Resource Allocation Patterns and Student Achievement*

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Abstract

This quantitative research study was designed to examine the relationship between system resource allocation patterns and student achievement, as measured by eighth grade Criterion-Referenced Competency Test (CRCT) mathematics, eighth grade CRCT reading, eleventh grade Georgia High School Graduation Test (GHSGT) mathematics, eleventh grade and GHSGT English/language arts. Financial expenditure predictor variables considered were the following: teacher salaries and benefits, instruction, pupil services, improvement of instructional services, media services, technology, and other. This research investigated whether any of these seven predictor variables could be included in an equation for predicting student achievement. Data from all 180 Georgia school systems were included in this study for fiscal years 2006 and 2007. Forward multiple regressions were utilized as the common method of analysis for each dependent variable to determine if student achievement could be predicted based on system level expenditures. While one independent variable, improvement of instructional services, had a significant negative effect on every student achievement variable, teacher salaries and benefits had a significant positive effect on three student achievement variables. Other independent variables, pupil services, technology, and other spending, negatively influenced one or two student achievement variables, and two independent variables, media services and instruction, did not have a significant effect on any of the student achievement variables.

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1 Sumario en espanol

Este estudio cuantitativo de la investigación fue diseñado para revisar la relación entre pautas de asignación de recurso de sistema y logro de estudiante, como medido por octava Prueba de Competencia de Criterio-Mencionó de grado (CRCT) las matemáticas, octavo grado CRCT que lee, undécima Prueba de Graduación de Colegio secundario de grado Georgia (GHSGT) las matemáticas, undécimo grado y las artes del inglés/Idioma de GHSGT. Las variables financieras del pronosticador del gasto consideradas fueron los salarios de maestro de lo Siguiente: y beneficios, la instrucción, los servicios de alumno, la mejora de servicios instruccionales, de los servicios de medios, de la tecnología, y de otro. Esta investigación investigó si cualquiera de estas siete variables de pronosticador podría ser incluido en una ecuación para predecir a estudiante logro. Los datos de sistemas escolar de 180 Georgia fueron incluidos en este estudio para ejercicios económicos 2006 y 2007. Múltiples retrocesos delanteros fueron utilizados como el método común del análisis para cada variable dependiente para determinar si logro de estudiante podría ser predicho basado en el sistema gastos planos. Mientras una variable independiente, la mejora de servicios instruccionales, tuvo un efecto negativo significativo en cada variable de logro de estudiante, los salarios de maestro y beneficios tuvieron un efecto positivo significativo en tres variables de logro de estudiante. Otras variables independientes, los servicios de alumno, la tecnología, y otro gasto, influyó negativamente algunas variables de logro de estudiante, y dos variables independientes, los servicios de medios e instrucción, no tuvieron un efecto significativo en cualquiera de las variables de logro de estudiante.

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2 Introduction

State and local governments are unable to provide additional dollars for educational programs because of the current economic dilemma, which makes determining how system expenditures impact student achievement of increasing importance. (Johnson, Oliff, & Williams, 2010; Martin, 2009). Faced with the reality of diminished financial resources, policy and decision makers need to know if spending in one area influences student achievement more than spending in another area. For years, researchers debated whether spending more money on education would improve student achievement. In the current economic environment, the question may no longer be relevant. The question now becomes, how can school systems make the best use of the current level of resources they have to improve student achievement? How can schools find a more effective way to use their existing funds? Hanushek (1996) suggested that how resources are used is more important than how many resources are used.

3 Literature Review

As educators across the country have spent years trying to understand and improve student achievement, conversations have often turned to school finance (Hanushek, 2006; Odden, Goetz, & Picus, 2008). Hill,

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Roza, and Harvey (2008) stated school finance, a very complex field, is at the point where politics, funding, and educational programming collide. After a six year $6 million study examining America's school funding system, the researchers concluded that the current school finance system is inefficient in its use of current resources and is counterproductive for student achievement. Instead of creating a more effective and efficient education finance system for today's students, the current system focuses on maintaining outdated programs and meeting the needs of adults rather than students (Hill et al).

Hanushek (2006) reported that while states may differ to a small extent, the general pattern for educational funding in the United States is that local governments, mainly through property taxes, and state governments, through various other tax instruments, fund approximately 90% of public education. Hanushek and Lindseth (2009) explained that while federal education laws, specifically No Child Left Behind, may be revised under the current Obama administration, given today's economic situation, educators are not likely to see increases in educational funding.

Many attempts have been made to involve courts in educational funding decisions with mixed results (Brimley & Garfield, 2005; Odden & Picus, 1992). While earlier school finance cases stressed equity concerns, the focus turned to adequacy in the 1990s (Hanushek, 2006). Hanushek reported this shift in terminology directly related to accountability, and since that time, concerned parties have filed lawsuits claiming that states did not provide adequate funding that allowed all students to meet state standards.

Roza and Hill (2006) suggested that before educators could define adequacy, they first had to determine the correct amount of funds needed to attain desired student outcomes. The researchers emphasized the importance of resource allocation decisions made at the local level. After studying several large urban school systems, Roza and Hill concluded that very few systems knew how they spent their money, where the money was being spent, and what the most effective uses of existing funds were. Roza and Hill also suggested that although many educators continued to ask for additional funding, they were ignoring the best use of their current level of funding resources.

Examining the current educational finance system, several school finance scholars (Hanushek & Lindseth, 2009; Hill, et al., 2008; Odden, 1997) agreed on one central recommendation; local school administrators must have flexibility in allocating resources to best meet the needs of their individual student populations. Hill et al. (2008) suggested that the current school finance system must be redesigned. Before this could happen, however, the researchers recommended an analysis of resource allocation practices. They stated the analysis should not include additional funding or new programs but should instead examine how current resources could support student achievement expectations. Specifically, Hill et al. recommended educators identify and build upon what was working to improve student achievement and dismantle and eliminate the many programs that did not improve student achievement. They concluded educators must abandon the current school finance system and create a more improved and productive system geared towards improving student achievement.

Educators have not been provided the flexibility needed to allocate funds to the needs of their current student population because of current regulations (Hill et al., 2008). Federal and state guidelines often mandated certain funds be spent for particular programs, restricting the transfer of funds from federal to state to local decisions. Even with the imposed government restrictions, Hill et al. suggested nothing guarantees the funds will be utilized effectively, equitably, or efficiently for the needs of local students. An effective school reform movement, they wrote, would address the regulations and policies of the current finance system and allow local administrators flexibility in fiscal resource allocation decisions.

4 Purpose of the Study

This study investigated system resource allocation patterns to determine if resource allocation at the system level could be linked to student achievement. Two research questions guided this study. The first question asked, which of the possible seven predictor variables (teacher salaries and benefits, instruction, pupil services, improvement of instructional services, media services, technology, other spending) can be included in an equation for predicting student achievement as measured by the following: Georgia eighth grade mathematics Criterion Reference Curriculum Test (CRCT); Georgia eighth grade reading CRCT; Georgia eleventh grade

mathematics Georgia High School Graduation Test (GHSGT); and, Georgia eleventh grade English/language arts (ELA) GHSGT? The second question was, does the obtained regression equation resulting from a subset of the seven predictor variables predict student achievement on these student achievement measures?

5 Methods

A forward multiple regression analyses was used to examine the influence of system level spending on student achievement in 180 Georgia school systems. Seven independent variables and four dependent variables detailing information on 180 school systems for 2 years, totaling 360 cases, were entered into SPSS 18.0 and analyzed using one-way analysis of variance, Mahalanobis' Distance, and forward multiple regressions. Excel 2007 was used for database creation, management, and variable recoding.

5.1 Participants

All 180 Georgia school systems were included in this study. The final regression analyses included data from FY 2006 and FY 2007. All 180 systems were included for the CRCT analyses. However, because of system configurations, five systems did not report high school data and were excluded from GHSGT analyses.

5.2 Procedures

A request was submitted to the Georgia Department of Education (GADOE) Financial Review Office for financial analysis reports by system. This report provided details on system expenditures by state function and object codes (GADOE, 2009a). After reviewing system financial analysis reports, it was determined systems do not always code certain objects in the same functions. For consistency purposes for this study, certain object codes were reassigned to designated functions. These include the school nurses and counselors reassigned to Pupil Services, library/media specialist reassigned to Media Services, and graduation coaches reassigned to Improvement of Instructional Services. Student achievement data for this study were available on the GADOE web site (GADOE, 2009c; GADOE, 2009d). All data were collected in Excel and then entered into SPSS.

5.3 Variables

The independent variables included in the study were the percentage of total system level expenditures in the following seven categories: teacher salaries and benefits, instruction, pupil services, improvement of instructional services, media services, technology, and other. The dependent variables included in the study were the system percentages of students who earned a passing score on the eighth grade CRCT mathematics, eighth grade CRCT reading, eleventh grade GHSGT mathematics, and eleventh grade GHSGT English Language Arts (ELA). Data were analyzed only from FY 2006 and FY 2007 because of the consistency of the tests and the Georgia curriculum.

6 Summary of Findings

Two years of data revealed that financial expenditures had a statistically significant, though small, effect on measures of student achievement. The most important predictor was improvement of instructional services which had a negative effect on all four dependent variables. Further, improvement of instructional services was the strongest predictor of student achievement in three of the four dependent variables. Teacher salaries and benefits was the second most important predictor variable, having a positive effect on three of the four dependent variables. In two of those variables, it was the strongest predictor. Other expenditures also entered into two prediction equations, both times having a negative influence. Pupil services and technology were each third predictors in a prediction equation, each having a negative effect on student achievement.

6.1 Eighth Grade CRCT Mathematics

An ANOVA was calculated on the eighth grade CRCT mathematics results for FY 2006 and FY 2007 to compare mean pass rates between years. The analysis was significant, $F(1, 358) = 16.54$, $p < .05$. The percentage of students passing the eighth grade CRCT math assessment increased from 76.7% in 2006 to 80.4% in 2007. The test forms were the same for both years. Therefore, the researcher proceeded with data analysis for FY 2006 and FY 2007.

Regression results indicated two of the seven independent variables, improvement of instructional services and teacher salaries and benefits, significantly contributed to the prediction of student performance on the eighth grade math CRCT. These two predictor variables accounted for 22.7% of the variance in student achievement. Improvement of instructional services had a negative effect on student achievement while teacher salaries and benefits had a positive effect on student achievement. Increasing funding allocations for improvement of instructional services by one percent decreased the percentage of students passing the eighth grade CRCT math assessment by .328 percentage points. Increasing funding allocations for teacher salaries and benefits by one percent increased the percent of students passing the eighth grade CRCT math assessment by .247 percentage points.

6.2 Eighth Grade CRCT Reading

An ANOVA was calculated on the eighth grade CRCT reading results for FY 2006 and FY 2007 to compare mean pass rates between years. The analysis was not significant, $F(1, 358) = 1.69$, $p = .194$. The ANOVA analysis indicated the assessment pass rates for the two years were not significantly different.

Three independent variables, improvement of instructional services, other expenditures, and pupil services, significantly contributed to the prediction of student performance on the eighth grade reading CRCT, accounting for 21.5% of the variance in reading scores. Each of these three variables had a negative impact on student performance. For every one percent increase in funding allocations in improvement of instructional services expenditures, the eighth grade CRCT reading pass rate decreased by .388 points. For every one percent increase in funding allocations in other spending, the eighth grade CRCT reading pass rate decreased by .215 points. For every one percent increase in funding allocations in pupil services, the eighth grade CRCT reading pass rate decreased by .102 points.

6.3 Eleventh Grade Mathematics GHSGT

An ANOVA was calculated on the eleventh grade GHSGT math results for FY 2006 and FY 2007 to compare mean pass rates between years. The analysis was not significant, $F(1, 349) = .10$, $p = .752$. The ANOVA analysis indicated the assessment pass rates for the two years were not significantly different.

Regression results indicated two variables, teacher salaries and benefits and improvement of instructional services, significantly contributed to the prediction of student performance on the eleventh grade GHSGT mathematics, accounting for 20.2% of the variance in student performance. Teacher salaries and benefits had a positive effect on student performance while improvement of instructional services had a negative effect on student performance. Increasing funding allocations for teacher salaries and benefits by one percent increased the pass rate for the eleventh grade GHSGT math assessment by .310 percentage points. Increasing funding allocations in improvement of instructional services by one percent decreased the pass rate for the eleventh grade GHSGT math assessment by .231 percentage points.

6.4 Eleventh Grade English/Language Arts GHSGT

An ANOVA was calculated on the eleventh grade ELA GHSGT results for FY 2006 and FY 2007 to compare mean pass rates between years. The analysis was significant, $F(1, 349) = 5.42$, $p < .05$. The percentage of students passing the eleventh grade ELA GHSGT increased slightly from 94.7% in 2006 to 95.5% in 2007. However, the test forms were the same for both years. Therefore, the researcher proceeded with data analysis for FY 2006 and FY 2007.

Three of the independent variables, teacher salaries and benefits, improvement of instructional services, and technology, significantly contributed to the prediction of student performance on the eleventh grade ELA GHSGT, accounting for 18.8% of the score variance. Teacher salaries and benefits had a positive effect on student performance while the other two variables, improvement of instructional services and technology, each had a negative effect on student performance. For every one percent increase in funding allocations in teacher salaries and benefits expenditures, the percent of students passing the eleventh grade GHSGT ELA assessment increased by .309 percentage points. For every one percent increase in funding allocations in improvement of instructional services spending, the percent of students passing the eleventh grade GHSGT ELA assessment decreased by .163 percentage points. For every one percent increase in funding allocations in technology spending, the percentage of students passing the eleventh grade GHSGT ELA assessment decreased by .107 percentage points.

7 Discussion of Findings

Odden, Archibald, and Fermanich (2003) encouraged systems to reallocate current school resources for more effective utilization. They suggested that decisions regarding resource reallocation should be made at the school level rather than at the state or system level. By making these decisions at the school level, school leaders can best identify ineffective strategies and replace them with new strategies that best meet the needs of the individual students of the school. They also stated school level decisions would garner greater faculty and administration commitment.

The Georgia General Assembly (2010) is currently considering legislation that would suspend certain expenditure rules for three years and give local systems greater flexibility in resource allocation. The proposed bill would allow systems flexibility for funds relating to direct instructional costs, media center costs, additional instruction days, and staff and professional development costs. Systems would be allowed to move funds from one category to another to meet local needs without being in violation of state laws (Georgia General Assembly).

Other states are also making adjustments to current regulations in response to the declining economic environment (Johnson et al., 2010). California's governor proposed legislation that would permanently suspend requirements related to how systems spend state funds and would allow local systems to easily transfer funds from one category to another (California Legislative Analysis Office, 2009. The governor of Illinois has proposed a one percent income tax increase to support education and help avoid additional teacher layoffs, school closures, and increased class sizes (Riopell & Essig, 2010). In the fall of 2009, Hawaii furloughed teachers for 17 days, which shortened the school year from 180 days to 163 days (Niesse, 2009). These efforts can be noted across the nation. Johnson et al. (2010) reported that at least 29 states have made cuts to K-12 education over the past 2 years. They suggested that these cuts will continue and even increase as governors and state legislatures begin negotiating 2011 budgets.

As school systems are allowed greater flexibility in resource allocation, leaders should take advantage of this opportunity and investigate how to maximize every dollar for the greatest student achievement. Educational leaders currently find themselves making decisions in financial situations like never before. Results of this study may be beneficial to them as they make resource allocation decisions. One independent variable, improvement of instructional services, had a significant negative effect on every student achievement variable in this study. Careful consideration should be given to expenditures from this account. Leaders should consider if some of the funds normally allocated to this account would best be spent in another area. The GADOE (2007) acknowledged that few studies of professional development used student achievement as a measure of effectiveness or impact. Darling-Hammond and Richardson (2009) stated "traditional" professional development did not deliver improved student achievement. Traditional professional development, they explained, often involved one-time workshops where teachers learned new techniques and behaviors. Darling-Hammond and Richardson reported traditional professional development is not curriculum specific and is often fragmented, leaving teachers with no follow-up or support. They also cited research studies where ongoing, intensive professional development did improve student achievement. These professional development activities were a component of a school reform effort and enabled teachers to learn new knowledge,

apply it in the classroom, and then reflect upon the practice with colleagues. Yoon, Duncan, Lee, Scarloss, and Shapley (2007) noted similar results. They stated professional development activities lasting 14 hours or less will have no effect on student achievement. The most effective professional development activities, Yoon et al. suggested, last between 30 and 100 hours and are scheduled over a period of 6 to 12 months.

After reviewing more than 1,300 studies examining the relationship between professional development and student achievement, Yoon et al. (2007) found that only nine of 1,300 professional development studies met What Works Clearinghouse professional development standards. They recommended more research to examine the link between professional development and student achievement. The results of the current study show that increasing the amount of funds spent for improvement of instructional services has a negative effect and decreases student achievement results. The literature is not conclusive as the effects of this variable on student achievement thus calling into question the funding of Improvement of Instructional Services as defined in this research.

Teacher salaries and benefits was the only independent variable that had a significant positive effect on any of the student achievement variables, and its effect was positive on three of the four achievement variables. While there are many factors which contribute to student achievement, this study only examined teacher salaries and benefits as a financial expenditure category and the relationship of this expenditure category to student achievement. Georgia teachers are paid according to a state mandated pay scale and individual systems vary in the amount and types of supplemental pay and benefits provided to teachers. A note of caution is offered as this variable could be influenced by many other factors which could influence student achievement including a state or system class size policy, since this factor directly has an effect on the dollars spent on teacher salaries and benefits. Other than the fact that Georgia has a specific class size policy, no consideration was give to class size or other factors in the statistical analysis. It is expected that as systems decrease class size, they typically employ more teachers, thereby increasing the amount of money spent on teacher salaries and benefits. Walberg (2006) noted that while decreasing class size is a politically popular notion, it is a very expensive strategy used to improve student achievement. After reviewing many class size reduction studies, Odden (1990) stated that dramatic system wide class-size reductions would have little effect on student achievement. After studying high school science class size, Wyss, Tai, and Sadler (2007) agreed. They suggested that small reductions in class size were not likely to have a significant impact on later student achievement. While systems are facing unprecedented budget shortfalls, they should carefully consider whether reallocating funds from other areas to teacher salaries and benefits to reduce class size would be beneficial in improving student achievement.

Many states have salary scales that provide for increases in salaries based on years of experience and educational credentials or advanced degrees (Honawar & Olson, 2008). Roza (2007) concluded, however, that teacher effectiveness stabilizes after 5 years and may decline as teachers approach retirement. Hanushek and Rivkin (2007) reported that research is mixed regarding the impact of teacher graduate degrees on student achievement. They found no evidence to suggest that simply raising teacher salaries would improve student achievement. Many states are moving toward a revised salary structure that is based on student achievement (Honawar & Olson, 2008). While this is the case in Georgia, it is one of the states considering restructuring the salary scale to include a student performance component (Torres, 2010). Hanushek and Rivkin (2007) stated student achievement gains are a better measure of teacher quality than experience or degree and should be used in determining teacher pay. They acknowledged, however, that current research is mixed regarding merit based pay.

As teacher salaries and benefits was the only predictor variable that had a significant positive effect on student achievement, any changes that are made by systems to teacher salaries and benefits, should be carefully researched before implementation. The merit pay system has been gaining momentum across the country, but current research in this area has produced mixed results (Hanushek & Rivkin, 2007; Honaway & Olson, 2008; Podgursky & Springer, 2007).

The pupil services and technology variables had a significant negative effect on one student achievement variable. These variables did not significantly influence student achievement, positively or negatively, for the other four student achievement variables. The literature does not support the finding of this study. House and Hayes (2002) maintained that school counselors can have great influence on student achievement.

They suggest by assisting minority and economically disadvantaged students in gaining access to more rigorous coursework, school counselors help close the achievement gap between these students and their more advantaged peers. Puskar and Bernado (2007) suggested many students face barriers on a daily basis that may impede their learning process. They pointed out that healthy children learn better than children with health problems and school nurses can play an important role in addressing the health needs of students.

In *Technology and Student Achievement – The Indelible Link,* a report from the International Society for Technology in Education (ISTE) (2008), researchers suggested that students gain more than just subject area knowledge when using technology for instruction and learning; they acquire skills needed to be productive and competitive in the workplace, in higher education, and in community service. Page (2002) found no significant differences between the control and experimental groups' reading scores in technology enriched classrooms, however, a statistically significant difference was found for the math scores.

Media services and instruction did not have a significant effect on any of the student achievement variables in this study although supported in the literature. According to Lance (2002), since the 1960s, school library programs have been changing from the traditional library filled with books and magazines to a more modern media center with print and digital resources. Keith Curry Lance in an interview with Callison (2005) and Loertscher (2008) suggested students who do not have access to the types of information technology a strong media program provides will be at risk in today's society. They cautioned system administrators allocating school funds that when schools overlook the growth of media centers, they risk widening achievement gap. While there is some support for these variables in the literature, there are inconsistent findings in these area leaving administrators to continue to ponder their decisions regarding resource reallocation.

8 Limitations

This study only examined financial data as predictors of student achievement. It did not take into account community, school, leader, or teacher effects. Socio-economic status and other individual student contributions were not considered when examining the financial data of school systems. While the GADOE (2009a) provides guidelines to systems for financial data coding, the way in which individual systems code may still vary according to system policies or individual input errors.

The study is limited by fact that there are many factors that have an effect on student achievement that are not considered in this study. Another limitation is that care should be taken before generalizing the results of this study to systems across the nation. Only Georgia systems were included in this study. Student achievement data were collected from Georgia curriculum assessments and state graduation rates. Georgia class size rules and the effect of these rules on the salary and benefits variable should also be considered before generalizing these findings to other states. Population validity of the test subjects may affect the external validity of the results because the study did not determine if system level expenditures had the same effect on schools in other states that have different student achievement measures than Georgia. In addition, student achievement data were only collected at the eighth and eleventh grade levels.

9 Conclusion

The unprecedented downturn in the nation's economy has led to much uncertainty for school administrators. Class size waivers, proposed resource allocation flexibility, and proposed pay scale changes are just a few indicators of the economic times. Now more than ever, educational resources must be used more effectively if student achievement goals are to be attained. During this time, the issue of receiving additional resources for education is not practical. Educators must manage their current level of resources, and in many cases even work to reduce their current budgets, while attempting to maximize student achievement.

Results of this 2-year statewide study revealed that the ways systems allocate resources to certain funds can affect student achievement to a limited extent. Because resources are limited and administrators are receiving flexibility in resource allocation decisions, having knowledge of the best use of funds to influence student achievement is of most importance. Results revealed that spending for improvement of instructional

services had a significant negative effect on all student achievement variables examined in this study. Conversely, spending for teacher salaries and benefits had a significant positive effect on three of the four student achievement variables. Expenditures for pupil services and technology had a significant negative effect on only one student achievement variable. Expenditures for media services and instruction did not influence student achievement, positively or negatively, in this study. Results indicate that resources should be focused more toward teacher salaries and benefits and less toward improvement of instructional services such as academic coaches, curriculum specialists, and professional development. Administrators should consider the results of this study when developing budgets that are focused on improved student achievement.

10 References

Brimley, V., Jr., & Garfield, R. R. (2005). *Financing education in a climate of change* (9th ed.). Boston: Pearson.

California Legislative Analysis Office. (2009). 2009-10 Budget analysis series: Proposition 98 education programs. Retrieved from http://www.lao.ca.gov/analysis_2009/education/ed_an09004002.aspx

Callison, D. (2005). Enough already?; Blazing new trails for school library research: An interview with Keith Curry Lance, director, Library Research Service, Colorado State Library & University of Denver. Retrieved from http://www.ala.org/ala/mgrps/divs/aasl/aaslpubsandjournals/slmrb/editorschoiceb/lance/interviewlan

Darling-Hammond, L., & Richardson, N. (2009). Teacher learning: What matters? *Educational Leadership, 66*(5), 46-53.

Georgia Department of Education. (2007). *Georgia academic coach program guidance.* Retrieved from http://public.doe.k12.ga.us/ tss_teacher.aspx? PageReq=TSSTeacherCoach

Georgia Department of Education. (2009a). *Chart of accounts.* Retrieved from http://public.doe.k12.ga.us /fbo_financial.aspx?PageReq=FBOFinRevCOAB

Georgia Department of Education. (2009b). *Class size exemption notice.* Retrieved from http://public.doe.k12.ga.us/DN

Georgia Department of Education. (2009c). *CRCT statewide scores.* Retrieved from http://public.doe.k12.ga.us/ci_tes Statewide Scores

Georgia Department of Education. (2009d). *GHSGT statewide scores.* Retrieved from http://public.doe.k12.ga.us/ci_t Statewide Scores

Georgia General Assembly. (2010). A bill to be entitled an act: Current version - House Bill 908. Retrieved from http://www.legis.state.ga.us/legis/2009_10/sum/hb908.htm

Hanushek, E. A. (1996). A more complete picture of school resource policies. *Review of Educational Research, 66,* 397-409.

Hanushek, E. A. (2006). Good intentions captured: School funding adequacy and the courts. In E. A. Hanushek (Ed.), *Courting failure: How school finance lawsuits exploit judges' good intentions and harm our children* (pp. xiii-xxxii). Stanford, CA: Education Next Books.

Hanushek, E. A., & Lindseth, A. A. (2009). Many schools are still inadequate: Now what? *Education Next, 9*(4), 48-56.

Hanushek, E. A., & Rivkin, S. G. (2007). Pay, working conditions, and teacher quality. *Future of Children, 17*(1), 69-86.

Harter, E. A. (1998). *The relationship between educational expenditures and student achievement at the school-level.* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 9822216)

Hill, P. T., Roza, M., & Harvey, J. (2008, December). *Facing the future: Financing productive schools.* Retrieved from Center on Reinventing Public Education Web site: http://www.crpe.org/cs/crpe/view/csr_pubs/251

Honawar, V., & Olson, L. (2008, January 10). Advancing pay for performance. *Education Week, 27,* 26-31.

House, R. M., & Hayes, R. L. (2002). School counselors: Becoming key players in school reform. *Professional School Counseling, 5,* 249-257.

International Society for Technology in Education. (2008). *Technology and student achievement – The indelible link.* Retrieved November 1, 2009, from http://www.iste.org/

Johnson, N., Oliff, P., & Williams, E. (2010, January 28). *An update on state budget cuts: Governors proposing new round of cuts for 2011.* Retrieved from the Center on Budget and Policy Priorities Office Web site: http://www.cbpp.org/cms/index.cfm?fa=view&id=1214

Loertscher, D. (2008). Flip this library: School libraries need a revolution, not an evolution. *School Library Journal, 54*(11), 46-48.

Martin, J. G., Jr. (2009). *The unfulfilled promise to Georgia's children.* Retrieved from http://www.casfg.org/reports/T

Niesse, M. (2009, October 20). Hawaii cuts school year to shortest in U.S. *ThePhiladelphia Inquirer.* Retrieved from http://www.philly.com/inquirer/world_us/20091020_Hawaii_cuts_school_year_to_shortest_in_U_

Odden, A. (1990). Class size and student achievement: Research-based policy Alternatives. *Educational Evaluation and Policy Analysis, 12,* 213-227.

Odden, A. (1997). Rethinking school budgets to support whole school reform. Retrieved from Consortium for Policy Research in Education Web site: http://www.cpre.org/images/stories/cpre_pdfs/pb-06.pdf

Odden, A., Archibald, S., & Fermanich, M. (2003). Rethinking the finance system for improved student achievement. *Yearbook of the National Society for the Study of Education, 102*(1), 82-113.

Odden, A. R., Goetz, M. E., & Picus, L. O. (2008, April). How much will it cost? Achieving school finance adequacy using national average expenditure per pupil. Paper presented at 2008 meeting of the American Education Finance Association, Denver, CO. Retrieved from ttp://www.lopassociates.com/PDFs/Adequacy%

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

Page, M. S. (2002). Technology enriched classrooms: Effects on students of low socioeconomic status. *Journal of Research on Technology in Education, 34,* 389-409.

Podgursky, M., & Springer, M. G. (2007). Credentials versus performance: Review of the teacher performance pay research. *Peabody Journal of Education, 82,* 551-573.

Puskar, K. R., & Bernardo, L. M. (2007). Mental health and academic achievement: Role of school nurses. *Journal for Specialists in Pediatric Nursing, 12,* 215-223.

Riopell, M., & Essig, C. (2010, March 11). Local lawmakers skeptical of governor's budget plan. *The Herald-Review.* Retrieved from http://www.herald-review.com/news/local/article_981fc518-ef44-56af-b489-c9e479c57e1a.html

Roza, M. (2007, January 8). *Frozen assets: Rethinking teacher contracts could free billions for school reform.* Retrieved from http://www.educationsector.org/usr_doc/FrozenAssets.pdf

Roza, M., & Hill, P. T. (2006). How can anyone say what's adequate if nobody knows how much money is spent now? In E. A. Hanushek (Ed.), *Courting failure: How school finance lawsuits exploit judges' good intentions and harm our children.* (pp. xiii-xxxii). Stanford, CA: Education Next Books.

Torres, K. (2010, January 12). Perdue proposes teacher pay changes based on student performance. *Atlanta Journal Constitution.* Retrieved from http://www.ajc.com

Walberg, H. J. (2006). Class size. In P. E. Peterson (Ed.), *Reforming education in Florida: A study prepared by the Koret task force on K-12 education* (pp. 245-254). Stanford, CA: Hoover. Retrieved from http://www.hoover.org/publications/books/3895672.html

Wyss, V. L., Tai, R. H., & Sadler, P. M. (2007, February/March). High school class-size and college performance in science. *The High School Journal 90,*(3), 45-53.

Yoon, K. S., Duncan, T., Lee, S. W., Scarloss, B. & Shapley, K. (2007). *Reviewing the evidence on how teacher professional development affects student achievement* (Issues & Answers Report, REL 2007-No. 033). Washington, DC: U.S. Department of Education, Institute of Educational Sciences, National Center for Education Evaluation and Regional Assistance. Retrieved from http://ies.ed.gov/ncee/edlabs/regions/southwest/