed in 1994 and decisions in 1997 (*Leandro I*) and 2004 (*Leandro II*) clarified the state’s responsibility to assure that equal opportunities were provided to all students and that specific resources (e.g., qualified teachers) had to be available to all students.



Leandro and the “Dependence” of School Districts

- The court also held that the North Carolina Constitution does not require equal funding in all school districts. Instead, localities are allowed to help finance their school systems -- any resulting unequal funding among school districts does not, in itself, violate the constitution.
- Almost all school districts in North Carolina are dependent; that is, they do not have independent taxing authority as is true in most districts across the country.
 - Opinion about this specific element of the system is mixed.

Overview of the Allotment System

- North Carolina uses an allotment system under which the state allocates almost all aid under many, separate formulaic procedures with no expectation that local districts will provide any additional support (the remainder of state aid is personnel benefits and a variety of competitive grants).
- Allotments can be organized into three basic groups:
 - Position allotments (e.g., teachers)
 - Dollar allotments (per all students or per some specific group of students, such as those in special education programs)
 - Special purpose allotments (e.g., supplemental funds for at-risk students)



Overview of the Allotment System

- The single largest allotment (46.5% of the state total in 2009-10) is for classroom teachers, with the cost based on a state-specified number of teachers (based on student to teacher ratios) and a salary for each teacher hired based on a statewide salary schedule and each teacher's education level and experience. Districts are free to hire more teachers and/or pay teachers more than the allotment provides.
- An example of a dollar allotment would be the one for supplies and materials, which was \$59.82 per ADM student in 2009-10.



Overview of the Allotment System

- An example of a special purpose allotment is the one for low wealth counties, which is based on determining the amount of revenue needed so that all districts making the statewide average school tax effort could generate the same revenue as a district with average wealth (where average wealth is based 40 percent on equalized assessed property value, 10 percent on the square mile density of the district, and 50 percent on per capita income).
 - In the past, 70 of the state's 100 counties (including 80 of the state's 115 districts) have received a portion of the total amount appropriated.

Overview of the Allotment System

- Other allotments :
 - The state allocates monies from the Lottery for capital purposes. 65% of these funds are distributed on a per student basis while 35 percent are distributed to counties with higher than average tax rates.
 - Charter schools are funded separately from non-charter schools with their funding based on the average dollar equivalent of the state and local resources received by the districts from which students come.
- The issue of flexibility:
 - While most allotments have restrictions regarding the use of funds received, over the past few years the state has relaxed restrictions and provided more flexibility to districts. Flexibility is defined in a variety of ways. For example: (1) personnel positions can be converted to dollars and used for other purposes (for example, assistant principals can be converted to teachers, supplies and materials, and/or staff development); (2) funds allocated through different allotments for the same target population can be mixed; and (3) funds allotted as dollar amounts are almost completely flexible within current operating expenses.



Initial Interviews

- APA conducted interviews in Raleigh in April with 23 individuals representing statewide organizations (e.g., Public School Forum), school districts (CFOs), the State Board of Education, the Department of Public Instruction, and others.
- Interview results included the following:
 - There was wide support for the position allotments.
 - There was concern about the caps used to determine total revenue for special education and limited-English proficiency.
 - There was also concern about the use of a single dollar amount in the case of special education.



Initial Interviews

- Interview results continued:
 - Special purpose allotments were viewed as overly complex and not targeted; there was concern that they were not accomplishing their objectives.
 - There was support for increased flexibility although concern that flexibility only came when the state decreased funding.
 - Those interviewed generally felt that the funding system was equitable and felt that local support should be equalized and not capped.
 - There was concern that state allotments could be based more directly on research.



The Relationships Between Education Resources and Student Performance

- Pure research on the relationship between education resources and student performance is mostly an academic exercise since so many factors are involved simultaneously and medical-type random assignment experiments rarely occur. Nonetheless, studies point to:
 - Professional development
 - Lower student to teacher ratios in early grades and for students with special needs
 - Low ratios for counselors and nurses
 - Full-day kindergarten
 - Early childhood education



The Equity of the System: Defining Equity

- Policymakers tend to focus on three items and the extent to which they vary across school districts:
 - (1) revenue (either state revenue only or state plus other revenue);
 - (2) resources (e.g., teachers); and
 - (3) tax effort.
- There is a need to take into account certain factors beyond the control of districts that might affect revenues, resources, and tax effort, including:
 - (1) student demographics (e.g., the proportion of students in special education programs); and
 - (2) district characteristics (such as size or regional cost differences).
- Resulting variations should not be related to district wealth.
- Because of its complexity, school finance equity cannot be expressed by a single calculation or number.

The Equity of the System: Measuring Equity

- Extent of variation in individual variables, such as per student revenue.
 - We used the coefficient of variation (the standard deviation divided by the mean, which is low when it is less than .100 and high when it is over .400).
 - We also divided variables into quartiles and examined quartile averages (all 115 districts divided into four groups: 3X29 + 1X28). We will not discuss these here – please see the report.
- Extent of relationship between pairs of variables, such as per student revenue and district need or wealth.
 - We used the correlation coefficient (which is considered to be low when it is less than .30 and high when it is over .70, it can be plus or minus).

The Equity of the System: Special Situation

- North Carolina is in a special situation compared to most other states because:
 - Local revenue is not expected to be provided although
 - It is available,
 - It is not restricted, and
 - It not only has an impact on total revenues but reflects community tax effort.
 - In the case of some allotments, state revenue is designed to vary across districts for reasons primarily related to student demographics or district (or county) characteristics).
 - Federal revenue, which is typically allocated on the basis of student needs, can be used to obtain additional resources.

The Equity of the System: Data

- Revenues
 - State
 - In 2008-09 the simple average (the average of 115 district values) of state support per student was \$5,273.
 - The coefficient of variation of state support was .204 (range was \$4,088 to 11,576 per student).
 - The correlation between state revenue and: (1) size was -.36; (2) need was .26; and (3) wealth was .07.

The Equity of the System: Data

- Revenues
 - Local
 - In 2008-09 the simple average (the average of 115 district values) of local support per student was \$1,253.
 - The coefficient of variation of local support was .575 (range was \$131 to \$4,499 per student).
 - The correlation between local revenue and: (1) size was .24; (2) need was -.07; and (3) wealth was .54.

The Equity of the System: Data

- Resources
 - State supported teachers per 1,000 students
 - In 2008-09 the simple average (the average of 115 district values) of teachers per 1,000 students was 48.5 and the coefficient of variation was .021.
 - Total teachers per 1,000 students
 - In 2008-09 the simple average (the average of 115 district values) of total teachers per 1,000 students was 74.7 and the coefficient of variation was .107, ranging from 62.9 to 119.4.

The Equity of the System: Data

- Resources
 - Average salary supplement
 - In 2008-09 the simple average salary supplement was \$2,249 and the coefficient of variation was .604.
 - The correlation between average salary supplement and: (1) size was .56; (2) need was .04; and (3) wealth was .09.
 - Percentage of teachers with more than a BA degree
 - In 2008-09 simple average was 25.0 percent and the coefficient of variation was .228.
 - The correlation between that variable and: (1) size was .12; (2) need was -.22; and (3) wealth was .38.



Equity of the System: Conclusions

- The allotment system achieves a high level of equality, in terms of both dollars per student and teachers per 1,000 students.
- The variation in state aid per student is relatively low and differences in state aid are appropriately related to district size and to district need, and are neutral with regard to district wealth.
- However, every school district supplements state aid and the variation in local revenue per student, and the tax effort made to raise such revenue, is large.



Individual Allotments

- For data, see Tables VII-1A, VII-1B and VII-1C.
- The individual allotments were examined in the order of their proportion of the total revenue generated by all allotments.
- The classroom teacher allotment is equitable although it favors districts that employ teachers with higher levels of experience and education. It does not take into consideration uncontrollable cost pressures associated with district or student characteristics.



Individual Allotments

- The special education allotment is distributed in a way that is neutral in regard to district wealth and somewhat sensitive to district need.
 - We found that while most students in special education programs were in the mild category, the variation in the proportion of students was significant in the moderate and severe categories.
- For the four allotments that each provided between 4-6 percent of total state aid (e.g., instructional support personnel), the variation per student was small but the correlations with need were low.



Individual Allotments

- The textbook, classroom materials and gifted allotments have virtually no variation across districts, as anticipated.
- The school building administration, at-risk, and other regular instruction allotments appear to operate well, meaning that the allocations were correlated appropriately with need and wealth.
- The transportation allotment works well. We were concerned that a transportation formula built on district spending levels 20 years ago could have created an equity issue. However, the correlation between wealth and spending for transportation was low.



Individual Allotments

- Overall, the state lottery allotment for capital purposes is sensitive to a number of important factors and is helping needier, less wealthy districts receive more funds for capital purposes.
 - One concern with this allotment is that it is based on total county tax effort figures, not just education tax effort.



Resource Use Analysis

- To understand the relationship between student performance and specific education resources, controlling for student demographic characteristics, we used a statistical approach -- linear regression.
- Three types of variables were used to predict the proportion of students in each school district who were considered to be at least “proficient.” The predictor variables used included the following:
 - (1) prior performance levels (from 2003-04);
 - (2) student demographic characteristics (reflecting student needs for special services); and
 - (3) resource variables (such as number of personnel, salary levels, and spending on particular functions).



Resource Use Analysis

- Though we tested several specifications of the student performance model, all specifications of the model explained approximately 85 percent of the variation in student performance.
- The model that made the best conceptual sense had the following characteristics.
 - Previous district performance levels were a strong predictor of students' performance five years later.
 - Geographic cost-adjusted average teacher salaries were also a strong predictor of overall student performance.
 - Higher percentages of at-risk and LEP students were negatively related to overall student performance but only slightly.
 - Higher percentages of gifted students were positively related to overall student performance but only slightly.



Resource Use Analysis

- We also organized our basic data to see what the relationships were between the numbers of personnel by type, student need and student performance.
- We found that it was always true that high performing districts have more staff than low or moderate performing districts and that it is generally true that moderate performing districts have more staff than low performing districts.
- This pattern is true for teachers, school level administrative support staff and guidance counselors.
- The opposite is true for health service personnel, student mentors, teacher coaches, technology specialists and social workers.



Resource Use Analysis

- We conducted interviews with school district administrators in 11 districts across North Carolina.
- Districts were selected on the basis of achieving higher than predicted student performance and, in some cases, lower than predicted spending.
- The districts were also geographically diverse, ranged in size from 2,000 to 21,000 students and mostly had moderate levels of at-risk students.
- Those interviewed emphasized the importance of classroom teachers, counselors, social workers, technology facilitators and assistant principals. They suggested that professional development and instructional coaches were critically important to student success.



Geographic Price Differences

- APA determined that it was important to estimate the extent to which prices, particularly those associated with salaries, varied across regions of the state.
- Many of the people we interviewed initially thought that uncontrollable price differences were a primary reason why some school districts spent more than other school districts.
- However, people also felt that some school districts were more attractive to teachers than other districts and that regional price differences might be related to district attractiveness.
- Therefore, APA created both a geographic cost index (GCI) and a teacher attractiveness index (TAI).
- Several states use a GCI in the distribution of state aid to school districts. No state has used a TAI for distributing state aid.

Geographic Price Differences

- The GCI was calculated using information from the Council for Community and Economic Research (ACCRA), the U.S. Department of Housing and Urban Development (HUD) and the National Center for Education Statistics (NCES). The GCI was set to have an average of 1.00 and it varied from .92 to 1.11.
- The TAI was based on predicting teacher turnover and distinguishing between variables that are under the control of or not under the control of school districts (such as teacher salary supplement and population density, respectively). The TAI ranged from .90 to 1.11.
- The correlation between the indices is .55. Therefore, while they could “offset” each other in some counties, they will not do so in other counties (we found 32 counties where the latter is the case).
- It should be noted that some of the analyses we have discussed use these indices, which are described in detail in the report.



Strengths of the Current Allotment System

- Taken together, the allotments address almost all cost factors that affect the provision of education services, including those associated with student characteristics and those associated with district characteristics.
- State aid is distributed in a highly equitable manner.
 - State aid per student does not vary dramatically across school districts.
 - To the extent that it does vary, it is inversely related to district size, positively related to student need, and neutral with regard to district wealth.
- Many allotments are easy to understand.



Strengths of the Current Allotment System

- The largest allotment encourages districts to select teachers with basic characteristics – education level and experience – that meet district hiring objectives.
- Further, the system is becoming much more flexible, allowing districts to spend the funds they receive in ways that support their individual needs and approaches to providing services. This is consistent with what other states have done over the past 20 years to embrace “standards-based” reform, under which the role of the state is setting student performance objectives, allowing districts to operate as they see fit, and holding districts accountable for student performance.



Weaknesses of the Current Allotment System

- There are many allotments, some of which use multiple formulas.
 - The majority of state support is allocated through a few allotments.
 - There is duplication among some allotments.
 - Some allotments allocate very small amounts of money.
 - There is a lot of politics surrounding the allotments, leading to changes in parameters from year to year, including the elimination of some allotments.
 - It is difficult for school districts to anticipate funding and therefore engage in detailed, multi-year planning.
- Several allotments are distributed on the basis of per student dollar amounts – this may be appropriate when each allotment is targeted but makes little sense if the state is promoting flexible use of funds.



Weaknesses of the Current Allotment System

- The teacher allotment may not provide sufficient choice so that all districts can hire people with the characteristics they desire. .
 - District wealth is correlated with teacher education and experience.
 - District need is inversely correlated with teacher education and experience.
- Some allotments are not based on research about the relationship between education resources and student performance.
 - The education and experience of teachers and the use of teaching assistants are not strongly supported by research.
 - Professional development, teacher mentors, and early childhood education are supported by research.

Weaknesses of the Current Allotment System

- The overall relationship between the amount of funds provided by the allotments and the needs of students is positive but not very strong.
 - This is a result of the fact that the teacher position allotment is not adjusted by student needs.
- The allotments for low wealth counties and the supplement for disadvantaged students are overly complicated. Formulas can be complex but that cannot happen at the expense of comprehension.
- The allotments provide little incentive for local support.
 - Even though local support is not thought of as being necessary, a couple of allotments do include local effort as factors.
 - There is a need to base allotments on education tax effort (real or computed) of school districts.



Recommendations to Improve the Allotment System

- The following recommendations are ordered based on ease of implementation. They are independent of each other and should not be viewed as a package.
 - **Combine all allotments that are distributed on the basis of total enrollment** (such as the ones for textbooks, instructional materials, non-instructional support, and technology) – not some subcategory of enrollment based on grade level or need – into a single per student allotment, the revenue from which could be used at the discretion of school districts.



Recommendations to Improve the Allotment System

- **Recommendations Continued:**
 - **Modify the Special Education Allotment** by setting three different payment rates for students with disabilities that can be organized into three cost categories based on disability severity (such as “mild,” “moderate,” and “severe”) and the expected relative cost of each group.
 - **Modify the Low Wealth County Allotment** by either creating two distinct allotments that would be based on simple formulas (one based on district wealth and another based on district school tax effort) or by creating a single formula that would use a power equalizing procedure that other states have employed to distribute aid.



Recommendations to Improve the Allotment System

- **Recommendations Continued:**
 - **Modify the At-Risk Student Allotment and the Disadvantaged Student Supplemental Fund Allotment** by combining them and distributing funds based on either: (1) the number of low performing students in each district or (2) a proxy for low performance, such as the number of Title I eligible students or the number of students eligible for federal lunch support (reduced-price and/or free lunch) but do not use a Census-based count since it does not change annually.
 - **Modify the Small County Allotment** so that it is focused exclusively on size, which is a well-known cost factor that is beyond the control of school districts. We would suggest allocating funds on the basis of district size, not county size, since the size of the district is what creates the cost pressure that state aid should be used to mitigate.



Recommendations to Improve the Allotment System

- **Recommendations Continued:**
 - **Change the way that Lottery funds are distributed** to support school buildings. Given that the primary responsibility for the construction of school facilities lies with school districts, state aid should be allocated with two objectives in mind: (1) to wealth-equalize paying for facilities; and (2) to provide an incentive for school districts to support needed facilities. Current aid is not wealth-equalized and our examination suggests that it has not served as an incentive to generate local funds by raising local tax effort.



Recommendations to Improve the Allotment System

- **Recommendations Continued:**
 - **Modify the Teacher Allotment** to change the way the number of teachers each district may employ is calculated.
 - Because the student-based needs of districts vary, we would suggest using a weighted student count, not the ADM count, to recognize those differences (under the assumption that most special student needs, such as participation in special education programs, are addressed through the use of more teaching personnel).
 - Our belief is that weights for special education, at-risk students, limited-English proficient (LEP) students, gifted students, and students enrolled in vocational programs should be used. Weights could be created for the three levels of special education discussed previously.



Recommendations to Improve the Allotment System

- **Recommendations Continued:**

- **Modify the Statewide Teacher Salary Schedule** by adding factors that would make it sensitive to uncontrollable cost pressures that districts face in paying teachers.
 - APA found that two kinds of cost pressures exist in North Carolina: (1) geographic cost differences that reflect differences in prices for consumer goods; and (2) the attractiveness of districts to teachers due to factors such as population density.
 - While some may believe that these cost pressures offset one another, APA found that they do not do so in every county, with the result that some counties need to pay more than the statewide average salary, while some could pay less than the statewide average salary, in order to attract and retain teachers with similar characteristics.



Recommendations to Improve the Allotment System

- **Recommendations Continued:**
 - **Modify the way the Teacher Allotment salaries are applied.**
 - While many district administrators support the current system of paying individual teacher salaries for eligible positions under the teacher allotment, the approach is cumbersome, requiring significant oversight and tracking of currently employed teachers.
 - An alternative approach would be for the state to pay a total amount to each district to cover the cost of teachers based on multiplying the number of eligible teachers by a statewide average salary adjusted for a variety of district-based factors, such as ones reflecting average education level, average years of experience, geographic cost differences, and teacher attractiveness.
 - Under this approach, each district would receive a lump sum of money, which could be used to pay teachers or, in the name of flexibility, anything the district wants.



Recommendations to Improve the Allotment System

- **Recommendations Continued:**
 - **Consider modifying the structure of the Statewide Teacher Salary Schedule.**
 - Currently, the statewide teacher salary schedule is based on two teacher characteristics: (1) education level; and (2) years of experience. Almost every school district salary schedule in the nation is based on the same characteristics.
 - Today, however, many school districts, and a few states, are examining different salary schedule structures. The basic changes being examined include replacing education level with individual professional development plans, de-emphasizing experience, adding multiple roles, levels of leadership and responsibility, and days of work, and adding alternative ways of holding teachers accountable based on student performance, formal evaluation, and individual-based student learning objectives.

Recommendations to Improve the Allotment System

- **Recommendations Continued:**
 - **Create a “foundation” type formula** based on setting a base cost with adjustments for student characteristics and district characteristics but, unlike other states, have no expected local revenue contribution to pay the costs.
 - This would make the school finance system in North Carolina analogous to the systems used in most other states (without the local contribution).
 - Additional state aid could still be provided for low wealth school districts, to promote particular programs or services of interest to the state, to provide incentives to districts to generate local funds, for transportation, and for capital purposes.
 - This could be accomplished by adding “tiers” to the foundation program.
 - This final alternative is the most far-reaching because it combines several of the alternatives discussed above.



Final Thoughts

- We want to thank numerous people for providing assistance to us as we went about our work.
 - Brian Matteson and Kris Nordstrom, of Fiscal Research, who oversaw the entire process.
 - DPI staff, who provided data and answered numerous questions.
 - The people we interviewed initially, some of whom travelled long distances for our convenience.
 - District personnel who participated openly in the on-site interviews.
- We believe that North Carolina's school finance system is strong. But we also believe that it could be improved.
- Based on our experience, we know it is difficult to change a school finance system without a lot of new money. However, the changes we are talking about are structural ones that are worth making in order to improve both the equity and efficiency of the system. The short-term price of such change might be the cost of a hold-harmless fund, which should disappear after a few years.