Macrothink Institute™

Journal of Studies in Education
ISSN 2162-6952
2012, Vol. 2, No. 3

The Impacts of Budget Reductions on Indiana's Public Schools

The Impacts of Budget Reductions on Class Size, Instructional Personnel, and Student Achievement for Public School Corporations in the State of Indiana

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Received: April 25, 2012 Accepted: May 10, 2012 Published: August 1, 2012

doi:10.5296/jse.v2i3.1715 URL: http://dx.doi.org/10.5296/jse.v2i3.1715

Abstract

In recent years, economic downturn and changes to Indiana's school funding have resulted in significant financial reductions in General Fund allocations for many of Indiana's public school corporations. The purposes of this three-year statewide study are to explore the possible impacts of these budget changes on class sizes, teaching position reductions, and student achievement indicators. Methods of data collection include a superintendent's survey, a compilation of student standardized test scores, and an evaluation of financial records for participating school districts. Currently, year two is complete with 87 school corporations participating in both years of the study. Descriptive statistics reveal sizeable budget cuts across the state, significant reductions in instructional personnel, a rise in average class sizes, and an increase in standardized test scores. This inquiry provides needed information regarding the depth and breadth of school budget cuts, instructional position reductions, and current data regarding average class sizes for Indiana's public schools.

Keywords: School budget reduction, Class size, Teaching position reduction, Cost benefit analysis

1. Introduction

Due to the national recession and shifts in leadership philosophy at the state level, several changes have been made to the Indiana public school funding formula over the past several years. These changes have resulted in significant financial reductions in General Fund allocations for the majority of Indiana's public P-12 schools (Jarman & Boyland, 2011). It is important to study these budget cutbacks because in Indiana, a public school's General Fund pays for the bulk of its educational operation, including salaries and benefits of teachers and support staff, the majority of teaching supplies, and most student programs. Therefore, General Fund reductions could ultimately impact the quality of education that students receive in Indiana's public schools.

This research is a statewide study with the goal of determining a number of outcomes as a result of these budget reductions. We are asking Indiana's public school superintendents questions regarding budget cuts, position reductions, and class-size information. Financial information is also being obtained for each of the participating school districts, including General Fund revenue records. We hypothesize that an analysis of these data will reveal steady increases in class sizes over a three-year period. In addition, we are examining each participating school corporation's standardized test results to monitor any changes in these student achievement indicators. Thus, the main objective of this study is to examine the impacts of budget reductions on class sizes in Indiana. Secondary objectives include an analysis of school corporations' budget changes in relation to reductions in instructional personnel, while also monitoring student achievement indicators. We believe that it is important to obtain this information and study these changes in Indiana's public schools in order to possess accurate and current data, which can then be used to guide future decisions and research. It is also important to analyze this information in order to scan for possible unintended consequences of widespread school budget reductions.

The collected data will be examined over the three-year period to determine answers to each of the following research questions:

1. What are the average class sizes for third grade, eighth grade, and total elementary and secondary classes in public schools in Indiana?
2. What changes are being made in the number and type of teaching positions, and teaching assistant positions, in public schools in Indiana?
3. What are the changes in General Fund revenue for Indiana public schools?
4. What are students' average math and English/language arts percent passing scores on the statewide standardized examination for third grade, eighth grade, and K-12 total, for Indiana public schools?

2. Background

2.1 School Funding in Indiana

For decades, the funding of Indiana's public school corporations has proven to be a challenging and controversial process (Toutkoushia & Michael, 2005). Historically, the Indiana public school funding formula placed a substantial reliance on property taxes as a

major source of General Fund revenue. Prior to 1974, individual school corporations actually had complete control over their own General Fund tax rates (Michael, Spradlin, & Carson, 2009). This created a disproportionate system due to the fact that different communities had varying levels of assessed valuation per student, depending on the local property tax base or the overall wealth of the community. Across the state, property tax rates, as well as school corporations' annual per pupil expenditures, varied greatly.

Over the years, state policy makers recognized these concerns and attempted to limit and reduce the variability of property tax rates across the state (Toutkoushia & Michael, 2005). In order to offset disparities, legislators worked to create a funding formula in which school districts with high assessed valuation received less state aid, while school corporations with less assessed valuation per pupil received additional state funds. More recently, an "at-risk" index (now termed the "complexity index") was implemented in order to provide extra funds to school corporations with high percentages of students eligible for free and reduced meals (Michael, Spradlin, & Carson, 2009, p. 4). Unfortunately, the system has never been perfected and funding inequities have continued. For example, Annual School Performance Reports from 2011 show three-year average expenditures for some Indiana public school corporations to be as high as $15,000 per pupil, while other Indiana corporations' per pupil expenditures were $9,000 or less (Indiana Department of Education Website, 2012).

In 2008, Indiana passed property tax relief, which lowered property-owners' tax bills by approximately 30%. This legislation also included property tax caps, slated to take effect in 2010, which capped homeowners' property taxes at 1% of the home's assessed value, apartments and agriculture land at 2%, and business property at 3% of assessed value (State of Indiana, Press Release, March 2008). Also in 2008, the Indiana General Assembly changed the Indiana public school funding formula to rely much more on sales tax, thus reducing the reliance on local property tax as a central revenue source for school corporations' General Funds (Michael, Spradlin, & Carson, 2009).

Because the shift to state sales tax lessened the association between a school corporation's level of assessed valuation and their General Fund revenue, it was hoped that the equity issue in terms of the General Fund would be diminished. However, due to a number of unresolved factors, some funding gaps have remained. One issue was that for many years, Indiana's formula allowed schools with waning enrollments to receive additional dollars through a restoration grant. The restoration grant provided extra funds to prevent school districts with declining enrollments from experiencing funding losses all at once. In addition, a provision called a "deghoster" continued to allow these corporations to receive supplementary dollars for students who had moved to other corporations. These programs, while beneficial for corporations with declining enrollments, left less money to be distributed among the remaining districts. Because the formula used an average of past enrollments, instead of current enrollments to determine per pupil funding, the money was not following the student. Therefore, the formula disadvantaged school corporations with quickly growing enrollments. In short, Indiana school corporations with rapidly growing student populations found themselves receiving less General Fund money per pupil, while simultaneously experiencing higher costs.

In 2009, this issue prompted three school corporations experiencing growing enrollments to initiate a lawsuit against the State of Indiana, alleging the current formula lacked uniformity and negatively impacted school corporations with growing enrollments by failing to provide a level of funding adequate to meet current educational requirements (Michael, Spradlin, & Carson, 2009). The state responded by adjusting the funding formula, including eliminating the restoration grant and the deghoster. The lawsuit was subsequently withdrawn in 2011.

However, in the meantime, the new property tax caps took effect, diminishing many school corporations' revenue for their Debt Service, Transportation, and Capital Project Funds, which are still funded through local property tax dollars. To raise needed additional funds, a number of Indiana school corporations have attempted to hold local referendums, requesting that their community members vote "yes" on increasing property taxes in order to cover operating expenses (General Fund referendum) or the costs of facilities (Capital Projects referendum). Since 1998, local voter referenda have been required in Indiana when school corporations are requesting that their constituents' property taxes be raised above the tax cap or if large construction projects are being proposed (Hiller & Spradlin, 2010). In some cases, these local school-initiated referendums have been successful, but for the most part, they have not. As of January 2012, there have been a total of 71 referendums held in Indiana. Of these 71 referendums, 41 (57.7%) have failed (CEEP website, 2012).

Like most states in our nation, Indiana is currently recovering from a recession. The recession has seriously impacted revenues generated from taxes. Sales tax revenue is especially vulnerable during a recession, causing a deterioration of funding available for schools. In 2009, the Indiana legislature reduced public school funding by 3%, effectively cutting $300 million from the 2010 public education budget, resulting in cutbacks in personnel and programs at the school level. Educators were hopeful that this was a "one-time cut." However, in January 2011, the Governor of Indiana announced that the 3% cut would continue, effectively providing school corporations with the same lowered budget amounts in 2011 as in 2010. Due to inflation and other increasing cost factors, this meant additional cuts for many school corporations in the 2010-2011 school year.

The sum of the above funding reductions for Indiana's public schools, including the new tax caps, direct statewide cuts, and changes in the school funding formula, have resulted in an unusually high levels of budget reductions for many schools. School corporations across the state have been forced to reduce staff and programs, and in some cases, to close schools (Jarman & Boyland, 2011). The possibly impacts of these budget reductions on class sizes, personnel, and student achievement are the focus of this study. A review of literature on class size will be discussed next.

2.2 Class Size

Throughout public education's history, the subject of class size has presented teachers, parents and administrators with complex issues. Discussions have surrounded the issue of "best" class size, including the relationship of smaller classes to student achievement for economically disadvantaged children. Other studies have focused on smaller classes and student achievement as it pertains to children from middle or upper class families. Several

studies have examined the relationship of class size as it relates to the attitudes and teaching methodology of classroom instructors. Although these are all important, the most perplexing issue continues to be the one that examines the general relationship between class size and student achievement regardless of the make-up of the student population.

As a result of an economic slump, a number of states find themselves financially challenged. State legislatures are re-examining, and many have cut, educational budgets. School districts have reduced both teaching and non-teaching personnel as a response. In Indiana, there has been a substantial decline in public school funding as the state wrestles with balancing its budget. The problem for Indiana is becoming more than just financial. The emerging question is if Indiana's financial problems will result in long-term educational changes as well?

As more teachers are laid off and class sizes begin to increase, the original, overriding class size question regarding the impact of larger classes on student achievement is finding its way back to the forefront. Unfortunately for schools, the enactment of No Child Left Behind leaves little room when it comes to meeting Adequate Yearly Progress (AYP). The Indiana Department of Education requires that its schools reach AYP. Schools that repeatedly fail to meet their annual AYP goals will face state takeover. Clearly, Indiana's schools are caught in the middle of a political-economic-educational battle.

It is common knowledge that parents and instructional staff desire smaller class sizes. This is based on the belief that low class sizes are an important component in maintaining a quality educational program. However, research findings, especially earlier studies, have varied. While many studies have indicated that smaller classes do have a positive influence on student achievement, a few have indicated that larger classes may be more beneficial in certain instances. In addition, a number of studies have reported that class size made no difference in the achievement level of students.

In order to understand and explore this issue, it is necessary to develop a working definition of class size. In their 1955 literature review, Class Size: The Multi-Million Dollar Question, Ross and McKenna defined a class as "any group of students scheduled to meet regularly for all or a definite fraction of a school day with one particular teacher for the purpose of learning or being instructed in some specific part of the school's curriculum" (1955, p. 24). Other organizations, such as the National Education Association (1965), have described class size to mean the number of pupils for whom a teacher is responsible in a self-contained classroom. For the purpose of this study, a combination of these definitions is appropriate and the term "class size" will mean the number of students being taught by a single teacher, in a single classroom, for a specific period of time.

Looking back to 1971, the Indiana Department of Education indicated that Indiana's class sizes, or pupil-teacher ratios, were slightly higher than the national averages. In 1971, the ratios for Indiana were 24.3 pupils per teacher for kindergarten classes, 24.8 per teacher for grades one through six, and 21.9 students per teacher in grades seven through twelve. By 1976, the figures showed a decided drop in ratios for the primary grades. Indiana's ratios for the 1976-1977 school year were reported as 24.6 students per teacher in kindergarten, 22.1 students per teacher in grades one to six, and 21.3 pupils per teacher in grades seven through

twelve. The gap between the national combined average and the Indiana combined average narrowed significantly through the 70's and into the early 80's. In the 1983-1984 school year, the combined U.S. average stood at 18.45 students per teacher, while the Indiana combined average was reported as 19.90 (Jarman, 1985).

As mentioned earlier, class size research has produced mixed results. However, it is important to note that several reviewers have argued that many class size studies, especially early studies, failed to produce definitive answers because of flawed or oversimplified design techniques. In a comprehensive review of literature, Murphy (1975) reported that faulty research design was a serious limiting factor in class size research studies conducted before 1975. The National Education Association indicated that in many studies that examined the question of class size and student achievement, the research had typically been one-dimensional and short-term; therefore, early class size research was not nearly as comprehensive as necessary for such a complex issue (NEA, 1965). For example, an early study in 1909 claimed a correlation between smaller classes and higher student achievement (ERS, 1978). This research, however, was only based on one year of student promotion data. In this study, which involved third grade students in the 6th District of Philadelphia, it was found that 88% of the students in classes below 40 students were promoted to the next grade level, 85% of students in classes with 40-49 students were promoted, whereas only 81% of the students in classes above 50 students were promoted. Therefore, the researcher reported a relationship between increased student achievement and smaller class size because the students in the classes with less than 40 students showed a higher rate of promotion than any other group (ERS, 1978).

It was during the 1920's that increased interest in the issue of class size and student achievement emerged. A great deal of material was published during this time period for both the elementary and secondary levels. However, by 1930, interest had begun to level off and remained fairly consistent until the late 1970s. Several researchers, including Goodlad (1984) indicated that while most of the studies on class size conducted prior to 1930 were attempts to determine the relationship between class size and student achievement, typically, student grades, class standing, or promotion results measured student achievement in those studies. There was little, if any, attempt to control the various independent variables that occurred in these studies and reliable standardized testing instruments were still in the development phase (Goodlad, 1984; NEA 1965).

In 1954, Blake conducted a summary of early class size research. Blake analyzed the literature written on class size prior to 1950. He located 267 studies and chose 85 of those that dealt with elementary and secondary students. From these studies, 35 indicated that small classes were better than larger ones, 18 reported that larger classes were better than smaller ones, and 32 indicated that the authors did not consider class size to be an important issue. In further analyzing these studies, Blake established six criteria to test their scientific acceptability. Only 22 of the original 85 studies met these requirements. Of these 22, those favoring smaller classes numbered 16, those favoring larger classes numbered three, and the remaining three were inconclusive (p. 119).

In 1964, Menniti studied the effects of class size on reading and mathematics achievement in Catholic elementary schools in Harrisburg, Pennsylvania, and Evansville, Indiana. For both locations, he concluded that large classes, those with 40 or more students, significantly favored achievement gains for average pupils in mathematics. Only the Harrisburg location found the same significance for reading scores. Also, low IQ groups exhibited positive gains for both subject areas when placed in larger classes, but high IQ groups assigned to large classes did not (Menniti, 1964). A study conducted by Furno and Collins, however, concluded that a class size of one to 25 was considerably better for non-White students in both reading and mathematics than classes above 25 (1967). Furno and Collins also concluded that smaller classes showed significant gains in both areas for students in regular and special education curricula (p. 146).

The Metropolitan School District of Madison, Wisconsin, conducted a research study in 1976 to measure the effects of class size on the reading attainment of students in grades one through three. “Small” classes contained less than 25 students for each of the three years studied. “Large” classes were any classes above this number. Results of the study showed that students consistently enrolled in small classes had lower reading scores than those enrolled in large classes. Further examination, however, revealed that the majority of students enrolled in smaller classes had lower IQ scores than those enrolled in the larger classes. At the end of the study, the district indicated, “It is impossible to know if placing students in small classes, grades one to three, would have any effect on their reading achievement scores…” (MMSD, 1976, p. 19).

A 1977 study conducted by Johnson at the South Carolina Department of Education produced an interesting mix of results. This study found that smaller class sizes significantly increased reading achievement levels for first grade students, but had no noticeable effect on math scores. The study also concluded that when viewed as a stand-alone variable, teacher in-service training had no effect on pupil achievement in either reading or mathematics. However, when combined with class size, the results showed that students in small classes, whose teachers received in-service training, scored significantly higher in reading than students in large classes whose teachers had not participated in the training sessions. Interestingly, this correlation did not hold up for math achievement (1977).

In a review of class size research conducted in 1978, Glass and Smith proclaimed that through a meta-analysis of existing research data, they were able to make “bold generalizations” about the effects of class size on pupil achievement where previous research analysis could offer only “timid generalizations” (pp. 22-23). Glass and Smith reported that smaller class sizes could be expected to improve students’ academic achievement. Unlike many earlier studies, the Glass and Smith study used class sizes ranging from one to one (tutorial instruction) up to forty to one (large group instruction). Glass and Smith claimed that earlier studies did not show a marked difference in achievement gains because their class sizes were normally above the 15 to one student mark. Glass and Smith concluded that class size could be increased from 20 students per class up to 40 students per class with only a 5% decrease in student achievement (p. 35). They postulated that decreasing from 20 students down to 10 students per class would result in an increase in student achievement of

approximately 10%, with the optimum achievement level being reached at the one to one, or tutorial level. The authors further stated that neither grade level, nor subject taught, nor ability of pupils altered the basic results.

Since Glass and Smith's initial meta-analysis, there has been some rebuttal, notably from Educational Research Service. In 1980, the Educational Research Service contended that Glass and Smith had over-generalized their findings and had not taken into account all of the contradictory studies that preceded them. The Educational Research Service further contended that the Glass and Smith samples from which they based their findings were not of sufficient number to bear out the generalizations that were being made (pp. 239-241). However, other researchers, such as Hedges and Stock (1983) and Cahen and Filby (1979) supported the Glass and Smith findings.

Arguably, the most notable United States study on class size was the Tennessee initiative known as Project STAR (Student Teacher Achievement Ratio). This study officially ran from 1985-1989, although many student participants were followed for years afterwards. Project STAR was a randomized $12 million experiment commissioned by the Tennessee state legislature which developed into one of the most extensive class size research projects ever conducted. It was voluntary in nature and open to all Tennessee public elementary schools. Of the 180 schools that expressed an interest in participating, only about 100 schools had enough students in each grade to qualify. Selected schools had to agree to four years of participation and to allow visitation from oversight teams who would verify class size, interview school personnel, and collect data. Participating schools also had to allow for additional testing and for the random assignment of students and teachers to class types from kindergarten through grade three. Tennessee paid for additional teachers and classroom aides and only class size conditions changed within the participating schools. Curriculum-based test results were used as the student achievement indicator. The experiment randomly assigned kindergarten students into small classes (13-17 students), large classes (22-26 students), or large classes with a full-time classroom aide. Teachers were also randomly assigned to classes of different types and the assignments of students and teachers to class type were maintained through the third grade. Students who entered the study after kindergarten were randomly assigned to classes upon enrollment. The sound design of the STAR study prompted highly respected researchers and statisticians, such as the late Frederick Mosteller, then Professor Emeritus of Mathematical Statistics at Harvard University, to declare very high confidence in the study's data. In fact, in a review conducted by Mosteller, Light, and Sachs, Project STAR was called "one of the great experiments in education in U.S. history" (1996, p. 814).

At the close of the STAR Project, several researchers analyzed and then re-analyzed the data. Repeatedly, the results indicated that students placed in the smaller classes showed higher gains in reading and in math in the primary grades. These gains were somewhat modest in the short-term, but were sustained over time. In addition, significant long-term gains were seen in terms of college attendance rates, especially for African-American students. In summary, Finn and Achilles (1990) reported that the results of the STAR Project provided convincing evidence as to the benefits of reduced class sizes in the primary grades and what appeared to

be a positive longitudinal effect, especially for minority students. Other researchers have supported this analysis of the data. After a sophisticated analysis of the results, Nye, Hedges, and Konstantopoulos also described higher long-term gains for students in smaller classes and additional benefits for minority students, saying, "The analysis reported here suggest class size effects that are large enough to be important for educational policy and that are quite consistent across schools. Thus, small classes appear to benefit all kinds of students in all kinds of schools" (2000, p. 123). Krueger and Whitmore also conducted an in-depth analysis of Project STAR data and reported a long-term benefit for African-American children. They went as far as to suggest that smaller class sizes might actually help lessen the Black-White disparity in college attendance (2001).

The STAR Project continues to be viewed as critically important research in the ongoing discussion regarding the impacts of class size on student achievement. In light of its findings, many states commenced statewide class size reduction efforts over the past 15 to 20 years. Indiana's initiative began in the mid 1980s, as did a review in Texas during the same time. Nevada and Oklahoma's efforts started in 1989, while Utah's work began in 1990. Wisconsin began a class size reduction effort in 1995 and California in 1996. Many of these class size initiatives continue today; however, several others have been repealed due to economic factors.

The question of whether increased student achievement is important for the broader good of society is not in dispute. Educators, politicians, economists, and physicians acknowledge the importance of improved educational achievement as it relates to the health and prosperity of a nation. The tie between student achievement and a nation's economic well-being is real and worldwide. In 2003, an English study published in The Economic Journal, and entitled "Class Size, Education, and Wages," researchers Dustmann, Rajah, and van Soest, stated, "We use micro data for England and Wales to examine the effects of class size on the decision to stay on in full time schooling at 16 and on wages later in life. We find that class size has a sizeable and significant effect on the decision to stay on. This finding is very robust. Wage equations show the effect of staying on is significantly positive for wages. Combining this with the effect of class size on the staying on decision, reveals that class size significantly affects future wages" (p. F99).

However, even if lower class sizes mean a better chance of students staying in school, not everyone agrees that reducing class size is worth the cost. In 2002, Florida amended its constitution and adopted Amendment 9. Beginning with the school year 2003–2004, class sizes in Florida were to be reduced by two students per year until the average number of students per class did not exceed the maximum set by the new law. Per legislative action, the funding needed to meet this requirement was to be the responsibility of the state, not the local district. However, it was estimated that by 2012, the amendment would cost billions of state dollars, causing many groups, including the Florida Association of District School Superintendents, to oppose the amendment.

In 2006, Normore and Ilon of Florida International University wrote an article addressing the cost-benefit analysis of class size. The authors explained that, "…the debate is whether the

costs involved are the best ways to spend taxpayers' monies...this article finds that reducing class size is the most expensive of state inputs that affect achievement scores. Varying the mix of school personnel (administrators, teachers, and teacher aides) and investments in teacher quality (training and experience) are shown to produce the same results (raising test scores) at a lower cost than the reduction of class sizes" (p. 429). The conclusions drawn by Normore and Ilon appear to have lent credibility to those who later suggested that Florida consider changing Amendment 9 so that a district's overall classroom averages could be used as opposed to individual classroom averages. Therefore, while there is a body of research that supports the idea that lower class size increases student achievement, the question remains, "at what price?"

Indiana's class size reduction initiative, called Project Prime Time, began in 1985. This program, initiated as a categorical grant, provided school corporations with additional funds in order to reduce class size at the primary grade levels. Under Prime Time, the target ratio was set at 18 students per teacher for kindergarten and first grade, and 20 students per teacher at grades two and three. As the program was being considered, a statewide study found that there was not enough classroom space in most Indiana school districts to hire the number of teachers needed to fully implement Prime Time (Jarman, 1985). Consequently, the initiative that finally passed the Indiana legislature allowed school districts to implement Prime Time with the option of hiring three instructional assistants in the place of hiring one new "Prime Time" teacher. However, the amount of money that Indiana placed in this categorical grant did not allow school districts to fully recover the entire cost associated with the hiring of new Prime Time teachers and instructional assistants. The result was that school districts had to reduce their upper elementary personnel in grades four and above in order to fully implement the project. Eventually, as it became apparent that the cost associated with Prime Time salaries and benefits would become too high, the Indiana legislature folded the Prime Time grant monies in with a school district's General Fund revenues. The final result is that Project Prime Time, as it was originally conceived, no longer exists in the state of Indiana.

Recently, this type of action has become more the rule than the exception. A proposal to loosen elementary school class size requirements is now making its way through the Texas legislature. For 27 years, Texas has had a class size cap that limits kindergarten through third grade classes to no more than 22 students per class. This year, the Texas comptroller is proposing to amend the law so that school districts could average 22 students across the district rather than using 22 as a hard cap for every classroom. However, teacher groups, parents and some local school officials are against that proposal. It has been estimated that allowing this amendment could save the state of Texas as much as $558 million over a two-year period. According to Sterling Lloyd, a senior research associate at the Editorial Projects in Education Research Center, 11 states relaxed classroom requirements in 2010, either through legislative action or administrative action (Harrison, 2011).

As Indiana school districts receive less revenue, reductions in teaching positions could ultimately result in increased class sizes in schools across the state. This three-year study examines any changes in average class sizes in Indiana and also monitors student achievement indicators. In addition, this study gathers data directly from superintendents

regarding personnel cut backs since 2009, which provides important and current information concerning the numbers and types of instructional positions that have been reduced in Indiana's public schools.

3. Method

3.1 Description

The primary objectives of this research are to gather and report data regarding budget cuts in Indiana's public schools and examine the possible impacts of those budget cuts on class size. Instructional position reductions and student achievement indicators for the participating school corporations using statewide standardized test scores are also under analysis. Based on the study's objectives, a combination of public records research and survey methodology was deemed most appropriate.

3.2 Procedure and Participants

For the survey portion of this study, all questions were developed by the researchers and were reviewed by a panel experienced in the development and use of educational surveys including college professors and practicing school administrators. The demographic questions were identified as appropriate through a review of the literature. The year one (2009-2010) survey and a cover letter were mailed to every public school superintendent, 293 total, in the state of Indiana in late July of 2010. By the end of August, a total of 103 superintendents had completed and returned the survey. A second round of surveys is sent out to non-respondents in early September 2010, which resulted in an additional 29 completed surveys being returned. Therefore, the total number of returned surveys for year one was 132, giving a return rate of 46%. Of the 132 returned surveys, 127 were considered "valid" and usable. All surveys were coded for confidentiality and the results entered into a spreadsheet.

The year two (2010-2011) survey and cover letter duplicated the 2009-2010 survey, except for appropriate date changes. In July 2011, the year two survey was mailed to the 127 superintendents who had participated in year one. By the end of August, a total of 73 superintendents had completed and returned the survey. A second round of surveys was sent out to non-respondents in early September, which resulted in an additional 16 completed surveys being returned. Therefore, the total number of returned surveys for year two was 89, giving a return rate of 70%. Of the 89 returned surveys, 87 were considered "valid" and usable. All survey were coded for confidentiality and results entered into a spreadsheet.

Simultaneously, during the summer of each year, a research and data collection of public records took place by accessing the Indiana Department of Education's master database of school corporation statistics and student achievement indicators. First, the student achievement indicators for each of the responding superintendents' school corporations were obtained. The student achievement indicators being using for this study are the results from the Indiana Statewide Testing of Educational Progress Plus (ISTEP+), which is a standardized examination administered in the spring to all students in grades three through eighth. The ISTEP+ exam is based on Indiana state academic standards. High levels of both reliability and validity are reported for this assessment (IDOE, 2010, pp. 108-116). We

collected the ISTEP+ percent passing results for each school corporation in math and English/language arts for third grade, eighth grade, and for each school corporation as a whole. Third and eighth grades were selected expressly for this study because they are the first and last grade levels of students to take the ISTEP+ exams in Indiana's public schools, therefore, representing the broadest range of grade levels possible for this specific exam.

After collecting the student achievement indicators, the survey results, financial records, and end of year performance records for the respondents' school corporations were analyzed using descriptive statistics in order to report class size data, General Fund revenue information, and instructional personnel position reductions.

4. Results

In regards to the demographics of the school corporations participating in this study, the information reported by the superintendents presented an accurate representation of the state of Indiana in terms of typical population distributions and characteristics (U.S. Census Bureau Website, 2011).

In the 2009-2010 survey, the communities of the participating school corporations were 65% rural, 17% suburban, 12% town, and 6% urban. Of the participating corporations, 53% had 1000-3000 students, 19% had 1000 or less students, 16% had more than 5000 students, and 12% had 3001-5000 students.

The 2010-2011 survey demographics were similar to those reported in 2009-2010. The communities of the participating school corporations were 63% rural, 15% suburban, 16% town, and 6% urban. Of the participating corporations, 58% had 1000-3000 students, 17% had 1000 or less students, 15% had more than 5000 students, and 10% had 3001-5000 students.

With respect to the General Fund budgets of the participating Indiana school corporations, results indicated a wide range in budget amounts and budget cuts. The mean budget reduction for the participating school corporations from 2009 to 2010 was $1,096,600 (SD = $1,964,100). In 2010-2011, the mean budget reduction per participating school corporation was $685,411 (SD = $900,534). Table 1 documents the overall General Fund results.

Table 1. General Fund Budgets of Participating School Corporations

	Mean	High	Low
2009 General Fund budget	$21,776,000.	$218,250,000.	$3,600,000.
2010 General Fund budget	$19,654,247.	$217,157,000.	$1,500,000.
2011 General Fund budget	$19,075,648.	$207,261,000.	$1,406,000.
Amount reduced from 2009 to 2010	$1,096,600.	$17,400,000.	$12,746.
Amount reduced from 2010 to 2011	$685,411.	$5,620,969.	$0.

Of significant interest are the numbers and types of teaching positions that have been reduced in Indiana's public schools since 2009. For the 2009-2010 school year, the 127 participating school corporations reported a total reduction of 1135 teaching positions. This includes all grade levels and represents a mean of 8.94 reduced positions per school corporation. Of the eliminated teaching positions, 449 were elementary (K-5) positions and 497 were secondary (6-12) positions. In the fine arts, 89 teaching positions were reported as eliminated in elementary fine arts (music, art, physical education) while 59 reduced positions were secondary related arts teachers. Finally, of the reduced teaching positions, 41 were in "other" areas, such as guidance counselors or media specialists. Several superintendents made comments explaining that they had reduced positions by "encouraging" retirements and several commented that to minimize eliminating positions, they are now sharing more teachers among and between buildings.

In addition to the teaching positions reduced, instructional assistants' positions were also substantially cut in 2009-2010 with the participating corporations reporting a total loss of 570 of these positions. This represented a mean of 4.63 instructional assistant positions eliminated per corporation.

For the 2010-2011 school year, the 87 participating school corporations reported a total of 412 teaching positions eliminated with a mean of 4.74 reduced teaching positions per school corporation. Of the eliminated teaching positions, 116 were elementary (K-5) positions and 180 were secondary (6-12) positions. Elementary fine arts lost 33 positions (music, art, physical education), while 28 reduced positions were secondary related arts teachers. An area that was hit harder in the 2010-2011 school year involved the "other" teachers, which are non-classroom licensed personnel such as counselors and media specialist, with 55 positions reduced in year 2010-2011, as opposed to 41 the year before.

Instructional assistants' positions were again reduced in 2010-2011, with the school corporations reporting a total loss of 197 of these jobs. This represents a mean of 2.29

instructional assistant positions eliminated per participating corporation. Table 2 presents the breakdown of position reductions for both years of the study.

Table 2. Breakdown of Teaching and Instructional Assistants' Positions Reduced in Indiana's Schools

	School Year 2009-2010			School Year 2010-2011		
Type of position reduced	Number of positions reduced	M	SD	Number of positions reduced	M	SD
Total licensed teaching positions eliminated (all kinds) Grades K-12	1135	8.94	17.86	412	4.74	7.54
Elementary classroom teachers Grades K-5	449	3.56	8.44	116	1.33	3.09
Secondary classroom teachers Grades 6-12	497	3.98	8.79	180	2.07	5.05
Elementary fine arts teachers (e.g., art, p.e., music) Grades K-5	89	.72	2.32	33	.38	.91
Secondary related arts teachers (e.g., art, music, band) Grades 6-12	59	.47	1.03	28	.32	.97
Other areas (e.g., counselor, media specialists)	41	.32	3.24	55	.64	1.52
Instructional assistants	570	4.63	7.73	197	2.29	5.11

Note. School year 2009-2010 results based on survey responses from 127 superintendents.

School year 2010-2011 results based on survey responses from 87 superintendents.

Combining the position reductions over the two years of this study, the total number of teaching positions reduced was 1547. The total number of instructional assistants' positions that were reported reduced was 767. These figures are presented in Table 3.

Table 3. Total of Teaching or Other Instructional Positions Reduced in Indiana's Schools over a two year period from 2009-2011

	Totals
Type of position reduced	Number of positions reduced
Total licensed teaching positions eliminated (all kinds) Grades K-12	1547
Elementary classroom teachers Grades K-5	565
Secondary classroom teachers Grades 6-12	677
Elementary fine arts teachers (e.g., art, p.e., music) Grades K-5	122
Secondary related arts teachers (e.g., art, music, band) Grades 6-12	87
Other areas (e.g., counselor, media specialists)	96
Instructional assistants	767

In order to determine class size information, superintendents from the participating corporations were asked to provide their average class sizes for each year. For the 2009-2010 school year, superintendents reported average elementary class sizes at 21.05 and secondary class size at 21.77. Superintendents reported the average third grade class size for the 2009-2010 school year at 22.34 and the average eighth grade class size at 23.51.

For the 2010-2011 school year, superintendents reported the average elementary class size at 22.37, a difference of an additional 1.32 students per class from the previous year. Secondary classes were reported at 23.31, which is an addition of 1.54 students per class. Superintendents reported that the average third grade class size for the 2010-2011 school year was 22.90, a difference of plus .56 from 2009-2010. The average eighth grade class size was reported at 24.28, which was up .77 from the previous year. Table 4 presents class size information for the 87 school corporations that have participated in the study in both years one and two.

Table 4. Class Sizes for Indiana's Public Schools

	School Year 2009-2010		School Year 2010-2011		
	M	SD	M	SD	Difference
Elementary class size Grades K-5	20.93	2.56	22.37	2.53	+1.44
Secondary class size Grades 6-12	21.62	4.25	23.31	3.54	+1.69
Third grade class size	22.34	3.19	22.90	2.82	+ .56
Eighth grade class size	23.51	3.71	24.28	3.68	+ .77

Note. Based on survey results from superintendents participating in both years of the study (n = 87).

Achievement indicators were collected for the school corporations participating in this study using statewide standardized test (ISTEP+) data in English/language arts and math for the total corporation, which is a summary of all grades tested, and for the individual grades of third and eighth (Indiana Department of Education Website, 2011).

In 2009-2010, the participating corporations had a mean English/language arts percent passing rate of 72.92 for all grades tested. Math passing percentages were at a mean of 75.46 for all grades tested in that year. The percent of students passing both areas of math and English/language arts for the participating districts was a mean of 65.32 for all grades. For the specific grades of interest, third and eighth, the third graders in the participating corporations had a mean passing percent of 77.83 for English/language arts and a mean passing percent of 75.92 for math. For both subjects, third graders in the participating

corporations showed a mean passing percent score of 69.16. Eighth grade scores for the participating corporations were somewhat lower than third grade scores with a mean passing percent of 67.91 for English/language arts and 71.15 for math. The mean passing percent was 60.24 for eighth graders for both areas tested (math and English/language arts).

In the 2010-2011 school year, the participating corporations had a mean ISTEP+ English/language arts percent passing rate of 77.00 for all grades tested. Math total corporation passing percentages were at a mean of 80.22 for all grades tested. The percent of students passing both areas of math and English/language arts for the participating districts was a mean of 70.16 for all grades. Third graders in the participating corporations had a mean passing percent of 82.83 for English/language arts and a mean passing percent of 79.64 for math. For both subjects, third graders in the participating corporations showed a mean passing percent score of 74.29. Eighth grade scores for the participating corporations were again somewhat lower than third grade scores with a mean passing percent of 73.56 for English/language arts and 78.29 for math. The mean passing percent was 66.95 for eighth graders for both subjects, math and English/language arts. Table 5 presents the standardized test results of the 87 school corporations that have participated in the study for both years.

Table 5. Achievement Indicators - standardized test scores (Indiana Statewide Test for Educational Progress - ISTEP+) for the 87 corporations participating in both years of the study

	School Year 2009-2010	School Year 2010-2011	
Indicator and grade level	Percent Passing	Percent Passing	Difference
Total corporation English/language arts (All grades tested: 3, 4, 5, 6, 7, 8)	72.92	77.00	+4.08
Total corporation math (All grades tested: 3, 4, 5, 6, 7, 8)	75.46	80.22	+4.76
Total corporation both math and English/language arts (All grades tested: 3, 4, 5, 6, 7, 8)	65.32	70.16	+4.84
3rd grade English/language arts	77.83	82.83	+5.00
3rd grade math	75.92	79.64	+3.72
3rd grade both math and English/language arts	69.16	74.29	+5.13
8th grade English/language arts	67.91	73.56	+5.65
8th grade math	71.15	78.29	+7.14
8th grade both math and English/language arts	60.24	66.95	+6.71

5. Discussion and Conclusions

In the state of Indiana, a school corporation's General Fund is primarily used to pay for the salaries and benefits of personnel, as well as student programs and supplies. Recent reductions in General Fund revenue for Indiana's public schools have resulted in high levels of cuts in both personnel and programs. Over a several-year period, this study documents changes in school corporations' General Fund budgets, class sizes, and instructional positions, while also monitor student achievement indicators.

An examination of 2009-2010 and 2010-2011 data regarding budget reductions reveals important information. The school corporations participating in this study report substantial budget cuts over the two-year period, with a mean General Fund reduction of $1,096,000 in school year 2009-2010 and $685,411 in school year 2010-2011. In attempts to offset revenue losses, in 2009-2010, the 127 participating school corporations made considerable reductions in instructional personnel, including eliminating a total of 1135 teaching positions (M = 8.94) and 570 instructional assistants' positions (M = 4.63).

In school year 2010-2011, cuts were still being implemented, but to a lesser degree. The 87 Indiana school corporations that continued to participate in this study in the second year reported a total of 412 teaching positions (M = 4.74) and 197 instructional assistants' positions (M = 2.29) reduced for the 2010-2011 academic year.

Summing the position reductions over the two years of this study shows a reduction of 1547 teaching positions and 767 instructional assistants positions, as presented in Table 3. However, it is important to note that these results represent only the 127 and 87 school corporations whose superintendents participated in this study in years one and two respectively. There are actually 293 public school corporations in the state of Indiana. Thus, by multiplying 293 times the means of the reduced positions, a rough estimate of statewide position reductions can be generated. These calculations provide an approximation of 4008 reduced teaching positions for the two-year period of 2009-2011 for all public school corporations in Indiana. The approximate number of reduced instructional assistant positions statewide is 2028 for Indiana's public school corporations for the same time period.

As expected after sizeable teaching position reductions, class sizes have increased in Indiana over the two-year period, although not as much as one might have projected. For the corporations participating in this study, class sizes have grown on average two students per classroom at the secondary level and approximately one student per classroom at the elementary level. Interestingly, student scores on standardized tests have risen during the two-year period. The percent passing on the statewide examinations in English/language arts and mathematics rose between four and five percent for the 87 school corporations participating in both years of this study. Eighth grade students, in particular, showed considerable gains on the Indiana exams in both subject areas tested.

However, two years of data, while valuable, cannot establish long-term trends. Further research is needed, as it will be important to follow any changes in class sizes and statewide achievement data in Indiana over a longer period. In particular, we wonder if eventually there will be a "tipping point" reached, as postulated by Glass and Smith (1978), in which larger class sizes might begin to negatively impact student achievement. In addition, in coming years it will be important to consider several new initiatives in the early stages of implementation in education in Indiana, which also might influence student achievement as measured by standardized test scores. For example, the state is just beginning a transition to the Common Core Standards, which might be causing a shift towards more rigorous and narrowed curriculums. In addition, Indiana is moving to a new teacher evaluation system in school year 2012-2013. This system incorporates student-learning outcomes, typically measured by student test scores, as one criteria of effective teaching.

In short, there are several initiatives in progress in P-12 education in the state of Indiana. Because these new programs are currently under development, but not yet fully implemented, a limitation of this study is that the relationships between and amongst these variables and the resulting influences on student achievement are not yet known and are unable to be described or controlled at this time. For this year's study, we felt that descriptive statistics sufficed as our objective was simply to document the changes. However, in future years, new initiatives and other possible intervening variables should be addressed and more advanced inferential statistics employed. Revisions to the study's methodology for future research will be necessary in order to incorporate multiple learning quality measures and employ appropriate analysis techniques. Consequently, we feel that it will be necessary to follow the participating school corporations in the coming years in order to determine if relationships exist between class sizes and student achievement indicators and, subsequently, to consider the implications of new initiatives and other learning criteria.

At this point in time, we would like to commend the large numbers of Indiana's public schools that have been able to accomplish improved student achievement on statewide exams despite the poor economy and waning state support for public education. Reducing personnel and programs are never easy tasks. However, it appears that many of Indiana's public school corporations are doing an admirable job of doing more with less.

This study has significance in several ways. The data collected will be of practical use to multiple individuals and agencies, including universities, school superintendents, state government and agencies, and other interested parties who are concerned about the status of reductions in Indiana's public school budgets. In addition, for all schools facing budget cuts, continued reductions mean even more "belt tightening." At the same time, schools are attempting to maintain their educational programs and are striving to improve their students' achievement. Superintendents and school boards continue to face difficult and often controversial choices. In some school corporations, budget reductions mean the loss of valuable student programs, such as fine arts, counseling programs, and transportation services, in order to keep core educational programming in place. In some Indiana corporations, closing of schools, consolidation, and student redistricting have ensued. In other corporations, extracurricular programs and class options have been severely limited.

However, amidst the turmoil that these budget reductions create, there appear to be many schools that are rising to meet these challenges. If through this research, we identify school corporations that are improving student achievement, despite reduced funding, these school corporations should be studied further. The methods corporations use to improve student achievement, while keeping costs down, should be shared. Ultimately, this study might provide strategies to school corporations for increasing student achievement, even during extremely difficult financial times.

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