

Academic Achievement and Money: The Debate Continues

Steven Hankla, Ed. D.
Colquitt County Schools, Moultrie, Georgia
229-242-5248
shankla@colquitt.k12.ga.us

James L. Pate, Ph. D.
Department of Curriculum, Leadership, and Technology
Valdosta State University
229-333-5633
jl pate@valdosta.edu

Don Leech, Ed. D.
Department of Curriculum, Leadership and Technology
Valdosta State University
229-333-5633
d wleech@valdosta.edu

Scott Grubbs, M. Ed.
Department of Middle Grades and Secondary Education
Valdosta State University
:229-259-5101
stgrubbs@valdosta.edu

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Abstract: There is a continuing debate about equity and adequacy in public education. With mixed findings, the debate has made its way into the court systems of most states. Most of the debate centers on how one defines equity and adequacy in state educational funding law. The definitions vary among the states according to their state constitutions and statutes. Further, they are constantly being redefined by the courts. Many questions about equity and adequacy remain, but most are linked to the question of whether more money translates into better academic performance by students.

This study examines equity and adequacy questions, and whether dollars spent per student in public education affect academic achievement gains of students. It examined differences in academic achievement in Georgia schools during a four year period, as measured by the Georgia High School Graduation Test (GHSGT) and high school completion rates between low-wealth and high-wealth public school systems.

A threshold driven comparison model patterned after the studies of Dr. J. C. Fortune was used as the research design. Thresholds were developed by dividing Georgia's public school systems into quintiles as determined by wealth generated from three sources: Special Local Option Sales Tax (SPLOST) revenue; equalization grant income; and, property tax mill value revenue. The study looked at relationships between the quintile variables, free or reduced lunch eligibility, and academic achievement variables.

Statistical procedures including Pearson's product-moment correlations and repeated measures ANOVAs, indicated strong relationships between the quintile selection variables and property tax mill value, SPLOST revenue and mill value, and Weighted Full Equivalent Student (WFES) expenditures and SPLOST revenue. Relationships between free or reduced lunch eligibility and the academic achievement variables were significant with a stronger association between free or reduced lunch and GHSGT passage rate.

Introduction

Education reform has received unprecedented attention in the past century. In a study on reform in school finance, Ward and Camp (1988) found education reform has a long-standing tradition dating back to the early 1900s. More recently, in related broad-based research, Ward and Camp examined the impact of the finance reform movement of the 1970s and concern over academic preparedness in the 1980's. The 1980s witnessed a trend in education reform that focused on America's ability to be competitive based upon the results produced in the public education system. Additionally, Berube (2004) and Solomon (2002) reinforce the idea that the emphasis on the standards reform movement as a recent development is merely perception. Currently, education reform has evolved toward a combination of attempting to ensure financial equity and educational adequacy, much of it driven by legal challenges to school finance laws.

The argument for public expenditures on education has its roots in American political ideology. As a nation, we ostensibly believe in equal opportunities for the future generations (Benson & O'Halloran, 1987). Further, this ideology affirms our belief in a society that regards educational attainment as a right of all regardless of family background, socio-economic or other demographic factors. Ideology, however, does not always guide funding decisions. Although states have developed intricate funding formulas and provide for equalization funding to poorer systems, the effects of individual and community wealth on the quantity and quality of education afforded students are still great. With renewed emphasis on school improvement, accountability, and education reform, challenges associated with the improvement of education have come to the

forefront of the education reform debate. The extent to which states provide a "thorough and efficient" education for their charges has become the centerpiece of debate in practically all states.

Review of Related Literature

Early philosophy of education economics assumed equal resources would provide for equal opportunities, outcomes, and performance in life (Berne & Stiefel, 1999; Cubberley, 1948 and Odden, 2003b). Refinement in equity philosophy indicated a need for vertical equity (weighting of funds by student needs within a school) as well as the traditional horizontal equity providing for a minimum education for all students (Arnold, 1998; Crampton, 1997). In introducing the concept of adequacy in education, many authors (Baker & Friedman-Nimz, 2003; Herrington & Weider, 2001; Odden, 2003a; Odden & Picus 1992; & Powell, 1993) found the emphasis on funding shifted from the equitable distribution of resources to providing the funding necessary to achieve high standards of achievement outcomes for all students.

A strong call for education reform became the political platform of the nation's governors by the mid 1980s. Ironically, as Harris, Handel, and Mishel (2004) point out, *A Nation at Risk* was essentially an economic document that was co-opted to make the argument that the educational system was largely responsible for our competitive woes and that a major overhaul of the educational system was in order. In response to a number of studies indicating the condition of public education was deteriorating, legislation was passed in nearly all fifty states signaling a new movement in education reform.

The U.S. Supreme Court heard the landmark school finance equity case *San Antonio v. Rodriguez* (1973) (Dayton, 2001). The author recounted the Court's refusal to establish a national mandate for school funding. By refusing to side with the plaintiff, the Court ruled that wealth discrimination and the Texas school finance system did not violate the equal protection clause of the Fourteenth Amendment to the U.S. Constitution. The Court eliminated all issues on school funding from the U.S. Constitution and turned the debate into individual state issues (Hanushek, 1996).

Beginning in the early 1990s, a number of state courts found for the plaintiffs in cases where great disparity in funding per student existed. According to Minorini (1994), the courts acknowledged a direct relationship between the funding per student and the quality of the education provided. Disparities in funding created a substantial difference in educational opportunities of students in poorer school systems compared to wealthier school systems. Minorini viewed the Court's concern to be more about the quality and equality of the education offered than the equality of the funding between school systems.

Reviewing findings of 11 recent court decisions regarding rural school funding inequities, Dayton (1998) concluded the courts are deciding that to eliminate the cycle of rural poverty, the educational needs of rural students must be met. Though all fifty-state constitutions charged their legislatures with providing a thorough and efficient education

for their students, many funding formulas continued to disadvantage students' educational opportunities based upon their residence or community wealth.

According to Hess and Rotherham (2007), "The equity camp postulates that America's biggest source of untapped talent resides in its cities and that it is the poor, generally minority students who fall out of the educational pipeline before they get a chance to see what they can do." Hess and Rotherman continue, "It is notable, though, how narrowly the equity camp has focused on urban and minority achievement in the last decade and how this focus has tended to dictate strategies geared to minority and urban students (e.g., disaggregation, school choice) rather than their rural counterparts. This has marked a sharp departure from the Great Society's dual focus on urban and rural poverty and illustrates just how readily an effort to tackle one social ill can push another to the back burner" (pg 348).

The National Education Association (NEA) (1995) cited a strong relationship between education spending, individual, and community economic health. The report concluded an educated work force was one of the most important variables studied in site selection of growing companies. The NEA asserted under funding in certain districts had serious consequences for life opportunities and the overall quality of life in such districts. Conclusions in the report stated spending must be increased in disadvantaged areas to provide all students with the opportunity to learn necessary skills to be productive in the information age.

Ashford (2003) summarized administrator concern regarding low-wealth, poor school districts in meeting the increased standards of No Child Left Behind (NCLB) (Elementary and Secondary School Act of 2001) and Adequate Yearly Progress (AYP). According to school administrators from the study, equity and adequacy regarding school funding, along with increased standards for all students, need to be addressed if NCLB is to be fully implemented.

Odden (2003a) concurred stating, in addition to vertical equity by grade levels, disabilities, etc., new standards and accountability will require more funding for students of low-income backgrounds. Odden stated funding levels will need to change in relation to individual student needs to produce acceptable standards for students with diverse needs.

Green and Schneider (1990) noted it has become axiomatic in education that high outcome standards are essential elements to the maintenance of our competitive position in the world economy. Continuing, the authors cited some northern and western regions of the country which are more capable of providing the resources for an adequate education for their residents than are others.

Following decades of research on the impact of educational resources on student achievement, only limited agreement exists over the effect of school expenditures on increasing academic achievement. Verstegen (1987) noted, with passage of the Elementary and Secondary Education Act in 1965, a House of Representatives committee resolved the nation must do a better job of preparing our youth for the work force.

Additionally, the committee found a strong correlation between poverty levels and students who were unsuccessful in school.

Citing research conducted in Pennsylvania, Hartman (1994) stated substantial disadvantages inherent in low-wealth school systems were linked to lower academic achievement, an increased dropout rate and diminished opportunities for post-secondary study. Additionally, Hartman noted in a replication of his research, wealth differences of the high, middle, and low spending groups changed in relation to their prior status. Personal income in the high spending districts increased over the seven-year span, followed by the middle spending school districts, and personal income of families in the lowest spending districts increased at the slowest rate.

In a re-analysis of Eric Hanushek's meta-analysis on the effect of resources on educational output, Greenwald, Hedges, and Laine (1994) found that the amount of educational resources available were positively linked to the academic accomplishments of students. Greenwald et al. (1994) cautioned however, finding the most educationally efficient form of increased education expenditures is the key to academic improvement.

A significant, controversial body of research exists regarding the relationship between school expenditures and academic achievement. Both positive and negative significance have been found in the relationship of teacher salary, experience, and quality on student achievement (Hartman, 1994; Leuthold, 1999; Matthews and Holmes, 1988; and Ward and Camp, 1989). King and MacPhail-Wilcox (1994) and others concluded the issue is more a matter of how money is used, whereas Fortune and Spofford-Richardson (2000) clearly found a positive relationship between per-pupil expenditures and student achievement. Several analyses and re-analyses are cited on the positive and negative correlation of funding and achievement underscoring the complexity of the debate over the impact of school expenditures on academic achievement.

Challenges associated with the improvement of education have come to the fore in education reform during the past two decades. In reviewing the literature, four issues emerged as paramount to the understanding of the complexity of the dilemmas facing education. The historical precedence of education finance from federal, state, and local perspectives is essential to understanding the ideology behind the control of public education. Disparity in academic achievement across national, state, and district lines has shifted the former emphasis on education equity to one of adequacy for all students. Disaggregated accountability in education has created a challenge to school districts' ability to provide a quality education. Of greatest impact to this study is discernment of the role education expenditures play in academic achievement.

Purpose of the study

The purpose of this study was to compare Georgia's low-wealth school systems to Georgia's high wealth school systems in terms of academic performance and high school completion rate. Addressing the adequacy of funding, we set out to determine if the current educational funding in Georgia provides all the students of Georgia an adequate education. We examined the effect of revenue per weighted full time equivalent (WFTE)

on the percentage passing the first administration of the Georgia High School Graduation Test (GHS GT) and high school completion rate in four consecutive years.

In addition, we examined the relationships between funding formula variables as well as the relationship between free or reduced lunch (FRL) percentages, high school completion rate, and percentage passing on the first administration of the GHS GT.

Research Questions

The following research questions were addressed:

- (1) Is there a significant difference between Georgia's high wealth and low wealth school systems in academic performance as measured by the Georgia High School Graduation Test (GHS GT) for Adequate Yearly Progress?
- (2) Is there a significant difference between Georgia's high wealth and low wealth school systems in high school completion rate as measured for Adequate Yearly Progress?

Methodology

The research design for this study used the "threshold effect" found in other educational production function analyses research studies (Fortune & O'Neil, 1994). Statistical inferences regarding independent sample populations were determined by Pearson's product-moment correlations and repeated measures ANOVAs. The aim of the causal-comparative quantitative design of this study was to determine if, and to what significance, a connection exists between school system wealth and academic achievement as measured by the GHS GT and high school completion rate.

Data Collection Procedures

The data were obtained from school system financial records (Office of Planning and Budget, Sales Tax Division, 2002; Georgia Department of Education, (n.d.), and from the state minimum competency GHS GT (Georgia Department of Education, 2003). This test was chosen because it is the only test administered in Georgia's public secondary schools under the same conditions and to every student. The No Child Left Behind Act's Adequate Yearly Progress requirements mandate passing percentages on the first administration.

This study utilized passing percentages on all five sections of the spring administration of the GHS GT. The high school completion rate was obtained from completion percentages self-reported to the Georgia Department of Education GHS GT (Georgia Department of Education, 2003). Four years of data were used in this study.

Two dependent variables were used in the study. The first was passing percentages on all five sections of the spring administration of the GHS GT. The high school completion rate was obtained from completion percentages self-reported to the Georgia Department of Education GHS GT (Georgia Department of Education, 2003).

Sample

Subjects for this study were selected from all public schools in Georgia, $N = 180$. Quintiles were derived as subsamples, $n=30$, of the whole by multiplying the value of one mill in 2002, by the millage rate assessed for each school system to produce the total revenue derived from personal property values. The product was added to revenue generated from the Special Purpose Local Option Sales Tax (SPLOST) of 1% on the dollar for fiscal year 2002. This revenue sum was added to the revenue derived from the equalization grants for the 2002 school year for systems earning grants for 3.25 mills beyond the first 5 mills levied. Equalization grants are state grants given to all systems falling below the 75th percentile in system wealth for the entire state. The total revenue generated by personal property assessed valuations, SPLOST, and equalization grants was divided by each school system's reported WFTE for the 2002 school year.

School systems levying less than 12 mills were excluded from the study since the Georgia legislature provided the 12-mill minimum as the amount of local taxation effort necessary to qualify for Low-Wealth Capital Outlay Grants. The remaining systems were then divided equally into quintiles, by dividing the remaining systems into five groups based on this information. For the study the school systems with the greatest revenue per WFTE comprising Quintile I, $n=30$, and those with the least revenue per quintile comprising Quintile V, $n=29$.

Quintiles were developed creating a minimum \$700.00 funding disparity suggested by Fortune and Spofford-Richardson (2000) in their threshold driven (Green and Schneider, (1990) comparison studies. Table 1 illustrates the disparity in local educational revenue between the High-Wealth and Low-Wealth Quintiles for the fiscal year 2002. In Georgia the state revenue per WFTE is the same for all systems with major funding differences resulting from local revenue sources.

Table 1
High-Wealth and Low-Wealth School Systems Range of Revenue Disparities Fiscal Year 2002

Quintile and school system	Value of one mill	SPLOST revenue	Equalization revenue	Local Revenue per WFTE
Quintile I				
Atlanta City	\$14,533,095	\$85,370,877	0	\$5,295
Quintile I	\$2,187,956	\$17,457,815	\$3,937,255	\$2,568
Douglas Co.				
Quintile V Polk Co.	\$614,057	\$3,732,010	\$2,833,063	\$1,671
Quintile V Schley Co.	\$70,398	\$244,827	\$214,935	\$1,068

Data Analysis

After data collection, Pearson's product-moment correlations were calculated with the variables utilized to establish the first and fifth homogeneous quintile groupings of school systems. Additionally, correlations were calculated using the percentage of students on a free or reduced lunch from both sets of quintiles and quintile selection variables, first time passage rates on the GHSGT, and high school completion rate as used to determine Adequate Yearly Progress.

These initial analyses were used to ascertain whether, and to what extent, a relationship exists between the variables. Correlational calculations help to gain insight and validate the importance of variables. In view of the large number of correlations conducted in these two tests, the Bonferroni technique (Huck, 2000) was applied to adjust the level of significance to reduce the potential for Type I errors. To be considered significant, the correlations in test one required a *p*-value of .005 or less and the second set of correlations required a *p*-value of .003 or less after applying the Bonferroni technique.

Findings

Table 2 is a correlation matrix representing the 10 bivariate correlations calculated among the five variables utilized to determine the high-wealth and low-wealth quintile school systems.

Table 2 *Bivariate Correlations and (r²) Among High-Wealth and Low-Wealth Quintile Variables*

Variables	1	2	3	4	5
	School Systems (n = 57)				
1. Mill Value	-				
2. Mill Rate Assessed (r ²)	.552*	-			
	.27				
3. SPLOST Revenue (r ²)	.993*	.558*	-		
	.97	.31			
4. Weighted FTE(WFTE) (r ²)	.962*	.541*	.977*	-	
	.93	.29	.95		
5. Revenue per WFTE (r ²)	.541*	.706*	.512*	.422*	-
	.29	.50	.26	.18	

p < .005

To illustrate the relationships among the variables utilized to determine the quintile placement of these 57 school systems, Table 2 presents the positive correlation coefficients indicating a positive relationship. All coefficients were significant applying the Bonferroni technique (Huck, 2000) at the *p* < .005 level or less. The results given in Table 2 show a strong relationship between the variables of WFTE and mill value,

Special Local Option Sales Tax (SPLOST) revenue and mill value, WFTE and SPLOST revenue. The common variance between all variables ranged from a low of 18% between revenue generated per WFTE and WFTE to a high of 99% between SPLOST revenue generated and mill value.

The results of the correlation coefficients between free or reduced lunch and the variables used to determine the quintiles of high wealth and low wealth school systems were generally weak. Additionally, these correlations were not significant at the $p < .003$ or less as adjusted by the Bonferroni technique (Huck, 2000). Negative correlation coefficients (inverse relationships) were generally strong between the percentage of students on a free or reduced lunch and first time passage rate of the GHSGT for the years 1998-2002. The 38% common variance in passing percentage on the first administration of the GHSGT, as related to the free or reduced lunch numbers in 1999, was the lowest common variance. Passing percentage on the first administration of the GHSGT in 2002 and free or reduced lunch was the highest common variance at 55%.

Negative correlation coefficients (inverse relationships) were moderately strong between the percentage of students on free or reduced lunch and high school completion rates for the years 1998-2002. The 16% common variance in high school completion rate, as related to the free or reduced lunch (FRL) numbers in 1998, was the lowest common variance. Twenty-eight percent of the common variance in high school completion rate, as determined by the free or reduce lunch numbers in 2002, was the highest. Both series of analyses on GHSGT and high school completion rate were significant at the $p < .003$ or less as adjusted by the Bonferroni technique (Huck, 2000).

Repeated measures ANOVAs were conducted on passing percentages on the first time administration of the GHSGT for Quintile I (high-wealth school systems) and Quintile V (low-wealth school systems) during the 1998-2002 school years to ascertain the effect of revenue per WFTE over a five year span. All variances for Quintile I and V were equal for the GHSGT variable. The repeated measures ANOVA indicated a statistically significant difference was present between Quintiles I and V for passing the first administration of the GHSGT ($F(1,55) = 5.929, p = .018$). An effect size of the mean differences was reported at $d = .1$, which is a small effect size (Cohen, 1988). Skewness and kurtosis values for all GHSGT variables were outside the normal range; therefore, these results should be viewed with caution.

Repeated measures ANOVAs were conducted on high school completion rate for Quintile I (high-wealth school systems) and Quintile V (low-wealth school systems) during the 1998- 2002 school years to ascertain the effect of revenue per WFTE over a five year span. All variances for Quintile I and V were equal for the high school completion rate variable. The repeated measures ANOVA indicated no statistically significant difference was present between Quintiles I and V for high school completion rate ($F(1,53) = 3.096, p = .084$). An effect size of the mean differences was reported at $d = .06$, which is a small effect size (Cohen, 1988). Skewness and kurtosis values for high school completion rate variables 1998-2000 were outside the normal range with 2001 and 2002 within the normal range; therefore, the results should be viewed with caution.

Conclusions

All correlation coefficients between the variables used to determine the subsample quintiles were statistically significant. Relationships between the variables mill value, mill rate, SPLOST revenue, WFTE, and revenue per WFTE were determined to be moderately strong to very strong. The major finding from this portion of the analysis was the relationship between mill value, WFTE and SPLOST revenue. Coefficients seemed to indicate high property assessments and large revenues generated from SPLOST were concentrated in areas of dense population.

Upon completion of the data collection on subsamples of high and low wealth school system quintiles, passing percentages on the first administration of the GHS GT, and high school completion rate, a pattern of increased academic achievement seemed to be present in the more affluent areas of the state. Free and reduced lunch percentages were added to the worksheet and correlation coefficients were calculated. The magnitude of the relationship between percentage of students eligible for a free or reduced lunch and passing percentages on the first time administration of the GHS GT were statistically significant and strong over the period 1998 through 2002. High school completion rate and percentage of students eligible for free or reduced lunch also was statistically significant though not as strong of a relationship.

A repeated measures ANOVA indicated a statistically significant difference was apparent between the first time passing percentages on the GHS GT and the students in high-wealth Quintile I and low-wealth Quintile V. Effect size was reported as small (Cohen, 1988). Skewness and kurtosis values for all GHS GT variables were outside the normal range; therefore, the assumptions of normality in these results should be viewed with caution. No statistical significance was found with the repeated measures ANOVA between the Quintiles V and high school completion and I rate.

Limitations of the Study

Limiting the generalizability of this study may be threats to validity. Validity threats included history, pretest sensitivity, mortality/attrition, and instrumentation, researcher bias, statistical regression, and setting generalizability (Cohen, 1988; Gay, 1996; Huck, 2000; and Huck & Cormier, 1996).

Non-revenue related interventions may have had an effect on the dependent variable. Performance on the dependent variable, GHS GT scores, may have been affected by other interventions not associated with the study.

Pretest sensitization (Cohen, 1988; Gay, 1996; Huck, 2000; and Huck & Cormier, 1996) may have provided an unfair advantage for subjects exposed to testing format and subject matter from pretest materials practiced; subjects may have become familiar with test format, or more comfortable in the testing environment hence subjects may have been less anxious about the test on the second administration. Validity may have been threatened because changes in the dependent variable may not be solely from the experimental treatment.

The GHSGT limited this study by creating a mortality/attrition threat to validity (Cohen, 1988; Gay, 1996; Huck, 2000; and Huck & Cormier, 1996). Validity may have been threatened by a disproportionate number of one type of subject dropped out of the experiment (i.e., if several subjects who might score below the mean on the measure dropped out, the final measure would produce a higher mean because low-scoring subjects are absent). Using an achievement test administered in the spring of the third year of high school eliminated many poverty-stricken students who had previously dropped out of school due to poor academic achievement. A true measure of the impact of per-pupil expenditures on academic achievement would need to take into consideration the number of students dropping out before taking the GHSGT.

Fortune and Spofford-Richardson (2000) advised that it may not be possible to compare expenditures between school systems when there may be a lack of uniformity in expenditures within the school system. Further, they identified the difficulty in addressing comparisons when expenditures are calculated at school levels and academic achievement is expressed at individual student levels. Additional validity concerns arose due to the necessity of converting minimum competency test percent passing scores to averages necessary for use in the Threshold Driven Comparison Model. In this conversion the concern is expressed by the authors of how much will be lost in the conversion (Gay, 1996).

Test results used from the GHSGT created a threat to validity as it related to statistical regression (Cohen, 1988; Gay, 1996; Huck, 2000; and Huck & Cormier, 1996). Results of the GHSGT as a dependent variable report only as first time test takers passing the test. Students retake the test and pass on the second try, or at least score higher. Without information it is difficult to project linear dependency of the independent variable of per-pupil expenditure with the dependent variables of academic achievement and high school completion rate, knowing only results of the first time tests takers and on time completion rates. Including only first-time test takers in the sample may distort the relationship between per-pupil expenditures and achievement.

Generalizability (Cohen, 1988; Gay, 1996; Huck, 2000; and Huck & Cormier, 1996) of the study is narrowed due to exclusive use of Georgia data. Results of the current study have limited validity because the sample was limited to Georgia students. Generalizability beyond Georgia is cautioned, as the study is not representative of the nation as a whole. This limitation reduced the setting generalizability of the findings due to the variance in economic wealth in the upper and lower quintiles of other states. Although thresholds may be similar from state to state, per-pupil expenditures might be higher in the lowest quintile of comparison states.

Implications for practice

As a common practice, the utilization of assessed property values as a variable in public school funding continues to be scrutinized in the courts. Findings from this study indicate the need for Georgia to revisit its school funding structure to address the needs of low-wealth systems more equitably, either through some process designed to more

equitably distribute SPLOST funds, and/or some major expansion in the Equalization Grant process. The Equalization Grant process is used by the state to provide additional state funding to low wealth systems in proportion to their local property wealth per student.

Statistically significant findings in the difference in passing percentages on the first time administration of the GHSGT indicate at the most minimum competency level the wealth of a school system appears to be a contributing factor in academic achievement. As the passing percentage standards mandated by NCLB continue to increase until the year 2014, low-wealth school systems may find themselves unable to provide their students with the thorough and efficient education necessary to meet AYP. Since NCLB requires systems to meet these standards and systems desire to increase students' achievement, additional funds, if properly spent on research based issues related to increasing student achievement, could result in student achievement gains for low wealth systems.

The challenge facing educators and state legislators is to work collaboratively to find additional revenue sources for low wealth systems and methods to assure those funds are spent on proven strategies for improving student achievement. The alternative to new revenue sources is the redistribution of existing funds to low wealth systems with accompanying expenditure guidelines to assure the additional funds are used for improving student achievement.

Without these changes, educational finance will continue to face the prospect of litigation based on the educational adequacy doctrine. Litigation has recently been filed in Georgia by a consortium of low wealth systems in an attempt to overturn the school finance laws based on these and similar findings. These issues are best resolved by educators and not judges or courts that have no understanding of the educational needs of students.

References

- Arnold, M. L. (1998). Three kinds of equity slicing the school finance pie fairly is a lot more complicated than it sounds. *The American School Board Journal*, 185(5), 34-36.
- Ashford, E. (2003). "No child" left behind rural kids, too. *The Education Digest*. 68(4), 18-21.
- Baker, B. D., & Friedman-Nimz, R. (2003). Gifted children, vertical equity, and state school finance policies and practices. *Journal of Education Finance*, 28(4), 523-555.

- Benson, C. S., & O'Halloran, K. (1987). The economic history of school finance in the United States. *Journal of Education Finance*, 12(4), 495-515.
- Berube, C.T., (2004). Are standards preventing good teaching? *The Clearing House*, 77 (6), 264-267.
- Berne, R., & Stiefel, L. (1999). Concepts of school finance equity: 1970 to the present. In H.F. Ladd, R. Chalk & J. S. Hansen (Eds.), *Equity and adequacy in education finance issues and perspectives* (pp. 7-33). National Academy Press. Washington, DC: N.A.P.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). New York: John Wiley.
- Crampton, F. E. (1997). Redressing school finance. *School Business Affairs*, 63(5), 34-38.
- Cubberley, E. P. (1948). *The history of education: Educational practice and progress considered as a phase of the development and spread of western civilization*. Cambridge, MA: Houghton Mifflin.
- Dayton, J. (1998). An examination of judicial treatment of rural schools in public funding equity litigation. *Journal of Education Finance*, 24(2), 179-205.
- Dayton, J. (2001). A review of public school funding litigation since Serrano v. Priest. (Draft Report, March 2001). Athens, Georgia: University of Georgia.
- Elementary and Secondary School Act of 2001, 20 U.S.C. § 6301 *et seq.* (2007).
- Fortune, J. C., & O'Neil, J. S. (1994). Production function analyses and the study of educational funding equity: A methodological critique. *Journal of Education Finance*, 20(1), 21-46.
- Fortune, J. C., & Spofford-Richardson, S. (2000). A Critique of methods used to answer the question: Does money make a difference? *Research in the Schools*, 7(2), 21-31.
- Gay, L. R. (1996). *Educational Research: Competencies for Analysis and Application*. Englewood Cliffs, New Jersey: Prentice Hall.
- Georgia Department of Education. (n.d.). *Selected excerpts & citations from the laws governing SPLOST*. Georgia code 20-2-131 Retrieved September 6, 2003, from <http://doe.k12.ga.us/doe/finances/splost.asp>.

- Georgia Department of Education. (2003) *Georgia Report Cards*. Retrieved December 4, 2003, from <http://techservices.doe.k12.ga.us/reportcard/>
- Green, B., & Schneider, M. (1990). Threats to funding for rural schools. *Journal of Educational Finance*, 15(3), 302-318.
- Greenwald, R., Hedges, L.V., & Laine, R. D. (1994). When reinventing the wheel is not necessary: A case study in the use of meta-analysis in education finance. *Journal of Educational Finance*, 20(1), 1-21.
- Hanushek, E. A. (1996). The quest for equalized mediocrity school finance reform without consideration of school performance. In L. O. Picus and J. L. Wattenbarger (Eds.), *Where does the money go? Resource allocation in elementary and secondary schools* (pp. 20-44). Thousand Oaks, CA: Corwin Press.
- Harris, D. N., Handel, M. J., & Mishel, L. (2004). Education and the economy revisited: How schools matter. *Peabody Journal of Education*, 79 (1). 39-63.
- Hartman, W. T., (1994). District spending disparities revisited. *Journal of Education Finance*, 20(1), 88-106.
- Herrington, C. D., & Weider, V. (2001). Equity, adequacy and vouchers; Past and present school finance litigation in Florida. *Journal of Education Finance*, 27(1), 517-533.
- Hess, F. M. & Rotherham, A. J. (2007). NCLB and the competitiveness agenda: Happy collaboration or collision course? *Phi Delta Kappan*, 88 (5), 345-352.
- Huck, S. W. (2000). *Reading statistics and research* (3rd ed.). New York: Addison Wesley Longman.
- Huck, S. W., & Cormier, W. H. (1996). *Reading Statistics and Research* (2nd ed.). New York: Harper Collins.
- King, R. A., and MacPhail-Wilcox, B. (1994). Unraveling the production equation: The continuing quest for resources that make a difference. *Journal of Education Finance*, 20(1), 47-65.
- Leuthold, F. O., (1999, August). *Is the level of student achievement performance in Tennessee public school systems related to level of expenditures for school*

systems? Paper presented at the Annual Meeting of the Rural Sociological Society, Chicago.

Matthews, M. & Holmes, C. (1988). District revenue potential and teachers' salaries in Georgia. *Journal of Educational Finance*, 14(2), 250-258.

Minorini, P. A. (1994). Recent developments in school finance equity and educational adequacy cases. *ERS Spectrum*, 12(1), 3-11.

National Education Association. (1995). *How spending matters to economic development* (Report No. 027 167). West Haven, Ct: National Education Association Professional Library. (ERIC Documentation Reproduction Service No. ED389062)

Odden, A. (2003a). Equity and adequacy in school finance today. *Phi Delta Kappan*, 85(2), 120-125.

Odden, A. (2003b). From equity to adequacy. *Principal Leadership*, 3(5), 25-28.

Odden, A., & Picus, L. O. (1992). *School finance a policy perspective*. Boston: McGraw-Hill.

Office of Planning and Budget, State Sales Tax Division, (2002). *Education 2002 report card*. [Data file]. Available from Georgia Office of Planning and Budget Web site, <http://www.opb.state.ga.us>

Powell, B. (1993). Sloppy reasoning, misused data. *Phi Delta Kappan*, 75(4), 283, 352.

Solomon, P. G. (2002). *The assessment bridge: Positive ways to link tests to learning, standards, and curriculum improvement*. Thousand Oaks, CA: Corwin Press.

Verstegen, D. A. (1987). Two hundred years of federalism: A perspective on national fiscal policy in education. *Journal of Education Finance*, 12(4), 516-548.

Ward, J. G., & Camp, W. (1998). An analytical view of two decades of reform in school finance: Some Comments. *Journal of Education Finance*, 14(1), 1-6. 1988.