EQUITY IN TEXAS PUBLIC EDUCATION FACILITIES FUNDING

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Dissertation Prepared for the Degree of

DOCTOR OF EDUCATION

UNIVERSITY OF NORTH TEXAS

May 2007

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Luke, Charles A., Equity in Texas Public Education Facilities Funding. Doctor of Education (Educational Administration), May 2007, 136 pp., 13 tables, 5 figures, references, 109 titles.

The need to establish appropriate, adequate, and decent educational facilities for school children across the nation has been well-established. The ability of school districts in each state to build these facilities has varied widely in the past. Historically, most facilities funding ability for school districts has come from the local community and has been tied to property wealth and the ability of the community to raise significant tax dollars to pay for school buildings. Responding to an expanding need for increased facilities funding and school funding litigation, the state of Texas added facilities funding mechanisms for public school facilities construction in the late 1990s. The purpose of this study was to determine whether or not the methods of facilities funding were equitable in the state of Texas.

In this study, equity values were framed around three equity concepts established in school funding equity literature. These three concepts were (1) horizontal equity defined as the equal treatment of equals, (2) vertical equity defined as the unequal treatment of unequals, and (3) wealth neutrality defined as the absence of a relationship between school district wealth and the equal opportunity of students.

The sample comprised 1,039 school districts in the state of Texas. Well-established equity measures were administered to data including capital outlays, weighted per pupil capital outlays, instructional facilities allotments, and school district wealth. Horizontal equity measures included the McLoone index, the Verstegen index, the federal range ratio, and the coefficient of variation tests. The Odden-Picus Adequacy index (OPAI) was administered to determine levels

of vertical equity. Finally, wealth neutrality was determined utilizing the Pearson product-moment correlation test.

Findings indicated that there were poor horizontal equity levels both in the top half and bottom half of the distribution of capital outlay spenders. A coefficient of variation test was administered to determine overall horizontal equity. While it did not indicate poor overall horizontal equity, the existence of extreme outliers in both halves of the distribution indicated that the dispersion of spending at the top and bottom of the distribution were inequitable. In fact, over the three year period of the study, fifteen percent of the top spending districts spent between forty and fifty percent of all capital outlay expenditures. Vertical equity was tested by implementing a court mandated equalization standard of eighty-five percent. When the OPAI was administered at this equity level, vertical equity was poorer than horizontal equity. Finally, while some state implemented facilities funding mechanisms were wealth-neutral, the overall funding system, with its heavy reliance on bonded indebtedness, was not.

ACKNOWLEDGEMENTS

I extend my deepest appreciation to my wife, Carmen and to my children, Matthew, John, Cayden, and Carson for their continued patience, encouragement, and expressions of love during the years involved in seeking this degree.

I would like to express my appreciation to Dr. William Camp, Chairman of the Dissertation Committee for his encouragement, patience and assistance throughout this study. Also appreciated are the helpful suggestions and professional advice by the members of the Dissertation Committee, Dr. Hoyt Watson, Dr. Robert Bland, Dr. Janie Huffman, and Dr. John Brooks.

Special thanks go to Cindy Tatum, the Business Manager for the Gainesville Independent School District and to Debbie Burgess, the Assistant to the Superintendent for the Gainesville Independent School District for their continued assistance and encouragement toward the completion of this study.

Finally, a debt of gratitude is owed to Dr. James Byrd for his technical assistance with the management of the data involved in the study.

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CHAPTER 1

INTRODUCTION

Few would argue with the concept that the education of children is integral to the economic and social health of a society. Research has shown that the environment in which children are educated may either add to or detract from the quality of education that they receive (Bowers & Burkett, 1987; Cash, 1993; Earthman & Lemasters, 1998; Schneider, 2002). Paramount in creating an appropriate educational environment which is safe, clean, orderly, and stimulating to children is the construction and maintenance of quality educational facilities. Facilities issues related to indoor air quality, thermal comfort, lighting, acoustics, building age, building quality, aesthetics, and classroom size affect academic outcomes (Schneider, 2002). Proper facilities are inexorably related to the creation of a safe and orderly educational environment, which is one correlate to the establishment of an effective school (Edmonds, 1981). Additionally, the need to provide adequate educational facilities has been recognized by the US General Accounting Office in the 1995 report entitled *School Facilities: Condition of America's Schools*, stating: "A number of state courts as well as Congress have recognized that a high-quality learning environment is essential to educating the nation's children. Crucial to establishing that learning environment is that children attend school in decent facilities" (US GAO 1995, p. 3).

Providing adequate and decent facilities for school children is a critical issue in our society. The GAO Report (1995) explains that it would take approximately $112 billion to "repair or upgrade America's multibillion dollar investment in facilities to good overall condition" (p. 2). The report defines good condition as needing only routine maintenance or minor repair and overall condition as including "both physical condition and the ability of the

schools to meet the functional requirements of instructional programs" (p. 2). While factors related to instructional flexibility are not addressed in the report, environmental factors such as lighting, heating, ventilation, indoor air quality, acoustics for noise control, energy efficiency and physical security are addressed. The report finds that approximately twenty-eight million students attend schools nationwide that "need one or more building feature extensively repaired, overhauled, or replaced or that contain an environmentally unsatisfactory condition" (p.2). Further, one-third of both elementary and secondary schools have at least one entire building in need of extensive repairs and replacement. Repairs most commonly cited in the report are heating, ventilation, and air conditioning (HVAC) work; plumbing; roofs; exterior walls; electrical lighting; finishes, windows, and doors; electrical power; and interior finishes and trims. In several "worst case scenarios" listed in the report, facilities financing is cited as a major impediment to improvements.

In Texas, the problem of funding school facilities includes both issues of adequacy and equity. Funding adequacy may be explained by asking the question, "Are we spending enough money on school facilities?" According to Odden and Picus (2004) adequacy may be defined as “the provision of a set of strategies, programs, curriculum, and instruction, with appropriate adjustments for special-needs students, districts, and their full financing, that is sufficient to teach students to high standards” (p. 71). Equity may be explained by asking the question "are we spending an equitable amount of dollars per pupil on school facilities?" Equity ensures that money is “distributed fairly and evenly across school districts and students” (Odden and Picus, 2004, p. 48). While there is little agreement over what adequate or decent facilities are in Texas, there may be even less agreement over an appropriate equity standard for funding these facilities. Rambo (1992) concludes that:

> the Texas school financing system fails to insure that each school district in this state has the same ability as every other district to obtain, by state legislative appropriation or by local taxation or both, funds for educational expenditures, including facilities. (p. 105)

While legislative measures have been enacted since Rambo's research, questions still exist as to the equity of facilities funding in the state and the ability of the poorest districts to fund facilities needs (Clark, 2001).

Statement of the Problem

The problem of this study is to examine current facilities funding methods in the state of Texas to determine whether or not those methods provide an equitable level of facilities funding for public school districts across the state. Current facilities funding mechanisms in the state allow for school districts to enter into bonded indebtedness for construction and certain other types of capital outlay projects. Local school districts are allowed to levy voter approved tax rates up to fifty cents for debt service. The state also provides assistance to local school districts in a funding mechanism known as the Existing Debt Allotment. After a school district incurs new debt for construction and holds it for one year, the district may apply for funding to assist with debt repayment. The state further provides assistance to eligible school districts for debt repayment under programs known as the Instructional Facilities Allotment and the New Instructional Facilities Allotment. These programs are generally based on the school district’s level of need and/or property wealth per student. All programs are subject to reauthorization by the state legislature at each regular session.

Significance of the Study

The significance of the proposed study is the evaluation and assessment of equity

contained in the current facilities funding system within the state of Texas. The information may be used by lawmakers and educators in future facilities funding decision-making thus making choices between funding systems clearer for all stakeholders. Ultimately, this will enhance opportunities to improve equity for facilities funding across the state. While the US General Accounting Office estimates that $112 billion worth of improvements need to be done to our nation's schools (US GAO, 1995), a study conducted by the National Education Association (NEA) estimates that cost at $322 billion. The NEA report finds that Texas' portion of that need is estimated to be $13.6 billion (NEA, 2000). While the need for equitable facilities improvements in both the nation and the state of Texas is tremendous, specific needs are often unknown. A facilities assessment initiated by state officials in Spring 2004 has not been completed. Further, the state has reduced their share of school funding to around 38% per year, the lowest funding level in more than 50 years (*Neely v. West Orange Cove CISD, et al.*, p. 10, 2005).

While facilities needs are growing, the state is decreasing rather than increasing funding to school districts. Heavy reliance on property taxation to fund the state's 1,044 school districts has led to litigation that has found the school finance system to be unconstitutional (*Edgewood I-IV*; *West-Orange Cove CISD v. Neeley*, 2004). Even though facilities funding is only one component of the overall state finance mechanism, it is an integral piece in state efforts to provide equitable education for all students. Factors such as rapidly increasing enrollment in the state's larger districts, a greater number of state-mandated curricular course offerings, increasing technology demands, and more federal and state regulatory issues, have all focused districts on the need for facilities retrofitting, renovation and new construction. Increasing demands from state officials for district-level achievement on state-mandated competency testing and rigorous

requirements of instructional compliance with the No Child Left Behind Act of 2001, coupled with a state-wide teacher shortage, forced districts to expend more funds for instruction, thereby leaving less for allocation to construction in many districts. While the need for appropriate facilities is great, research on facilities funding equity in the state of Texas is severely limited. This research may be used by educators, researchers, and lawmakers in developing policy, practice and theory to provide a more equitable and effective funding instrument for public education facilities in the state.

Research Question

The following research question was stated for the study: Is the current Texas public school facility funding system statistically inequitable?

Methodology

Six statistical tests of three equity standards are used in this research study. The tests and the standards are appropriate for wide use in the field of equity research. These standards - horizontal equity, vertical equity, and equal opportunity or wealth neutrality were established by Berne and Stiefel (1984) in their groundbreaking research. Four of the tests, the McLoone index, the Verstegen index, the coefficient of variation, and the Federal Range Ratio are various tests of horizontal equity. Horizontal equity may be defined at the "equal treatment of equals" in a system. One of the tests, the Odden-Picus Adequacy index (when applied to weighted data) is a measure of vertical equity. Vertical equity may be defined as the "unequal treatment of unequals" within a system. Finally, a Pearson Product-Moment Correlation analysis was applied to determine equal opportunity or wealth neutrality. Wealth neutrality may be defined as an absence

of a relationship between the educational opportunities of students and the property wealth of a school district. Generalizations of this study are applied to the state of Texas' public education facilities funding system and account for input-based or ex-ante equity standards. Data obtained from the Texas Education Agency is categorized by school district and applies to the most recent three years of facilities funding available.

Limitations

Although this study applies a variety of tests to determine levels of equity in Texas' public schools facilities funding mechanisms, there are limitations to the scope of the research. Private schools and charter schools are not measured as the study focused on traditional K-12 public education facilities in the state. Regional and economic variations in construction costs were not measured in the study and no construction outcomes were measured as the study was limited to capital outlay inputs per school district. Data obtained from the Texas Education Agency was utilized to measure equity in the current facilities funding mechanisms with no measurement of past or proposed mechanisms included. Finally, no state-wide facilities needs assessment exists as a baseline measurement to which to apply the three equity standards. The following limitations are present in this research study:

- The study is limited to the public school finance system in Texas.
- Ex post equity or outcomes are not measured in this study.
- The study is limited to the use of three finance equity standards. These three standards are horizontal equity, vertical equity, and equal opportunity or wealth neutrality.
- Data is obtained on facilities funding from the Texas Education Agency.
- Data obtained regards current facilities funding mechanisms in the state of Texas.

Definition of Terms

For the purpose of this study, the following definitions apply:

Average daily attendance (ADA) - Daily attendance of a school district or campus averaged over a school year.

Average daily enrollment (ADE) - Daily student enrollment of a school district or campus averaged over a school year.

Budget per pupil capital outlay expenditures (BPP) - The fiscal year (FY) capital outlay expenditures of a school district divided by the number of students enrolled, in average daily attendance, or in weighted average daily attendance.

Capital outlay expenditures (COE) - The amount of dollars a school district expends on capital outlay projects during a given fiscal year (FY).

Coefficient of variation (COV) - A test of horizontal equity, the coefficient of variation determines the statistical measure of the deviation of a variable from its mean. The test is used to determine horizontal equity by examining whether or not the coefficient of variation has increased or decreased over time from the mean.

Equity - A term in school finance that denotes the most equitable and non-discriminatory distribution of resources to the recipients, based on specific need (Thompson, 1985).

Edgewood I-IV - A series of court cases in which school funding equity was consistently an issue in the state of Texas. *Edgewood ISD v. Kirby* (1989) or *Edgewood I* establishes the unconstitutionality of the Texas public school funding system at that time. *Edgewood ISD v. Kirby* (1991) aka *Edgewood II* readdresses the issue of efficiency in the generation of comparable revenue among school district, again finding the funding system unconstitutional. In *Carrollton-Farmers Branch ISD v. Edgewood ISD* (1992) aka *Edgewood III*, the state finds that

its funding system has created an unconstitutional ad valorem property tax. Finally, in *Edgewood ISD v. Meno* (1995) aka *Edgewood IV* overturns a district court finding that the system is unconstitutional on the grounds that it fails to provide adequately for facilities.

Ex ante equity - Equity concepts specifically related to the condition of state funding inputs in efforts to achieve measures of equity.

Ex post equity - Equity concepts used to define equity outcomes that may or may not differ from the intention of input standards.

Existing debt allotment (EDA) - A public education facilities funding mechanism in the state of Texas, the EDA provides assistance to school districts with existing debt based on their local tax effort.

Foundation school program (FSP) - The foundation school program was established by the Gilmer-Aikin Act in 1949 and currently operates under guidelines established by the 73rd Texas Legislature in Senate Bill 7 (TEA, 2004). The state distributes funds from the Available School Fund to local school districts through a two-tiered program. Tier one of the FSP provides funds to meet the costs of basic education programs that meet state accreditation standards. Tier Two provides schools with equal access to revenue for educational enrichment (Handbook of Texas Online, 2004). Chapter 41 of the Texas Education Code further provides for wealth sharing in the form of recapture of tax revenue from districts with over $305,000 of property wealth per pupil (2003). Many consider this to represent a third tier of the funding system.

Gilmer Aiken Act of 1949 - With the passage of this act, the State Department of Education was transformed into the Texas Education Agency (TEA). The act established a state school board, a Commissioner of Education, and adopted a funding plan based on an economic index and average daily attendance. The plan established a minimum foundation program as well

as a minimum salary schedule for teachers.

Horizontal equity - The notion that equally situated individuals should be treated equally; often referred to as the equal treatment of equals.

Instructional facilities allotment (IFA) - A public education facilities funding mechanism in the state of Texas, the IFA provides assistance to school districts in making debt service payments on qualifying bonds and lease-purchase agreements.

McLoone index - A measure of horizontal equity, this index is the ratio of total dollar inputs for pupils below the median to the dollar inputs that would be required if all pupils below the median are receiving the per-pupil dollar amount at the median (Berne & Stiefel, 1984).

New instructional facilities allotment (NIFA) - A public education facilities funding mechanism in the state of Texas, the NIFA provides assistance to qualifying districts with debt incurred with the construction of a new instructional facility.

Odden-Picus adequacy index (OPAI) – Specifically a measure of adequacy, the Odden-Picus index includes vertical equity measures when calculated on the basis of weighted students. The OPAI identifies an adequate spending level per pupil and the percentage of districts spending above that level.

Pearson product-moment correlation test - Used as a measure of wealth-neutrality, the Pearson product-moment correlation coefficient test expresses relationships or correlations between school district wealth and per pupil facilities capital outlays. The coefficient involves computing the sums of cross-product variables x and y then summing these computations across the study sample n. The coefficient is expressed as the sum of the cross-products of the standard scores divided by $n - 1$ (Hinkle et al., 1998).

Percent equalized revenue test (PERT) - A statistical test used by the Texas Education

Agency to determine levels of wealth neutrality in each of the state's public school districts.

Permanent School Fund (PSF) - Created with a $2 million appropriation by the Texas Legislature in 1854, the fund provides expressly for the benefit of the public schools of Texas. As approved, public bond issues are guaranteed by the corpus of the PSF and the fund helps to secure a stronger bond rating for school districts throughout the state.

Restricted range and federal range ratio – Measures of horizontal equity, both the restricted range and federal range ratio measure distributions below the lowest 5 % and the highest 5 %.

Student based equity standard - An equity principle which focuses on the benefit of the child.

Verstegen index – A measure of horizontal equity, the Verstegen index may be thought of as the opposite of the McLoone index in that it measures disparity in the top half of the distribution. It is the ratio of the sum of the values of all observations above the median to the sum of all observations if they are all at the median (Odden & Picus, 2004).

Vertical equity - The equity concept that differently situated individuals be treated differently; often referred to as the unequal treatment of unequals.

Wealth neutrality/equal opportunity principle - The idea that no relationship exists between the educational opportunities of students and the property wealth of the school district.

Weighted average daily attendance (WADA) - Average daily attendance adjusted for special student needs. Students classified in special categories receive a different funding weighting by the state consistent with their need.

Weighted dispersion measures - A statistical measure of vertical equity, weighted dispersion measures assign weights to horizontal equity concerns in an effort to determine

whether or not the unequal treatment of unequals is being met.

Summary

Although research has shown that decent and adequate facilities are correlated to improved academic outcomes (Schneider, 2002), the provision of adequate funding for facilities improvements in order to construct or retrofit America's schools presents a problem both of adequacy and of equity. The purpose of this study is to review current Texas state facilities funding mechanisms with regard to how well they meet various measures of equity utilizing standards established by the courts in historic cases (Edgewood I-IV). Six statistical tests of three equity standards are compared to the equity standards outlined in case law and account for input-based or ex-ante equity levels within the Texas public education facilities funding system. The study's significance focuses on a better understanding of facilities funding equity and helping to ensure appropriate decision-making at the legislative and administrative levels of government with regard to the creation of funding mechanisms and the appropriation of funds.

The purpose of this study is to review the current state facilities funding mechanisms in Texas with regard to the level of equity provided in school construction and maintenance; to provide a rationale for the inclusion of facilities funding as a true tier or separate level of state financing; to identify specific criteria for school facilities funding equity, to offer analysis and conclusions regarding the findings; and to outline implications for future research.

CHAPTER 2

INTRODUCTION

School facility needs repeatedly emerged as a primary consideration in ongoing efforts to improve education. While a United States General Accounting Office (GAO) report released in 1995 determined that America's public school unmet facilities needs would require $112 billion to address properly, more recent research has indicated that number to be even higher. According to a more comprehensive study by Crampton, Thompson and Hagey (2001), the cost to retrofit and provide for new construction in order to meet all of the fifty states unmet facilities needs is estimated at $266.1 billion, more than twice the estimate of the GAO report. While spending on public school facilities has increased in recent years (US General Accounting Office Report, 2000), it is estimated that states and localities would have to increase capital outlay funding by as much as 67% over a ten-year period in order to meet the aggregate unmet facilities funding needs of America's public schools (Crampton et al., 2001). As this study adopted the National Education Association's (NEA) (2004) definition of capital outlay as "an expenditure that results in the acquisition of fixed assets or additions to fixed assets, which are presumed to have benefits for more than one year" (p. 2) and includes "an expenditure for land or existing buildings, improvements of grounds, construction of buildings, additions to buildings, remodeling of buildings or initial, additional, and replacement equipment"(p. 2), it is considerably more comprehensive in scope.

The GAO (2000) study ranks Texas as the fifth neediest of all 50 states with an unmet facilities need of $9,467,620,774. In order to meet all state-wide facilities needs over a ten-year period, Texas would have to increase facilities funding by approximately $248 per pupil per year for that length of time. Given the fact that Texas spent an average of $631 per pupil per year for

facilities funding during the seven years covered by the study, this presents a significant challenge to the state.

Theoretical Underpinnings – Past Research

The question of school funding equity emerged as an issue as early as the late 19th century. Cubberly (1919) reported that equity issues may have arisen from the dependence on local communities to fund education along with an absence of state funding. According to Cubberly, "Everywhere development has been from the community outward and upward and not from the State downward" (p. 155).

In addition to an absence of state support, local support was not initially subsidized by any form of taxation but depended on the donations of the local citizenry. The notion that education should be subsidized by any form of taxation did not become widespread until about 1850 (Campbell & Fischel, 1996). Obviously, wealthier communities with a stronger donor base could afford better facilities and could fund a higher and more diverse quality of education. This discrepancy between the abilities of communities to fund education almost certainly led to funding inequity both with regard to academic opportunities as well as meeting the facilities needs of students. As schools began to consolidate in the late 19th and early 20th centuries, the need for more sophisticated systems of equitable funding was needed. This need led to a proliferation of education finance research related to the topic of school funding. An early observation by Cubberly (1906) was that local taxation was highly inequitable. He stated: "…any attempt at the equalization of the opportunities for education, much less any attempt at equalizing tax burdens, is impossible under a system of exclusively local taxation" (p. 54).

As a result of his research among six different states, Cubberly advocated a flat grant

from the state which guaranteed a specific dollar amount for every student in the local school district. Cubberly further advocated the rewarding of local effort for poorer school districts that increased their local level of taxation in order to improve their educational programs and facilities (Green-Driscoll, 1998). In agreement with Cubberly, Updegraff (1922) also advocated rewarding poorer school districts for increased local effort by increasing school funding. Updegraff expanded on the concept of school funding equity and local effort, however, by advocating the percentage equalization method. According to Green-Driscoll (1998):

> This approach "guaranteed" that the state would make up the difference between a local specified minimum level of expenditure and the money raised through a locally determined level of effort. If the locality wished to tax itself further even to fulfill what was considered the state's obligation, then that was at its own discretion. The oft-quoted rationale for this effort-driven approach was that this "hands off" behavior of the state asserted the right of localities to establish their own level of spending for public education purposes. (p. 43)

Strayer and Haig offered an alternative approach to funding equity, arguing that equalization efforts should be focused on the tax burden of localities through the summing of taxable income, together with 10% of the property values, as a measure of fiscal capacity of school districts (Thompson, 1985). Their argument was predicated on the concept that rewards from the state for localities that exhibit extra effort may result in a destruction of the equality of the tax burden state-wide. Localities receiving such rewards would necessarily benefit at the expense of other localities in the state (Strayer & Haig, 1923).

Further research yielded even more detailed and sophisticated approaches to developing school funding equity. Paul R. Mort (1924) suggested that education funding be based on per-pupil need and on a weighted basis. Using regression measures, Mort advocated computing the annual weighted per pupil costs of an educational system. From that cost, a minimum property tax rate to support the system could be derived. Following this research, indices were developed

by educational researchers based on states' ability to raise educational revenue (Chism, 1936) and on the ability to fund education equitably and adequately based on the equalized or true value of property in specific locations (Cornell, 1936).

Systemic change was advocated during this time period to address perceived funding inequities within educational systems. In 1933, the National Tax Association (NTA) sponsored the Model Tax Plan, which proposed to raise educational revenue by levying a personal income tax by the state of residence, a state tax on tangible personal property, and a state levied business tax. The NTA believed that these taxes would compensate for the drop in revenue resultant from economic loss during the Great Depression (Green-Driscoll, 1998).

Ultimately, state legislatures had to deal with the issue of school funding equity. Over the next thirty years, states developed various approaches to school funding in their attempts to provide both adequate and equitable education finance systems. While some researchers went so far as to advocate the abolition of the local school district and the adoption of full state funding, a much more accepted approach was fiscal equalization. According to Thompson (1985) by 1949, 43 of the 48 states had adopted some type of equalization formulae for the distribution of aid to local school districts. While this approach to school funding went essentially unchanged until the 1960s, there continued to be advocates for a system that did not rely so heavily upon property as a measure of wealth nor upon per pupil measures as an equalization tool (Thompson, 1985).

During the 1960s and 1970s much of the focus of school funding had shifted from equitable distribution of funds to the ability of states to adequately provide fiscal capacity to operate desegregated school districts. In 1962, largely in keeping with increased federal involvement with state issues during this time, the Advisory Commission on Intergovernmental Relations (ACIR) developed the Representative Tax System (RTS), a comparative method of

calculating the fiscal capacity of each of the fifty states. The RTS provided a composite index of each state's ability to raise similar tax revenue under hypothetically similar conditions. According to Green-Driscoll (1998), the importance of this approach was that it "was a shift from earlier ones in that fiscal capacity was viewed as not simply an indigenous characteristic of a locality, but rather an indication of the economic strength of the government to collect this revenue" (p. 47). Although the RTS was never implemented in the US, critics of the approach continued to attack it on the basis that the statutory bases for the system reflect patterns of consumption and/or economic preferences which vary widely from state to state, rending the system biased toward some states and away from others (Barro, 1986).

While states struggled with social and fiscal capacity issues throughout the 1960s and early 1970s, school funding litigation led to a renewed focus on education finance equity. Building on economic principles of equity, Berne and Stiefel (1984) defined several issues related to school funding equity that would be utilized by education researchers, courts and state legislatures for years to come in efforts to provide funding equity for school districts throughout the nation. In their pivotal work *The Measurement of Equity in School Finance: Conceptual, Methodological, and Empirical Dimensions*, they provided a framework for organizing alternative school finance equity concepts. The researchers based this framework around four questions:

- Who? What is the makeup of the groups for which school finance systems should be equitable?
- What? What services, resources, or more generally, objects should be distributed fairly among members of the groups?
- How? What principles should be used to determine whether a particular distribution is equitable?
- How much? What quantitative measures should be used to assess the degree of equity? (pp. 4-5)

Aside from framing and defining equity concepts with these questions, the authors provided several statistical measures for defining school funding equity that continued to be utilized for further research far into the future. According to Berne and Stiefel, equitable systems must contain high levels of vertical equity or the unequal treatment of students situated unequally; horizontal equity or the equal treatment of students similarly situated; and wealth neutrality or the concept that there was no relationship to educational opportunity and the property wealth of a particular school district.

Research related to school funding continued after the issues of equity and statistical measurements were established. Specific research related to the equitable funding of public school facilities began to emerge as well. Thompson (1985) examined levels of equity in capital outlay funding in school districts in the state of Kansas. His work examine five alternative methods of funding facilities and used formerly established empirical and methodological measurements to interpret equity levels in the state and to draw conclusions regarding the relative merit of each approach. Methods of capital outlay funding measured were total local support, full state funding, equalized percentage grants, flat percentage grants, and flat percentage loan funding alternatives. These approaches were measured against three established equity principles, i.e., ex post fiscal neutrality requiring that variations in funding not be too closely related to local wealth; ex ante fiscal neutrality relating tax effort to revenue yield; and the resource accessibility principle related to all students receiving equitable access to resources. Thompson (1985) found that full state funding and percentage equalizing grants generally achieved a higher degree of equity stating, “It may be concluded that the introduction of state aid to capital outlay funding significantly reduces the role of geography as a major determinant of district revenue capacity” (p. 114). Since flat percentage grants come from the state, this

approach achieved the middle rank of equity as the approach better satisfied the resource accessibility standard and the ex post fiscal neutrality standard. Thompson found that flat percentage loans and total local control methods of school facilities funding achieved the lowest equity levels of all of the approaches as they were more dependant on the wealth of individual school districts to either pay back the loans or to fund the facilities outright.

Further research on facilities funding equity was conducted by Rambo (1992) in an analysis of facilities funding approaches in forty-one of the fifty states. Using statistical measures to determine equity levels, Rambo found that full state funding was the most equitable approach because the quality of construction is not a function of the wealth of the district, the variety of tax resources at the state level are greater than those at the local level, the state can develop allocation criteria that may provide a higher level of efficiency, and the state can provide savings in terms of interest and bond issuance costs due to the larger issue at the state level. Similar to Thompson's research, Rambo found that total local facilities funding was the least equitable in that it did not include the advantages created by state support.

While the framework established by Berne and Stiefel (1984) involving four questions of equity was met with widespread use by researchers to determine the levels of equity of school funding approaches, problems with the system began to emerge. According to Odden and Picus (2004) issues with the framework were based around three concerns. First, it was difficult to establish wealth neutrality as just one of the four different equity concepts since it was a core issue in litigation and policy decision. Second, since the framework was based around the district as a unity of analysis, it seemed outdated when the focus of researchers and policymakers shifted to school-level finance. Finally, as the adequacy of school finance systems became more of a concern over the twenty years after the framework was developed, it seemed obsolete due to its

focus on equity inputs and not on outcomes as perceived to be integral to adequacy issues. Partly as a result of these concerns, Berne and Stiefel (1999) updated the framework and redefined it in the newer climate of school funding concerns. In their more recent research Berne and Stiefel embraced six key topics:

- Ex ante versus ex post analyses
- The unit of analysis in terms of state, district, school, or student
- The objects of interest, whether they be input fiscal variables, educational process variables, or student achievement variables
- The group of concern in terms of children or taxpayers
- Equity concepts, but now leading with fiscal neutrality, while also incorporating horizontal and vertical equity
- The concept of adequacy, even though nearly all of its elements could be incorporated into the preceding five issues

General school funding studies of both horizontal equity – the equal treatment of equals, and vertical equity – the unequal treatment of unequals have been conducted by several researchers over the past thirty years using a variety of data. Brown (1977) conducted studies of horizontal equity using samples from all fifty of the states and found that disparities in school expenditures increased from 1970 to 1975 (Odden & Picus, 2004). Odden, Berne, and Stiefel (1979) indicated that states improved horizontal equity and fiscal neutrality during a similar period of time in the 1970s, while Odden and Augenblick (1981) showed that equity increased or decreased depending upon the object of equity measured and the statistical measurement. Evans, Murray, and Schwab (1997) conducted an extensive research study and concluded that funding inequities decreased over a period of twenty years. These decreases, however, occurred largely in states with school funding litigation over that period of time. Odden, Picus, and Fermanich (2004) determined that equity increased in Kentucky over a ten year period after that system was

declared unconstitutional.

Vertical equity studies have generally focused around the weighting of students and the use of price-adjusted dollars to determine equitable funding. Studies by the US Government Accounting Office (1997) and the National Center for Education Statistics (1998) indicated that vertical equity increased when different weights were calculated for the levels and types of services needed for individual categories of students. Equity studies related to price-adjusted dollars were conducted to determine levels of vertical equity in states that indicated price differences in their state aid formulae. Odden and Busch (1998) stated that all dollars involved should be price adjusted and not merely those indicated by a state formula price factor (Odden and Picus, 2004).

As challenges to provide both adequate and equitable education opportunities for all children in schools throughout the nation continue, research related to school system funding equity as well as school facilities funding equity will continue to be conducted. Such challenges have been and will continue to be mirrored in state and, increasingly, federal legislation. Research based equity principles are embedded in federal legislation such as the Individual with Disabilities Education Act (IDEA) most often associated with the needs of special education students and, more recently the No Child Left Behind Act (NCLBA). Furthermore, as states continue to address the increasing demands of educational systems, facilities funding equity issues will be reflected in state legislation as well.

Historical Review of Facilities Funding in the US

Public school facilities construction emerged in the nineteenth century as a lower-priority, local educational concern. Thompson (1985) indicated that pre-twentieth century school

facilities were generally built by local citizens using donated materials and volunteer labor. Building costs were thus kept low, and educational facilities were not so extravagant as to demand uniform public support. While the majority of states and territories built schools in this manner, some early funding mechanisms through property taxation did exist. As early as 1647, Massachusetts levied a property tax to help provide for the construction of schools. The Massachusetts Bay Colony required all townships with at least fifty householders to appoint and fund a school teacher to teach reading and writing. At the same time towns with at least one-hundred householders, such as Boston, were required to provide a Latin Grammar School with a more comprehensive curriculum (Driscoll, 1998). New Hampshire levied a similar tax for public school construction in 1693 (Odden & Picus, 1992) as did Connecticut and Maine (Driscoll, 1998). During this same period, New York, Pennsylvania, and New Jersey tended to build parochial schools reflective of their distinctive religious diversity. Such schools were commonly funded by rate bills, a tax levied on parents of students based on the number of children in a family to be educated (Driscoll, 1998; Butts & Cremin, 1953). Ralston (2003) stated that by 1820, thirteen states provided for public school education in their constitutions, and by the 1850s many states provided government responsibility for funding schools.

Demand for adequate educational facilities increased and, indeed, entire systems grew as more and more individuals migrated to America from other countries. As a result of this increasing population, many communities and states began to feel pressure to develop school systems that would serve to educate their citizenry. Cities with multiple grammar schools soon began to feed those students into the high school, necessarily expanding the number of years students attended school. This facilitated the need for more and larger facilities as well as for new teachers and other costs incidental to the education process. The question of how to fund

these needs soon arose. In her treatise regarding the fiscal capacity of school systems in Virginia, Green-Driscoll (1998) included this letter to Horace Mann from Virginia legislator R.B. Gooch:

> There are a number of persons in this state who are deeply solicitous of doing something to remedy the evils under which our population are suffering from want of general instruction. They have determined to meet together in a deliberative assembly contemporaneously with the meeting of the State Legislature, in order to consult upon some system, which may meet the favor of that body. They have many opponents and much apathy to contend with, besides the natural obstacles presented by the sparseness of the population in our state and there are conflicting views among them as to the best mode of effecting the object they have in view. Some are in favor of raising the necessary means by state taxation and others by county levies; some for and some against the District school system; some are for adopting a general system operating everywhere whilst others are for submitting the question to the vote of the people . . . No tangible scheme has been presented … (p. 41)

As the demand for more and larger educational facilities grew, local volunteer funding resources were no longer adequate, and property tax levies for school construction became a reality. In the latter part of the 1800s, increasing construction costs led to the borrowing of funds and consequently, to the practice of bonding to pay for schools (Thompson, 1985). While bonds were often used to pay for the construction of facilities, property taxes emerged as the preferred method for local communities to finance their schools (Melvin, 1984). According to Driscoll (1998), this method led to an almost immediate philosophical divergence between the views of educators with regard to fiscal capacity. It was noted that communities with greater property wealth and a taste for the liberal arts could satisfy their desire for a liberal education much more easily and with less taxing effort than could their less property wealthy counterparts. Added to this was the argument of state versus local control of educational systems. While an increasing number of states were adding education provisions to their constitutions, local communities viewed schools as their own institutions. State encroachments on this concept of local control were not welcomed by local authorities. According to Dayton (1995), this created inequities in school funding across localities:

> It is in the conceptual gap between constitutional mandates for public school funding and citizens' perceptions that the problem of school funding inequities unfolds. State constitutions establish a state level duty to support public education, but citizens continue to claim ownership over local funds generated to support education. Underlying this divergence between constitutional mandates and public perceptions is a tension between altruism and self-interest: the altruistic wish for equity for all children and an enhancement of the general welfare of society versus wanting the best for one's own children and advancing one's self-interest. Proclamations that may have been attractive as constitutional ideals may become politically problematic when they result in additional taxation or the transfer of economic resources from one community to another. (p. 2)

This same discussion was later held with regard to the wealth neutrality or equal opportunity principle of school funding equity. Communities with more extensive tax bases and economic development opportunities commonly were able to raise more money for educational programs and facilities with less tax increase. Communities with less extensive tax bases were not, and in order to compete with the property wealthy localities, these communities were forced to raise tax rates to a higher level. Subsequently, these higher taxes hindered rather than aided economic development, and the communities sank even lower in their fiscal capacity to raise monies for educational facilities and programs. While state constitutions were formulated to address issues of educational disparity, political realities often created inequities. Dayton (1995) states:

> Unconstitutional disparities in expenditures result from this conflict between altruistic ideals and the harsh political realities of self-interest. Although the state's constitution proclaims that the state owes a duty of educational support to all of the state's public school students, in order to appease local political concerns the state operates a system of public school funding that results in substantial disparities in educational support and tax burdens. Even though all children are equally children of the state entitled to a state supported free public education, some of the state's children are favored or disfavored based on local wealth. (p. 2)

As demands continued to grow in the early 20th century, more and more states began to provide funding mechanisms for the construction of public school facilities. States such as Alabama, Delaware, South Carolina, North Carolina and Virginia instituted limited funding for

school facilities within the first decade of the 1900s (Thompson, 1985). State involvement in public school funding continued to grow, and by 1972, a large number of states provided for some method of assisting local districts with facilities costs (Thompson, 1985; Webb, 1972).

With the public funding of schools on the rise and with growing concerns over civil rights, the question of the equity of school funding would soon emerge. While the historic case of *Brown v. the Board of Education of Topeka* (1954) raised this question by overturning the doctrine of separate but equal, funding equity issues were more specifically addressed with later legislation. In 1971, the landmark case of *Rodriguez et al. v. San Antonio ISD* raised the question of property wealth disparities between rich and poor school districts in Texas. The plaintiffs contended that students in poorer school districts were being denied their rights of "equal protection" guaranteed by the US Constitution due to an unfair state school funding system. A further argument was that the poverty of the school district actually engendered the continued poverty of its most disadvantaged students who, unable to afford the choice of private schools, were trapped within a sub-par and under-funded education system. After a state panel ruled in the plaintiff's favor, the US Supreme Court overruled, indicating that the issue should be settled at the state level (*San Antonio ISD v. Rodriguez,* 1973). The decision of the court established the right of states to decide the constitutionality of their own education funding systems, but along with cases like *Serrano v. Priest* (1971), it opened the door to court litigation regarding public school funding equity disparities.

Significant litigation specifically involving capital outlay and facilities funding of school finance systems occurred in *Pauley v. Bailey* (1982) in West Virginia where the court addressed the question of school funding and outlined standards for curriculum, personnel, materials and equipment, facilities, guidance, health services, and transportation. In *Pauley* the opinion of the

court, under the control of Judge Arthur M. Recht, was that the method of public education funding in West Virginia did not comply with the state's constitution by failing to provide for an adequate and efficient system of education. Secondly, it was determined that the method of assessing real property for school funding purposes fell short of constitutional standards, and the state thereby favored rich counties over poor ones. As a result, the state was required to develop a master plan for education to outline specific methods for overcoming the constitutional shortfalls and fell under judicial oversight for the next twenty-seven years. According to a later court, the master plan was an:

> extensive compilation of detailed concepts and standards that defines the educational role of the various state and local agencies; sets forth specific elements of educational programs; annunciates considerations for educational facilities; and proposed changes in the educational finance system. (*Tomblin v. West Virginia Board of Education, 2003*, p. 3)

The plan sought to ensure that West Virginia students had access to an adequate and equal educational opportunity by providing performance standards, by developing an assessment system, and by establishing a statewide performance review office. The plan included additional funding for low-performing schools in efforts to correct deficiencies and failures in the education system. The plan met with some success as indicated in subsequent litigation. In *Tomblin v. Gainer* (2000) it was recognized by the court that “substantial progress has been made in the implementation of this Court’s decree in improvement of facilities through a statewide facility planning and funding mechanism which prevents waste and promotes the efficient use of existing resources” (p. 3). The court did, however, take the opportunity to reinstate resource evaluations and school reviews that require the state to report on individual schools’ specific needs. In 2003, judicial oversight resulting from the original case was lifted when Judge Recht approved the legislature's 1998 Master Plan for Education (*Tomblin v. West Virginia Board of*

Education) indicating that it provided the necessary latitude to develop an efficient public education system.

While cases such as *Roosevelt Elementary School District No. 66 v. Bishop* (1994) and *DeRolph v. State* (1997) focused on facilities, many states still provided little or no funding for school facilities (Sielke, 2001). In *Roosevelt*, plaintiffs filed a lawsuit claiming that the capital outlay portion of the Arizona education finance system was inequitable and violated uniformity requirements of the state constitution's education clause. The Supreme Court of Arizona ruled the system unconstitutional due to substantial capital facility disparities. The court indicated that the system was beset by a combination of heavy reliance on local property taxes, arbitrary school district boundaries, and piecemeal attempts at equalization, and that the state's financing approach could only produce disparities (*Roosevelt Elementary School District No. 66 v. Bishop*). After the state's response to merely aid local districts in facilities development was also declared unconstitutional (*Hull v. Albrecht*, 1997), the legislature decided to move the responsibility for funding school construction away from the local district entities to the state. Local property taxes used to support capital outlays were phased out and replaced by state funding, and facilities construction oversight was given to the newly formed Arizona School Facilities Board (ASFB) (Hunter, M.A., 2004). The new board was placed in charge of three funds to provide for new school construction, building renewal, and deficiency correction.

Facilities funding continued to be an issue in Arizona litigation with challenges in 2003 that the state was under-funding for building renewal and thereby denying students an appropriate academic education. While the appellate court in the case of *Roosevelt Elementary School District No. 66, et al. v. the State of Arizona* (2003) agreed that the state was under-funding the Building Renewal Fund and that such under-funding could possibly lead to

prohibited academic success in the future, they did not feel that the plaintiffs sufficiently showed that there was a loss of academic opportunity or success as a result of the under-funding. The decision of the superior court was reversed, and the case remanded for further proceedings. Other litigation regarding the educational opportunities of at-risk students (*Crane Elementary School District et al. v. State of Arizona,* 2001) has produced little outcome in the way of increased facilities funding.

In reviewing the complaints in *DeRolph v. State* (1997), the court held that public school districts in Ohio were more dependent on local revenue for their school systems than they were on state funding. The court further contended that due to flat amount categorical disbursements, wealthier districts were in a better position to meet actual costs of education than were poorer districts. Next, the court contended that certain guaranteed amount and tax reduction provisions in the funding system provided in order to equalize funding actually worked against property poorer districts and to the advantage of property wealthier districts. As a result, the provisions worked against rather than toward funding equalization. Specific to the focus of this paper, the court found additionally that the legislative act which existed for the funding of school facilities provided insufficiently for the needs of districts that were poor in real property value. The court ultimately agreed with the plaintiffs in the case that the state had failed in its constitutional responsibility to provide a thorough and efficient system of public schools. The court called for the state to create a thorough and efficient system throughout the state, indicating that a thorough system could not mean one in which part or any number of the school districts of the state was starved for funds. An efficient system could not mean one in which part or any number of the school districts of the state lacked teachers, buildings, or equipment (*Derolph v. State*, 1997). The court referred to public schools facilities conditions as determined by a 1990 Ohio Public

School Facility Survey. According to the court:

> Among its findings, the survey determined that one-half of Ohio's school buildings were fifty years old or older, and fifteen percent were seventy years old or older. A little over half of these building contained satisfactory electrical systems; however, only seventeen percent of the heating systems and thirty-one-percent of the roofs were deemed to be satisfactory. Nineteen percent of the windows and twenty-five percent of the plumbing and fixtures were found to be adequate. Only twenty percent of the buildings had satisfactory handicapped access. A scant thirty percent of the school facilities had adequate fire alarm systems and exterior doors. (*Derolph v. State*, 1997, p. 11)

The court further pointed out that asbestos was a continual major safety and health concern in at least 68% of Ohio's school building. This was in direct violation of a 1987 mandate from the US Environmental Protection Agency. In contrast to this need, the court indicated that only sixty-three districts had received funding from the state for the purpose of asbestos abatement. The court further listed such facilities conditions as plaster falling from ceilings, leaking pipes, dirty conditions including insect infestation, and inadequate heating in some of the state's school buildings. Finally, the court found that the state's funding system was unconstitutional in that it was neither thorough nor efficient. The court pointed out four elements that should be eliminated which rendered the system unconstitutional. These elements were the operation of the School Foundation Program; the emphasis of the school funding system on local property tax; the requirement that districts without sufficient funds to operate borrow money through spending reserve and emergency school assistance loan programs; and the lack of sufficient funding in the state budget for the construction and maintenance of public school buildings. In stating the remedy for an unconstitutional school finance system, the court held that the legislature would be responsible for creating an entirely new system. They further defined that system by stating: "A thorough and efficient system of common schools includes facilities in good repair and the supplies, materials, and funds necessary to maintain these facilities in a safe manner, in compliance with all local, state, and federal mandates" (*DeRolph v. State*, 1997,

p. 17). While the court gave the state twelve months to address these issues, subsequent litigation found that the state had not satisfied the requirements of the court's decision. In *DeRolph v. State* (2000), also known as *DeRolph II* the court again found the school funding system to be unconstitutional. With regard to facilities funding, the court indicated that:

> The task at hand is not one to be taken lightly. One-half of Ohio's school buildings are fifty years old or older. Constructing and maintaining school buildings is an ongoing process, and this court recognizes that it would be unreasonable to require the General Assembly to remedy overnight what has taken decades of neglect to develop, yet there remains an extensive amount of work to be done in order to educate Ohio's students in "safe and healthy learning" environments. Continuing funding in this area is of the utmost importance. (*DeRolph v. State*, 2000, p. 46)

The court declined a request to appoint a special master to oversee the efforts and instead maintained continuing jurisdiction over the issue. However, in 2001, the court appointed a mediator over the issue to attempt to move toward resolution (*DeRolph v. State*, 2001). Mediation failed, and the court again declared the funding system unconstitutional but did not retain jurisdiction over the case (*DeRolph v. State*, 2002). After elections caused changes to the composition of the court's bench, the court acted to prohibit a plaintiff requested compliance conference, thus effectively ending the case (Hunter, 2004).

A series of lawsuits in New Jersey also addressed that state's entire education system including facilities, beginning with *Abbott v. Burke* (1985) and culminating with *Abbott X* in 2003. Specifically, in *Abbott v. Burke* (1997) also known as *Abbott IV*, the New Jersey Supreme Court ordered the State of New Jersey to increase funding for urban districts and to hold special hearings to determine the supplemental programs needed for disadvantaged children and to determine facilities needs in urban districts. The court further ordered in *Abbott v. Burke* (1998), otherwise known as *Abbott V*, that the state provide comprehensive school reform; full-day kindergarten and preschool for all 3- and 4-year-olds; and a state managed and funded facilities

program to correct code violations, to eliminate overcrowding, and to provide adequate space for all educational programs in the state's schools. Specifically, *Abbott IV* and *Abbott V* provided for the Abbott "education adequacy" framework which includes:

- Rigorous content standards-based education, supported by per-pupil funding equal to spending in suburban schools.
- Universal, well-planned and high quality preschool education for all three and four year olds.
- Supplemental ("at-risk") programs to address student and school needs attributed to high-poverty, including intensive early literacy, small class size and social and health services.
- New and rehabilitated facilities to adequately house all programs, relieve overcrowding, and eliminate health and safety violations.
- School and district reforms to improve curriculum and instruction, and for effective and efficient use of funds to enable students to achieve state standards.
- State accountability for effective and timely implementation, and to ensure progress in improving student achievement. (Education Law Center, 2005)

Facilities funding was at the forefront of the case of *Kasayulie v. State* (1999) in Alaska. Plaintiffs filed suit against the state alleging that the states system for the capital funding of schools was unconstitutional based on violations of the equal protection clause of the state's constitution. The suit further alleged that the system was in violation of implementing regulations of Title VI of the Civil Rights Act of 1964. The Superior Court found in favor of the *Kasayulie* plaintiffs indicating that the Alaskan facilities funding system was dual, arbitrary, unconstitutional, and racially discriminatory (Hunter, 2004). In 2001, the state attempted to appeal the decision, but the court rejected the motion to reopen the case indicating that although the state had allocated increased funds for construction and renovation of rural schools, it still had not significantly altered the duality of the finance system itself.

As state funding systems continued to fall under more court scrutiny with regard to the level of equities, it became increasingly common to see states unable to include the funding of

monies for school district expenditures in capital outlay in order to create equitable and efficient education systems. A case that emphasized this point was the case of *Campbell County School District v. State* (1995), also known as *Campbell I* in Wyoming. In *Campbell I,* the state of Wyoming upheld an earlier state Supreme Court decision that declared the state school funding system unconstitutional based on grounds of equity and adequacy. The court provided remedial guidelines to the legislature and indicated specific elements that should be included in any quality education system. Among those elements the court listed were small classroom size, ample and appropriate provisions for at-risk students, and meaningful standards and assessments. The approach of the state in responding to a court ordered directive to determine the cost of education and fund it was notable as Wyoming used a "costing out" procedure to determine funding levels for its school districts. The approach involved extensive input from the state's educators and educators from surrounding states regarding the components of quality education. Consultants then calculated the costs of these educational components and developed adjustments based on the needs of individual school districts (Campaign for Fiscal Equity, 2002). In more recent litigation known as *Campbell II* (*State of Wyoming v. Campbell County School District*, 2001), the Wyoming Supreme Court declared the new cost-based education system constitutional but indicated the need to review overall cost factors every five years and adjust them for inflation every two years. The one piece of the school funding system that the court in *Campbell II* found to still be inadequate and inequitable was the system for funding capital outlay in order to improve, construct, and maintain school facilities.

Stating that these needs continued to mount, the court ordered the state to remedy these deficiencies in order to provide appropriate educational opportunity to all students. While the state argued that the funding system should only be required to remedy facilities that were

deemed deficient, the court stated that the state was responsible for funding facilities that were capable of delivering the "full basket" of educational services to students in all locations throughout the state. The court then established that the state was not meeting that standard; indicating that most districts throughout the state depended on bonded indebtedness for facilities needs, and that districts had not levied bonded indebtedness uniformly. The court recognized that this lack of uniformity was caused by disparities in local wealth and was therefore unconstitutional. Additionally, the court relied upon facilities studies conducted since *Campbell I* to determine the needs of capital outlay in districts throughout the state. The court then ordered the legislature to provide a plan by July 1, 2002 to remedy school facilities deficiencies within six years. (*State of Wyoming v. Campbell County School District*, 2001*).*

Another case in which capital outlay funding disparities sparked litigation was the case of *Zuni School District v. State* (1999) in New Mexico. While the state had a long history of funding its education system at over 80% since the passage of the 1974 Public School Finance Act, the funding of facilities was still primarily the responsibility of local districts. In *Zuni*, the plaintiffs charged that the state funding mechanism for facilities was unconstitutional on the basis of the lack of a uniform facilities funding system. The court granted summary judgment to the plaintiffs and charged the state with the task of correcting past inequities by providing a uniform capital outlay funding system. The court set a deadline for the legislature to act by the end of the 2001 legislative session. A special master, appointed to provide the court with an impartial opinion regarding state compliance, reported in 2002 that the state had made a good faith effort toward compliance by installing a $400 million capital funding system to provided standard-based facilities for all districts in the state. While plaintiffs objected, indicating a failure of the effort to satisfy disparities in bonding capacities between school districts, the court

approved the special master's report thereby declaring the new system constitutional.

As educational needs and community expectations increased across the nation, many other states adopted measures to address facilities funding. Sielke (2001) reported that in the years 1993 and 1994, twenty-five states reported spending an aggregate of $4.1 billion on public school facilities funding. Sixteen states, however, reported no funding for capital outlay in those years. According to the study, by 1998-1999, thirty states reported facilities funding aid totaling $10.9 billion. While this was a significant increase in capital outlay funding for those states, twelve states still reported no funding for public school facilities. Sielke found that the percentage of expenditures for facilities funding also increased over this time frame, with New Hampshire spending the most money on infrastructure with 16.5% of their total school funding going toward facilities. Noteworthy in this research with regard to facilities funding equity was the type of funding approach used. Typically, the mechanisms can be grouped into flat grants, equalized grants, categorical grants, and full-state funding. According to Sielke, flat grants typically "exacerbate inequity" since they were not meted out according to special needs. She found that in 1998-1999, five states used some type of flat grant combined with an equalized grant system, twenty-one states used equalizing grants, and twelve states used categorical grants. While many states adopted a combination of grant approaches, only five states embedded state facilities funding within their basic funding program. Only one state, Hawaii, practiced full-state funding. Additionally, a study released by the National Governors' Association for Best Practices (2000) also indicated increased facilities funding activities in many states. According to their report:

> eleven states subsidize, reimburse, or match local funding for construction projects; ten states have an established formula for determining the amount of state funding each school district receives; six states have established a new agency to oversee school construction within the state; five states provide low-interest loans for low-income school

> districts to help support their local construction efforts; and four states require the Governor and the state legislature to approve all school construction projects prior to state funding being made available. (p. 1)

Finally, according to a March 2000 report of the US General Accounting Office, annual construction expenditures for elementary and secondary schools increased by 39% from 1990 through 1997. Most of the construction was for new facilities or additions to existing facilities and was primarily locally funded through construction bonds indicating that, while state facilities funding for public education was on the rise, local school districts largely provided funding for improved facilities.

Historical Review of Facilities Funding in Texas

The burden of funding public school facilities in Texas has been placed historically and largely upon the shoulders of the local school district. During most of the nineteenth century, Texas was not significantly different than many other states where the burden of public school facilities construction rested upon the local community. The state's early role, however, began in the 1880s with the authorization of a per-capita fund to be used for operating expenditures as well as the construction of school facilities and continued with the legislature's authorization of the State Board of Education to invest the Permanent School Fund in school district bonds in 1901 and 1909 (Clark, 2001). After 1911, the state offered an incentive aid for construction to public school districts to encourage consolidation (Clark, 2001; Walker, 1988). While the corpus of the Permanent School Fund continued to be utilized to guarantee public school bonded indebtedness, the per capita fund and incentive aid initiative offered scant resources to school districts and did little to alleviate the burden of facilities funding (Clark, 2001). While early drafts of the Gilmer-Aiken Act of 1949 initially contained recommendations for equalized

funding for facilities construction, legislators failed to enact these recommendations, believing that increased consolidation would alleviate construction burdens by creating more efficient use of existing facilities (Clark, 2001). The state then did little with regard to public school facilities construction until 1971, when an incentive aid for construction was once again authorized for school districts agreeing to consolidate (Texas Education Agency, 1994). The state acted again in 1983 when the legislature authorized the use of the corpus of the Permanent School Fund to guarantee bonded indebtedness for school districts, allowing districts to achieve the best possible bond rating for the sale of bonds for construction (Clark, 2001).

Eventually, school funding litigation influenced decisions of legislators toward providing a larger state share for facilities. The decision of the district court in *Rodriguez et al. v. San Antonio* in 1971 supported the contention of the plaintiffs that the Texas school funding system violated equal protection provisions of the US Constitution. The decision was reversed by the US Supreme Court in 1973 when the court found that there existed a rational relationship to furthering state minimum education goals while upholding local district control (Burbach & Dover, 2003). A favorable ruling, however, in the district court for property poor school district plaintiffs in the historic *Edgewood v. Kirby* court case in 1989 forced the state to consider their role in public school facilities funding. In *Edgewood v. Kirby* (1989), also known as *Edgewood I*, the Texas Supreme Court held that the Texas public school finance system was unconstitutional in that it violated Article VII, Section 1 of the Texas Constitution, which states:

> A general diffusion of knowledge being essential to the preservation of the liberties and rights of the people, it shall be the duty of the Legislature of the State to establish and make suitable provision for the support and maintenance of an efficient system of public free schools.

The court held that the public school funding system was neither efficient nor suitable. The court defined efficient as "…the use of resources so as to produce results with little waste”

(*Edgewood ISD v. Kirby*, 1989, p. 6*)* and indicated that under an efficient system "…districts must have substantially equal access to similar revenues per pupil at similar levels of tax effort" (*Edgewood ISD v. Kirby*, 1989, p. 9*)* while maintaining that the ability of local districts to supplement an efficient state system at differing levels was not unconstitutional. The court arrived at these conclusions on the basis of "…glaring disparities in the abilities of the various school districts to raise revenues from property taxes" (*Edgewood ISD v. Kirby*, 1989, p 2*).* While the case did not revolve around facilities funding issues, the court indicated that the basic state funding program did not cover costs required to meet minimum state education standards and did not provide for facilities or debt service.

On the heels of this case and the convening of several state exploratory committees, legislators enacted Senate Bill 1 in 1990. While the law addressed several inequities outlined in the *Edgewood v. Kirby* (1989) case, it merely made facilities funding a part of the existing Tier II of the foundation program (Clark 2001). While the court recognized that Senate Bill 1 contained "modest equalization" of debt service through Tier II (Walker 1989), it further criticized the state for its failure to provide substantial and equal access to facilities funds (Clark 2001) as most property poor school districts would be forced to use Tier II funds for maintenance and operations rather than for facilities construction or improvements (Walker 1989; Casey 1994). In what became known as *Edgewood II*, the court readdressed the issue of efficiency, indicating that an efficient system must allow districts to generate comparable revenue from property taxes at similar rates (*Edgewood ISD v. Kirby*, 1991). As Senate Bill 1 excluded the wealthiest 5% of school districts, the court once again found the system to be unconstitutional. The court upheld their earlier findings regarding local supplementation of the property tax.

The Texas Legislature's next attempt to create a constitutional system in 1991 also fell

short of the court standard. Under House Bill 351, the legislature created 188 County Education Districts (CED's) and authorized them to levy, collect, and distribute property taxes. In *Carrollton-Farmers Branch ISD v. Edgewood ISD* (1992) also known as *Edgewood III*, the Texas Supreme Court found that HB 351 created an unconstitutional state ad valorem tax through the use of the County Education Districts and did not allow appropriate voter approval for tax rates. The court took the opportunity to sharpen the definition of an efficient system, stating:

> An efficient education requires more than the elimination of gross disparities in funding; it requires the inculcation of an essential level of learning by which each child in Texas is enabled to live a full and productive life in an increasingly complex world. (*Carrollton-Farmers Branch ISD v. Edgewood ISD*, 1992)

The court called on the legislature to create a system that would address educational results as well as school funding.

The Texas Legislature responded in 1993 with Senate Bill 7, creating a new funding system. Senate Bill 7 established a basic allotment of $2300 per student in average daily attendance to districts with a tax rate of at least 86 cents per $100 and an equalized enrichment of $20.55 per weighted average daily attendance for each additional penny of ad valorem tax up to a cap of $1.50. It capped each district's property wealth at $280,000 per student and provided recapture options for districts exceeding this cap. As the recaptured funds from property wealthy districts were to be distributed to districts with less property wealth, the system became known as the "Robin Hood" system. Following the passage of Senate Bill 7 in 1993, the district court found that the bill was constitutional but that it failed to provide adequately for school facilities and issued a freeze on all school bonds issued after September 1, 1995 unless the legislature provided adequate facilities funding by that time (Clark, 2001). In what became known as *Edgewood IV,* the Texas Supreme Court overturned this injunction but indicated the need for a

greater state share of facilities funding, stating that further litigation could result if action was not taken: “Indeed, the evidence at trial shows that the lack of a separate facilities component has the potential of rendering the school finance system unconstitutional in its entirety in the very near future" (Edgewood ISD v. Meno, 1995). In response to this decision, the legislature provided the School Facilities Assistance program in 1995 and appropriated $170 million for facilities funding for the 1996-1997 biennium. A grant-based assistance program conditioned on low wealth and enrollment growth, it was recognized as insufficient in ensuring the equitable allocation of resources for the wide variety of facilities needs (Clark, 2001).

Recent litigation has revolved around whether or not the $1.50 ad valorem cap imposed on school districts for maintenance and operations funding under Senate Bill 7 constituted a statewide property tax. In *West Orange Cove Consolidated ISD v. Alanis* (2003), property rich plaintiffs sued, alleging that they had lost the ability to maintain local discretion in setting tax rates once they had reached the tax rate cap. In 2003, the Texas Supreme Court reversed an affirmative decision by the appellate court and remanded the case back to the trial court to decide certain questions of fact related to whether or not districts must tax at $1.50 and whether or not they had lost meaningful discretion if they did. In the subsequent case of *West Orange Cove v. Neeley* (2004), the court found that the current funding system was unconstitutional because property rich districts had lost meaningful discretion to set a tax rate and that the system provided inadequate and inequitable funding for school children across the state. The judge placed an October 1, 2005 deadline on the legislature to address the issues raised by the court and to create a constitutional public school funding system. The case was appealed directly to the Texas Supreme Court in 2005. In the case of Neeley *v. West Orange Cove CISD* (2005), the Texas Supreme Court upheld the constitutionality of the overall funding system but agreed with

the trial court that the $1.50 tax rate cap on maintenance and operations levies by school districts was unconstitutional. The court indicated, however, that the current system may be susceptible to more court challenges unless changes were made. The court stated explicitly:

> We now hold, as did the district court that local ad valorem taxes have become a state property tax in violation of article VIII, section 1-e, as we warned ten years ago they inevitably would, absent a change in course, which has not happened. Although the districts have offered evidence of deficiencies in the public school finance system, we conclude that those deficiencies do not amount to a violation of article VII, section 1. We remain convinced, however, as we were sixteen years ago, that defects in the structure of the public school finance system expose the system to constitutional challenge. Pouring more money into the system may forestall those challenges, but only for a time. They will repeat until the system is overhauled. (p. 8-9)

As a result of their findings, the court affirmed in part the decision of the trial court with respect to the $1.50 ad valorem property tax cap and reversed in part the decision of the trial court with regard to the unconstitutionality of the entire public education funding system. While the question of equitable funding for school districts in Texas was far from over, the state responded to facilities needs through the creation of the instructional facilities allotment (IFA) in 1997, the existing debt allotment (EDA) in 1999, and the new instructional facilities allotment (NIFA) in 1999.

Facilities Funding Mechanisms in Texas

The instructional facilities allotment (IFA) was initially authorized in House Bill 4 passed by the 75th Texas Legislature in 1997 and was incorporated in the Texas Education Code as Chapter 46. The legislation provided $200 million to render assistance to school districts in making debt service payments on qualifying bonds and lease-purchase agreements and to be allocated evenly over the 1997-1999 biennium. An additional $150 million was authorized by the 76th legislature for the 1999-2001 biennium (TEA, 2003). The IFA allotment was held at this

level by the 77th legislature for the 2001-2003 biennium. Application for IFA funds must be made to the Texas Education Agency (TEA) after acquiring voter authority through either a successful election in the case of bonds or the expiration of the required 60-day notice period in the case of lease-purchase agreements. Bonds must have a weighted maturity of at least eight years while lease-purchase agreements must have a term of at least eight years. All proceeds from bonds or lease-purchase agreements must be used for the construction and/or renovation of an instructional facility, specifically districts must use proceeds to fund debt or refund bonds issued during the 1997-1998 school year or later. IFA guaranteed a maximum of $250 per student in average daily attendance (ADA) or the actual debt payment, whichever was less. State aid was guaranteed at a yield of $35 per penny of tax effort per unweighted ADA with districts being required to levy sufficient taxes to cover the local share of the allotment. Small districts with less than 400 students were eligible for a maximum allotment of $100,000 per year or their actual debt payment, whichever was less (TEA, 2003). Due to funding limitations, state law required that applicant districts be ranked by property wealth to determine priority of awards. The TEA considered several other factors when implementing IFA. Based on available funding, the TEA considered three other priority areas for school district awards; preference was given to (1) districts without outstanding debt obligations; (2) districts experiencing an enrollment increase over the previous five years; and (3) districts that applied in a previous biennium but were not awarded funding due to a lack of funds. The TEA placed districts that qualified but were not funded on a priority list for subsequent funding cycles (Clark, 2001).

The existing debt allotment (EDA) was authorized by the Texas Legislature in Senate Bill 4 for the purpose of assisting school districts with existing debt as a third tier of the Foundation School Program (FSP) and was included in the law as administrative code (19 Texas

Administrative Code, Chapter 61.1035, 1999). The EDA provided a guaranteed amount of state and local funds set at $35 per student per penny of debt tax for each cent of local tax effort up to $0.12 of debt service to pay the principal and interest on eligible bonds. Debt that was eligible for the EDA was debt that a school district had made and had levied and collected a tax on in 1998 or before for instructional and non-instructional purposes through bond issuance, the refunding of bonds, or a lease-purchase agreement (19 TAC 61.1035, 2003). Debt obligations to which IFA funds had been applied were not eligible for EDA.

The new instructional facilities allotment (NIFA) was authorized by the Texas Legislature in Senate Bill 4 for the purpose of assisting school districts with debt incurred with the construction of a new instructional facility as a third tier of the FSP and was included in the law as administrative code (19 Texas Administrative Code, Chapter 61.1034, 1999). Both property wealthy and property poor districts were eligible to receive NIFA funds for the first year a new facility was open at the level of $250 for each student in average daily attendance (ADA). In the second year a facility was open, districts received $250 per ADA for each additional student at the facility. Campuses were required to qualify as instructional facilities used for teaching the state curriculum required by Chapter 28 of the Texas Education Code. NIFA funds were limited to $25 million in a school year for all school districts combined. If total allotments exceeded this amount, each district's allotment would be reduced so that the total amount distributed equaled the amount appropriated. While IFA, EDA, and NIFA were attempts by the state to address facilities funding, and they may have addressed equity related issues; legislative responses to pressures from school districts across the state have led to considerations for changes to the Texas school funding system.

Proposed Funding Mechanisms for Texas Public Schools

With a budget deficit approaching $10 billion and an increase in the number of school districts capped at an ad valorem tax rate of $1.50 per $100 of property wealth, the 78th Texas Legislature proposed several funding mechanisms for the entire education system. These bills represented fundamental historical shifts in the method of school finance that could impact facilities funding should reemergence of these bills occur during future sessions of the legislature.

In its embryonic stages, House Bill 5 emerged as a stop-gap measure to buy time to reconfigure the fundamental school finance system in Texas. Initially, this bill contained an allotment of $150 per student in average daily attendance for each school district, repealed Chapters 41, 42, 46, and 45.002 of the Texas Education Code (all related to school finance), and charged legislators with the task of developing and implementing a new school finance plan by September 1, 2004 (HB5, 2003). After several changes, HB5 emerged later in the legislative session substantially altered as Committee Substitute for House Bill 5 (C.S.H.B.5, 2003) and in the Senate as Committee Substitute for Senate Bill 2 (C.S.S.B.2, 2003). This bill guaranteed each Texas school district $4,300 in state aid per pupil in weighted average daily attendance (WADA) as the basic school program. While purporting a dedication to local control, the bill proposed to establish via constitutional amendment, a state property tax of $0.75 per $100 of value while retaining county assessors-collectors at the local level. The bill, which failed to pass into law, further allowed for a maximum district enrichment tax of $0.10 subject to voter approval. The projected negative fiscal impact of this bill was $16.1 billion for the fiscal years 2004-2005 (Texas Legislative Budget Board, 2003). Reductions in property taxes were to be compensated by reliance on increases in the sales tax, subject to voter approval of a proposed constitutional

amendment.

House Bill 3382 was introduced in the regular session of the 78th Texas Legislature. The bill contained a teaching and instruction component and an instructional facilities component by proposing the creation of a Texas Great Teachers and Facilities Fund under Chapter 47 of the Texas Education Code (TEC). The purpose of the fund was set forth to:

> guarantee that each school district in the state has adequate resources to provide each eligible student a basic instructional program and education facilities suitable to the student's educational needs; and access to a substantially equalized program of financing for teacher compensation, instructional spending, and educational facilities. (78th Texas Legislature, 2003)

The bill provided formulas for both components in attempts to preserve overall funding equity. The teaching and instruction component proposed the establishment of salary targets and benefits targets multiplied by the school district's student enrollment. Salary targets and benefits targets were to be determined using formulae based on data reported by the US Department of Labor, Bureau of Labor Statistics. The formulae also provided for state aid adjustment related to an income adjusted class size target based on the district's median household income by percentile. Of more significance to this study, the bill provided for a basic instructional facilities allotment for each academic year calculated by multiplying $3,500 by the number of students in average daily attendance (ADA) divided by the income adjusted class size target. The bill further provided for adjustments for very small districts with an average of 40 or fewer students per grade for the prior academic year and small districts with an average of more than 40 but less than 71 students per grade for the prior academic year. Further state aid increases and adjustments were provided for by including formulae for "growth districts" in the bill. The bill included the existing allocations under the IFA thereby maintaining that facilities funding mechanism. The bill allowed for up to $1.25 per $100 property valuation for local tax

enrichment and required districts to either eliminate or reduce their ad valorem tax rates to meet a target of no more than 110% of the district's prior year budget. To implement this, the bill required the Commissioner of Education to calculate each district's expected state aid and report it to them no later than March 31, 2004. If a district's state aid was estimated to be more than 110% of their prior year funding, the district would be required to eliminate its ad valorem tax. If a district's expected state aid was estimated to be more than 110% of their prior year funding, the district would be required to change its ad valorem tax by an amount such that the new tax rate would generate revenue equivalent to the difference between the 110% target and its expected state aid. Finally, districts estimated to receive state aid greater than their prior fiscal year budget but less than the 110% target would be exempt from these provisions. The estimated negative fiscal impact of this bill was nearly $38 billion through the biennium ending August 31, 2005. Funding for the bill was to be generated through an addition to the state sales tax of 2.8% of all taxable items sold in the state; the allocation of monies from the existing motor vehicles sales taxes; the use of all taxes from the cigar and tobacco products tax; the liquor, wine, and malt liquor taxes and the beer tax; the dedication of monies from taxes on gas, electric, and water utility tax revenue; state lottery monies; and 25% of all state insurance premium taxes. The bill would have required voter approval via a constitutional amendment.

Neither HB 5 nor HB 3382 was enacted by the 78th Texas Legislature. Instead the legislature opted for legislation that would retain the current funding system established under Senate Bill 7 while providing school districts additional funding of $110 per weighted pupil in average daily attendance (WADA). House Bill 1, Rider 82 was aimed at providing additional funding for school district needs until a more permanent solution to the school funding dilemma could be addressed in a promised upcoming special session. As promised, the special session to

address school finance was called in late April 2004.

In the interim the Joint Select Committee on Public School Finance, involving both the House and the Senate of the Texas legislature, conducted a study of issues affecting the duty of the legislature to establish and make suitable provision for the support and maintenance of an efficient system of public free schools (Texas Joint Select Committee on Public School Finance, 2004). While the study primarily revolved around a review of the state's revenue system related to its ability to provide for a constitutional finance system, facilities funding was specifically addressed in the report. The committee suggested that the legislature maintain the current facilities funding system; restrict state support to facilities used for instructional purposes only; establish criteria for new facilities or renovation to qualify for the Instructional Facilities Allotment; provide relief for fast-growth districts; and allow fast-growth districts to assess impact fees with voter approval.

With the convening of the 4th Special Session of the 78th Texas Legislature in April of 2004, proposed legislation emerged to adopt a new funding system for education in the state. House Bill 1, containing elements of the Governor's Education Excellence and Property Tax Relief Plan (2004), introduced in the legislature by Representative Kent Grusendorf, proposed the increase of the basic allotment from $2,537 to $2,650 per student in average daily attendance and an increase in the guaranteed yield from $27.14 to $27.50 per penny of tax effort. The bill proposed to decrease the maximum tax rate for the Tier II guaranteed yield from 64 cents to 44 cents and lower the limit on the maximum growth in appraised value of residential homesteads from 10% to 3% per year. Entitled the Educator Excellence Incentive Program, the bill provided for performance-based monetary incentives at the individual principal and teacher levels and abolished Chapter 41 of the Texas Education Code, the code that provided for the recapture of

wealth from property rich school districts. In order to generate the needed revenue to fund the proposal, the bill allowed the state to license video lottery operations and to raise the tax on cigarettes, allocating a portion of the expected revenue to education. Finally, the bill would have increased the IFA to $35.50 per penny of tax effort but left other funding provisions of the education code so that facilities funding through the current mechanisms would continue. The bill was estimated to add approximately $7.1 billion to the total cost of the education program over the initial funding biennium.

Difficulty over determining the best method for school financing continued, however, and during the 4th Special Session of the Texas Legislature, lawmakers clashed over how to fund several proposals to restructure the state finance system. The ensuing clash resulted in a deadlock between the legislature and the governor, and the session ended two days earlier than the 30 day deadline with no new funding mechanisms in place.

A sense of urgency was added to establish a new school funding mechanism with the ruling of the district court judge in *West Orange-Cove CISD v. Neeley* in September 2004. The court found that the current Texas school funding plan was unconstitutional on all counts, specifically citing that the system was neither efficient nor adequate and did not provide meaningful discretion for the setting of tax rates. The court then issued an injunction prohibiting further funding of public schools under the existing school finance structure effective one year from the date of the written court orders. The ruling effectively forced the legislature to replace the current funding mechanism before the beginning of the 2005-2006 school year; however, the ruling was soon appealed to the Texas Supreme Court.

While the case was slated for appeal, the regular session of the 79th Texas Legislature convened in January 2005. Under pressure by the trial court to address school funding issues, the

legislature proposed several bills during this session. An early bill from this legislative session addressing school funding issues was House Bill 2, jointly sponsored by Kent Grusendorf and Florence Shapiro. This bill mandated that 90% of the state's students be covered in the funding system. Recapture under the funding system would be significantly reduced for wealthier school districts by capping those payments to a maximum of 35% of a district's maintenance and operations tax revenue. The bill also proposed an accreditation allotment. For districts that levied a maintenance and operations tax rate of $1.00 per $100 of valuation, the rate would be set at $4,550 per pupil expenditure for each student K-8 in average daily attendance. HB 2 further provided additional funding for students in accelerated programs, transitional language programs, or career and technology programs. The bill required the Texas Education Commissioner to develop an incentive program for teachers showing success in student achievement (Texas Association of School Administrators, 2005).

Proponents of the bill were supportive because the bill proposed to add $3 billion over the 2005-2007 biennium in state funding to schools and required greater levels of school accountability. Opponents of the bill suggested that the bill would have increased the funding equity gap between rich and poor districts due to the limits placed on recapture. Additionally, they indicated that the bill was an unfunded mandate for many poor school districts as it did not provide increased funding for teacher pay raises and the proposed required incentives for teachers. Finally, many opposed the bill stating that it did not adequately address the issues emerging from the court findings in *West Orange Cove CISD v. Neeley* (2004) which the legislature was supposed to correct. House Bill 2 failed to pass in the 79th legislative session and in subsequent special sessions called by the governor later that year.

Another bill introduced in the 79th Legislature was House Bill 3, sponsored by Jim

Keffer. This bill proposed to restructure the property tax system in an effort to decrease reliance by school districts on this type of taxation for their maintenance and operations and capital outlay programs. HB 3 emerged as a shell bill introduced in an effort to move toward property tax relief. The bill proposed lowering property taxes to no more than one dollar per $100 of valuation for all residential and commercial property. The reduction in revenue from property taxes would be compensated for by raising the cigarette tax, expanding the sales tax base, eliminating the franchise tax and continuing the telecommunications infrastructure fee (Texas Association of School Administrators, 2005). While the bill was passed by the Texas House of Representatives, it failed to pass in the Senate, in part due to a conflict between the Texas comptroller and the Speaker of the House. Comments by the comptroller's office in a public information release indicated that she did not believe the bill was appropriate in that it allowed too much latitude for taxpayer avoidance, that it provided faulty imbalances in revenue projections, and that it fell short by one-third of the amount of revenue it purported to raise (Keeton-Strayhorn, 2005).

Finally, in November 2005, the Texas Supreme Court released the aforementioned decision in the appeal from the district court in the case of *Neeley v. West Orange Cove CISD* (2005) and gave the Texas Legislature until June 1, 2006, to correct the issues at hand. Given the deadline imposed by the court on the legislature, the governor of Texas called a special session of the legislature in spring 2006 to address the court's findings. The result of the special session was the passage of House Bill 1 (HB 1, 2006), an aggressive restructuring of the school funding system that was designed to reduce the portion of the property tax used by school districts for maintenance and operations by approximately 33% over a two-year period (79th Texas Legislature, 2006). School districts were allowed to levy a local enrichment tax, without voter

approval, of 4 cents after the initial tax cuts to allow for any increased maintenance and operations expenditures. Subsequent to that, districts were limited to 2 cents of tax increase per year with voter approval. Lost revenue from the tax reduction was to be regained through the implementation of House Bill 2 (HB 2, 2006), passed by the legislature during the same special session (79th Texas Legislature, 2006). House Bill 2 mandated equalization of revenues from three other bills to offset the reduction in revenues created by House Bill 1. House Bill 3 (HB 3, 2006) was designed to reduce the exemptions on the franchise tax or business tax in Texas, thereby gaining revenue for schools from the imposition of these taxes on the corporate and business world. More revenue was to be replaced through the provision of House Bill 4 (HB 4, 2006) and House Bill 5 (HB 5, 2006), also passed during the special session. HB 4 altered taxes on motor vehicle purchases and HB 5 significantly increased the taxes on cigarettes. Although the new finance package was completed by the June 1, 2006 deadline, it was pointed out that the fiscal notes for the tax and school finance bills indicated a gap of $10.5 billion between the costs of HB 1 and the revenues gained from HB 3, 4, and 5 in the 2008-2009 school year (Lavine, 2006). While HB 1 did not specifically deal with facilities funding in Texas public schools, such funding gaps could affect the state's future ability to fund facilities allotments. During the special session the legislature left the existing facilities funding mechanisms for public schools intact. Additionally, in preparation for the 80th session of the Texas Legislature, State Comptroller Carole Keeton-Strayhorn requested a facilities survey from every public school district in Texas (Keeton-Strayhorn, 2006).

While legislators and educators continued to work on a school funding system that was adequate, top finance researchers offered suggestions for new systems. In his paper entitled "Texas Public School Finance: A Look at Where We Have Been – And Where We Are Headed"

(2003), Thompson provided several suggestions for lawmakers. Thompson maintained that an equitable system should sustain the level of efficiency established in the *Edgewood IV* litigation, and lawmakers should be cautious of aiming too low. The system should use a one-tier guaranteed yield approach that provided for the general diffusion of knowledge. The system should reduce its reliance on local property taxes for support, continue to include various cost adjustments to stay up-to-date, and establish mechanisms to keep student and district factors current and keep the system in balance. With regard to facilities funding, Thompson contended that the state should roll IFA and EDA programs into a true debt tier to allow for better district facilities planning. Although reform-minded individuals like Thompson called for facilities funding changes, no significant funding restructuring was forthcoming from the Texas legislature. With the passage of House Bill 1, the state addressed the issue of property tax reform significantly but did not specifically address facilities funding issues.

Summary

Ultimately, school funding issues in Texas, as in other states, continued to revolve around equity and adequacy issues. With regard to equity, Texas continued to focus on methods to provide greater vertical, horizontal, and wealth neutrality levels of equity for its public school children. While the burden of funding public school facilities has been placed historically upon the shoulders of the local school district, increasing litigation influence the decisions of legislators toward providing a larger state share of funding for facilities. Historic cases such as *Edgewood v. Kirby* (1989) brought attention to school facilities funding as a part of a greater picture of school funding inequities. Subsequent cases regarding school funding such as *Edgewood v. Meno* (1995) caused the state to focus on facilities improvements by providing the

School Facilities Assistance program to assist districts with low wealth and heavy enrollment growth (Clark, 2001). Two years later in 1997 the state created the IFA to assist further in the construction and renovation of facilities for needy districts. This action was followed in 1999 by the creation of the EDA and the NIFA. Increased facilities funding was addressed again by the Texas Legislature in 2003 with the introduction of HB 3382 which included an instructional facilities component to guarantee adequate resources for educational facilities (78th Texas Legislature, 2003). While HB 3382 did not pass due to its large fiscal note and exorbitant cost, the state continued to look for ways to address inequities in school facilities funding and the school funding system overall.

In the landmark case of *West Orange-Cove CISD v. Neeley* (2004), the court found the Texas school funding plan unconstitutional, citing that it did not allow local districts to maintain meaningful discretion in setting tax rates and therefore violated the constitutional prohibition against a statewide property tax. The court gave the state one year to correct the system. During the regular session of the 79th Texas Legislature, representatives and senators tried to create a funding system that would pass constitutional muster but fell short, largely due to personality conflicts between leadership in the House of Representatives and the Senate. An appeal to the court gave the legislature until June 1, 2006, to correct the issues at hand, and the legislature developed a new funding scheme in a spring special session called by the governor in April 2006. Most of these efforts were primarily aimed at the school funding system overall with little attention given to facilities. School facilities funding still remained the primary responsibility of the local school districts related to their ability to pass local bond issues to fund capital outlay projects.

Given the history of past litigation in the state of Texas, it is safe to assume that more research will result in increased dialogue regarding school facilities funding equity in the state. Quantifying levels of equity statistically, in this study, will cause policy makers, legislators, and educational stakeholders to review equity issues across the state within and between school districts which likely will lead to future litigation with regard to facilities funding.

CHAPTER 3

INTRODUCTION

To determine equity levels of public education facilities funding in Texas, this study utilized the concepts of horizontal equity, vertical equity, and wealth neutrality. Within the scope of those principles, it was necessary to explore research questions and a hypothesis using a study population of Texas public school districts. Next, a procedure for the collection and treatment of data was outlined using statistical tests that measure levels of horizontal equity, vertical equity, and wealth neutrality within the current state facilities funding system. Finally, these levels were compared to equity standards established by the court in the historic *Edgewood IV* court case (*Edgewood ISD v. Meno, 1995*).

Research Hypothesis and Questions

The research hypothesis for this study regarded the question: Is the current Texas public school facilities funding system equitable? The following specific research statement was addressed:

Ho1. The current Texas public school facilities funding system is statistically inequitable.

Study Population

Texas has 1,044 public school districts serving well over 4 million students. These districts receive funding from federal, state, and local sources and range in size from as small as 50 students to more than 100,000 students. This study focused on 1,039 of those school districts in existence during the three-year study period. Several school districts were either created or disbanded during the study period and therefore were not included. As this study focused on

traditional public schools in the state of Texas and as the research sample size was sufficiently large to provide statistical reliability; no private schools, home schools, or charter schools were included.

Procedure for the Collection of Data

State and local facilities expenditures as well as per district information regarding pupils in average daily enrollment were available from the Texas Education Agency. This data was collected via e-mail, and other authorized access formats. All data was available from the Texas Education Agency either upon request or via the Internet at www.tea.state.tx.us and were extracted accordingly. Data were coded by numbers generated by the TEA representing both the county in which the school district was located and the district code. The data were also accessible by district name. Data indicating per pupil expenditures by average daily attendance (ADA) and weighted average daily attendance (WADA) were generated by dividing capital outlay expenditures in each school district by ADA and WADA.

Procedure for the Treatment of Data

In order to measure equity for students with regard to the facilities funding mechanisms for the Texas education system, it was necessary to focus on three equity principles: horizontal equity, vertical equity, and wealth neutrality or equal opportunity. Horizontal equity may be defined as the "equal treatment of equals" in a system (Berne and Stiefel, 1984). Utilizing capital outlay expenditures, horizontal equity was measured by comparing whether or not per pupil expenditures were equitable among a distribution of all students as indicated by average daily enrollment. Vertical equity may be defined as the "unequal treatment of unequals" in a system

(Berne & Stiefel, 1984). Using per pupil capital outlay expenditures, vertical equity was measured by comparing whether or not per pupil expenditures were equitable among a distribution of all students as indicated by weighted average daily attendance. Weightings for students were embedded in the school funding formulae of the state of Texas and were available in provided and accessed data sets. Students with greater perceived needs received a higher weighting than those with less perceived needs in order to provide greater educational equity. Wealth neutrality may be defined as the absence of a relationship between district property wealth and student opportunity (Berne and Stiefel, 1984). With regard to per pupil capital outlay expenditures, wealth neutrality was indicated by a comparison of district property wealth to capital outlay expenditures per student. Across the state, this measurement required determining a dispersion of those comparisons.

Horizontal equity was reviewed as a measure of income inequality that was derived from a specific utility function (Berne and Stiefel, 1984); in this case the specific function was analogous to a welfare function, specifically the level of equity defined in *Edgewood v. Meno* (1995) as necessary for the operation of an efficient school system. This level of equity was defined by the court as being reached when the gap in access to revenue between rich and poor districts and defined by the Texas Education Code for operations and facilities would be reduced to no more than $557 per weighted student; when 85% of all weighted students would be in the equalized system; and when at least 98% of all revenue would be equalized. This equity measure was applied to school facilities funding formulas contained in the current funding mechanism as expressed by school districts as per pupil capital outlay expenditures. It converted distributions of per-pupil objects to a single number that measured the desirability of each distribution. Per pupil units were measured utilizing the following tests of horizontal equity:

- McLoone index – A measure of horizontal equity, this index is the ratio of total dollar inputs for pupils below the median to the dollar inputs that would be required if all pupils below the median were receiving the per-pupil dollar amount at the median (Berne and Stiefel, 1984). The number of students below the median in a given state multiplied by the total dollars received forms the denominator in the index, and the numerator is the total dollar inputs below the median. If *x* equals the number of students in a distribution, *y* equals the sum of expenditures *below* the median, and *z* equals the median, the McLoone index would be expressed as:

$$\frac{y}{.5x(z)}$$

  The index expressed technically is the ratio of the sum of the values of all observations below the 50^{th} percentile to the sum of all observations if they were valued at the median (Odden & Picus, 2004). The index yields a measure between zero and one and gets larger as equity increases.

- Verstegen index – A measure of horizontal equity, the Verstegen index may be thought of as the opposite of the McLoone index in that it measures disparity in the top half of the distribution. It is the ratio of the sum of the values of all observations above the median to the sum of all observations if they were all at the median (Odden & Picus, 2004). If *a* equals the number of students in a distribution, *b* equals the sum of expenditures *above* the median; and *c* equals the median, the Verstegen index would be expressed as:

$$\frac{b}{.5a(c)}$$

  Expressed in terms of 1.0 or greater, a lower number indicates improved equity in the top half of the distribution. The Verstegen index will be used to address a phenomenon in

school finance equity where disparities in equity may decrease in the bottom half of the distribution and increase in the top half, resulting in a deceptive McLoone index and coefficient of variation indications.

- Coefficient of variation (*CV)* – A measure of horizontal equity, the coefficient of variation determines the statistical measure of the deviation of a variable from its mean. The test is used to determine horizontal equity by determining whether or not the coefficient of variation has increased or decreased over time from the mean. The measure addresses the dispersion in a state after adjusting for differences in various horizontal equity characteristics in a predetermined manner. In this case, the predetermined manner is represented by average daily attendance (ADA) per district. The *CV* is the ratio of the standard deviation to the mean and may be expressed as:

$$c_v = \frac{\sigma}{\mu}$$

- Federal range ratio – A measure of horizontal equity, the federal range ratio measures distributions below the lowest 5% and the highest 5%. The federal range is the difference between the per-pupil expenditures at or above which 5% of the pupils fall and the per-pupil expenditures at or below which 5% of the pupils fall. The federal range ratio is determined by dividing the range by the per-pupil dollar inputs at or below which 5% of the students fall. If *x* equals the number of expenditures above 95% and *y* equals the number of expenditures below 5% then the federal range ratio may be expressed as :

$$(x/y) - 1$$

The lower the federal range ratio is, i.e. the closer the number is to one, the higher the level of equity between the extremes in the distribution.

As the state of Texas has identified pupil weightings expressly for the purpose of school

funding, weighted dispersion measures were used in the determination of vertical equity. Vertical equity issues were specifically related to the question, “Once groups with legitimate differences are defined, how should the educational object vary over these groups?” (Berne and Stiefel, 1984). This measurement standard captured the dispersion that exists after the application of the weights to the facilities components in the proposed funding mechanisms and thus to determine levels of vertical equity between those systems. A per pupil unit was measured utilizing the following test of vertical equity:

- Odden-Picus Adequacy index (OPAI) – Specifically a measure of adequacy, the Odden-Picus index includes vertical equity measures when calculated on the basis of weighted students. The OPAI identifies an adequate spending level per pupil and the percentage of districts spending above that level. The measure then uses a McLoone index ratio to indicate a percentage of the sum of all observations below the adequacy level to the sum if all observations were at the adequacy level. The measure expresses values in terms of 1.0 or 100% to a percentage less than 100. Numbers closer to 1.0 indicate a more adequate system. The OPAI includes the entire distribution but focuses on the distribution below adequacy levels (Odden & Picus, 2004). The OPAI may be expressed as the McLoone index but with the bottom half of the distribution based on a false median.

Since wealth neutrality in education may be defined as “relationship measures where, in most cases, perfect equity is defined as the absence of a relationship" (Berne & Stiefel, 1984), correlation measures were used to determine neutrality based on the correlation coefficients and the statistical significance of the facilities components of the funding system. The unit to be measured was wealth per pupil related to Texas public school districts. The following test was

used to determine equal opportunity:

- Pearson product-moment correlation coefficient - Used as a measure of wealth-neutrality, the Pearson product-moment correlation coefficient test expresses relationships or correlations between school district wealth and per pupil facilities capital outlays. The coefficient involves computing the sums of cross-product variables *x* and *y* then summing these computations across the study sample *n*. The coefficient is expressed as the sum of the cross-products of the standard scores divided by $n - 1$ (Hinkle et al., 1998). The Pearson product-moment correlation coefficient may be expressed statistically as:

$$r = \frac{\sum z_x z_y}{N - 1}$$

Measurement Standards

The development of measurement standards against which to gauge the level of horizontal, vertical, and equal opportunity equity must involve both *ex ante* and *ex post* equity concepts. Utilizing well established standards, funding mechanisms were statistically measured for the three types of equity against the median and mean budget per pupil for capital outlay within the state of Texas. Utilizing a similar operational definition established by Berne and Stiefel (1984), equity was identified when a school district expended state capital outlay funding which met the mean and median budget per pupil expenditure or when aid was received in proportion to ability to self-fund facilities. Direct aid to school districts with regard to wealth was determined by the award of monies from the IFA and the NIFA. Correlation tests were administered to determine the statistical significance of this funding mechanism on equity levels.

Data Collection and Treatment

A mean and median budget per pupil capital outlay expenditures (BPPCOE) was determined for each district per year by accessing state data. Information regarding the median BPPCOE was gathered through compiling a list of 1,039 school districts in the state and determining their capital outlay expenditures per pupil over a proposed three school year period of 2000-2001, 2001-2002, & 2002-2003. This data was derived from state funding mechanisms such as the IFA, the EDA embedded in required capital outlay expenditures, and voter approved debt allowed under state law. The purpose of providing a mean and median BPPCOE was to determine an objective standard against which equity measures may be set to measure vertical, horizontal, and equal opportunity equity within state facilities funding mechanisms and against the court defined and current equity standard.

The statistical results of these measurements were compared to the equity standards established by the court in *Edgewood IV* and in use in the current finance system (*Edgewood v. Meno, 1995*). In order to ensure that Senate Bill 7, which created the current funding system, would be declared constitutional by the court, the state promised that by the 1996-1997 school year, the following equity standards would be met:

- The gap in access to revenue between rich and poor districts as defined by the Texas Education Code for operations and facilities would be reduced to no more than $557 per weighted student.
- At least 85% of all weighted students (WADA) would be in the equalized system.
- At least 98% of all revenue in the system would be equalized. This equalization level would be determined by the state's percent equalized revenue test (PERT), a test for wealth neutrality (Foster, 2004).

Summary

To answer the research question “Is the current Texas public school facilities funding

system equitable?" a study of 1,039 public school districts within Texas was undertaken. The study focused on data over a three year period collected from the Texas Education Agency. Six statistical tests measuring horizontal equity, vertical equity, and wealth neutrality were administered to the data to determine levels of equity within, between, and among the entire distribution of the school districts. A McLoone index was used to measure horizontal equity among the districts in the lower half of the distribution. A Verstegen index was used to measure horizontal equity among the districts in the upper half of the distribution. A coefficient of variation test was administered to determine horizontal equity across the entire distribution of districts over the three year study period. A federal range ratio test was administered to determine horizontal equity in the upper and lower 5% of the total distribution of school districts. The OPAI was administered using weighted average daily attendance (WADA) to determine vertical equity when the court standard mandated in the *Edgewood v*. *Meno* (1995) case was applied. Finally, wealth neutrality was measured utilizing a Pearson Product-Moment Correlation test to determine significance between school district wealth and capital outlay expenditures.

CHAPTER 4

INTRODUCTION

An analysis of 1039 school districts in the state of Texas for the school funding years of 2000-2001; 2001-2002; and 2002-2003 was used to indicate equity levels in the facilities funding system as measured by per pupil capital outlay. Two categories of fund expenditures were measured to account for the utilization of state funds for capital expenditures by school districts. These categories included All Funds and General Funds. All funds were measured in order to ensure that monies received from two of the state's facilities funding mechanisms were included: local bonded levies and the existing debt allotment (EDA). Compliance with state law by school districts regarding the required inclusion of these funds in debt service for capital outlay expenditures was assumed in the formulas. EDA monies received to pay back debt incurred in the levy of capital outlay expenditures for facilities are embedded in all funds capital outlay expenditures through each school district's ability to spend. As all EDA was received at a uniform percentage by school districts to offset capital debt, an application of this debt offset amount to the total distribution would result in minimal change to coefficients for each statistical test. As monies from general funds are utilized for operating expenditures and do not include monies from state facilities funding mechanisms, general funds only were measured in order to yield a picture of school funding that did not include the expenditure of revenue from the state funding mechanisms. Capital outlay expenditures in both fund categories were measured against the per pupil wealth of each district to determine the level of wealth neutrality or correlation between per pupil wealth and per pupil expenditures. Finally, all funds were measured with regard to the amount of instructional facilities allotment (IFA) and/or new instructional facilities allotment (NIFA) monies received to determine the statistical significance of this funding

mechanism on wealth neutrality equity levels. Each funding year was measured separately in order to develop a stronger comparison between years, to note any trends that might occur over the three-year study period, and to ensure statistical reliability. Where appropriate, line graphs were used to visually express longitudinal relationships over the three year study period.

Overall Spending

In the study year 2000-2001 (Table 1), the districts in the study yielded a mean per pupil capital outlay expenditure level of $1,137 and a median per pupil capital outlay expenditure level of $940.80 in the all funds category. Actual total expenditures above the median were $3,809,978,878 and actual total expenditures below the median were $763,295,867. For the study years 2001-2002 and 2002-2003 the mean per pupil capital outlay expenditures from all funds decreased to $1,033 and $966 respectively, indicating a reduction in capital outlay expenditures overall for school districts over the three-year period of the study. The median per pupil expenditure in this category changed from $940.80 in 2000-2001 to $517.77 in 2001-2002 and $632.65 in 2002-2003. Actual total expenditures above the median fluctuated in the three-year study period with $3,809,978,878 in 2000-2001, increasing to a three year high in 2001-2002 at $4,121,972,767, and dropping to $3,679,633,187 for 2002-2003, reflecting an overall 2% fluctuation in those expenditures. Actual total expenditures below the median dropped 30% during this same period changing from $763,295,867 in 2000-2001 to $511,769,007 in 2001-2002 and finally reaching $526,147,968 in 2002-2003 (Table 2).

Table 1

Overall School District Expenditures in All Funds Category

	2000-2001	2001-2002	2002-2003
Mean Per Pupil Expenditures	$1,137	$1,033	$966
Median Per Pupil Expenditures	$940.80	$517.77	$632.65
Actual Expenditures Below the Median	$763,295,867	$511,769,007	$526,147,968
Actual Expenditures Above the Median	$3,809,978,878	$4,121,972,767	$3,679,633,187

Table 2

Summary of Selected Horizontal Equity Measures Compared to Actual Expenditures Above and Below the Median – All Funds Category

	2000-2001	2001-2002	2002-2003	Avg. Change
McLoone	.403431	.440570	.381889	+5%
Verstegen	2.013723	3.548512	2.670758	-18%*
Actual Expenditures Below the Median	$763,295,867	$511,769,007	$526,147,968	-30%
Actual Expenditures Above the Median	$3,809,978,878	$4,121,972,767	$3,679,633,187	-2%

* Verstegen index coefficients moving further away from 1.0 represent a negative change in equity.

Horizontal Equity Test Results

Horizontal equity may be defined as the equal treatment of equals (Berne and Stiefel, 1984). Horizontal equity was measured using data that did not include pupil weightings. All

horizontal equity measurements used in this study were conducted using per pupil capital outlay expenditures by average daily attendance in each school district. When horizontal equity statistical measures were applied to the data, inequities were indicated in school facilities expenditures and funding ability across the state. The McLoone index was applied to determine equity levels in the bottom half of the distribution of school districts. Specifically, the index measured equity based on what level of statistical effort would be required to move the bottom half of the distribution to the median level of spending. The index measured equity levels by yielding a coefficient between 0 and 1.0, with 1.0 being perfect equity. The dispersion for the study year 2000-2001 (Table 2) for all funds yielded a McLoone index coefficient of .403431, far from the perfect equity standard of 1.0 set by the test. Since the index measured the amount of effort necessary to close the equity gap between the bottom half of the distribution and the median point of the distribution, the finding indicated a large inequity between school districts spending above the median and those spending below the median as well as an inequitable distribution within the bottom half of the total distribution of school districts.

Data from districts spending below the median yielded a McLoonee index coefficient of 0.403431 in 2000-2001 and 0.440570 in 2001-2002 indicating a small equity increase in that half of the total distribution of per pupil capital outlay expenditures during that two-year period even though there was a substantial reduction in actual total per pupil expenditures below the median (Table 2). Horizontal equity below the median decreased in the third year of the study, dropping to a low of 0.381889 for the 2002-2003 study year. While actual expenditures below the median reflected an average 30% decrease, equity levels reflected an average 5% increase, indicating that expenditure fluctuations have little bearing on overall equity standards in this un-weighted category. Although there was much less average fluctuation in the total percentage of spending

in districts above the median at -2%, equity within that distribution fluctuated more dramatically during the three study years.

A Verstegen index was utilized to measure the level of equity in the top half of the distribution, specifically what level of effort was necessary to close any inequitable spending gaps to bring the top half of the distribution down to the median point with 1.0 being perfect equity and numbers moving away from 1.0 expressing greater levels of inequity. This test yielded an index coefficient of 2.013723 for the all funds category in the 2000-2001 (Table 2) study year again indicating clear inequities within and between the top half and bottom half of per pupil capital outlay spenders. In 2001-2002 the Verstegen index coefficient increased to 3.5485 from 2.0137 the previous year but dropped to 2.6707 in 2002-2003 reflecting an overall fluctuation of -18%. Notably, in 2001-2002 equity yielded an inverse proportion to spending levels above and below the median. Less money was spent below the median in that year but equity actually increased among the funds that were spent. More money was spent above the median in that study year, but equity decreased dramatically in that distribution (Table 2). Overall longitudinal changes in horizontal equity in both halves of the distribution for the all funds category were graphically charted in Table 3.

In the general funds category the data yielded large discrepancies between spending among school districts in the top half of the distribution and those in the bottom half. Actual total expenditures above the median for the study year 2000-2001 were $502,232,540 while actual total expenditures for districts in the bottom half of the distribution for that year were $143,516,687 (Table 3). The discrepancies were somewhat more pronounced in the following two study years with actual total expenditures above the median being $459,774,375 for 2001-2002 and the $463,208,577 for the 2002-2003 year. During this same period actual total

expenditures below the median for 2001-2002 and 2002-2003 were $81,545,215 and $63,749,400 respectively. Actual total expenditures in the general funds category were significantly less than in the all funds category as expenditures of state facilities funds and monies allocated from bonded indebtedness for debt service were not included. There was significantly less fluctuation in the mean per pupil expenditures in this category of funds with figures of $161 in 2000-2001, $121 in 2001-2002, and $121 in 2002-2003 (Table 3). The median per pupil capital outlay expenditures dropped significantly over the three year period of the study in the general funds category. The general fund median expenditures for the school districts in the study were $119.71 for 2000-2001, $81.93 for 2001-2002, and $75.00 for 2002-2003. When statistical tests were administered for horizontal equity some significant similarities were seen in the general funds category between and within both the top and the bottom half of the total distribution of school districts measured. A McLoone index coefficient of .596117 was yielded for the study year 2000-2001. While this test yielded an equity fluctuation in the all funds category over the three-year study period, it yielded a movement away from equity over the same period, yielding a coefficient of .443605 for the 2001-2002 year and .3903 for the 2002-2003 school year. Notably, while the coefficients in this index yielded an average 38% movement away from equity during the study period, actual expenditures below the median in this fund category also decreased by 65% during the same period (Table 3) indicating a relationship between capital outlay expenditures and equity. Verstegen index coefficients for the top half of the distribution in the same time period yielded numbers of 2.086096 for 2000-2001; 2.501169 for 2001-2002; and 2.835953 for 2002-2003 category, indicating an average decrease in equity of 29% for those districts above the median in this fund category during the three-year period of the study (Table 3). During the same three year period, actual expenditures

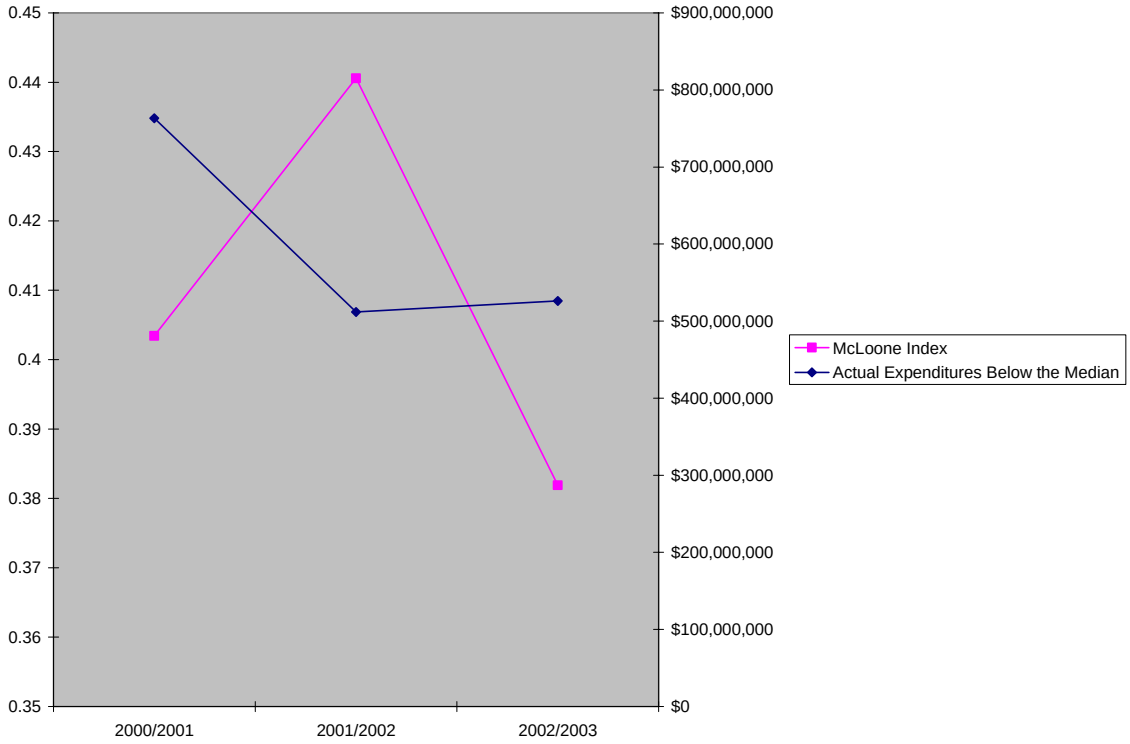

Figure 1. Longitudinal changes in equity below the median and capital outlay spending – all funds.

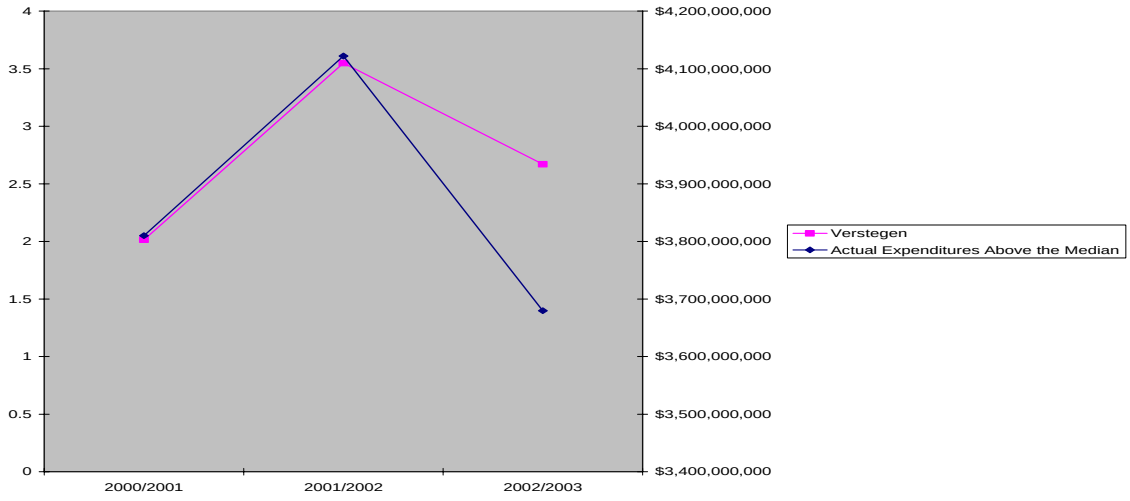

Figure 2. Longitudinal changes in equity above the median and capital outlay spending – all funds.

Table 3

Overall School District Expenditures in General Funds Category

	2000-2001	2001-2002	2002-2003
Mean Per Pupil Expenditures	$16	$121	$121
Median Per Pupil Expenditures	$119.71	$81.93	$75.00
Actual Expenditures Below the Median	$143,516,687	$81,545,215	$63,749,400
Actual Expenditures Above the Median	$502,232,540	$459,774,375	$463,208,557

Table 4

Summary of Selected Horizontal Equity Measures Compared to Actual Expenditures Above and Below the Median – General Funds Category

	2000-2001	2001-2002	2002-2003	Avg. Change
McLoone	.596117	.443605	.390300	-38%
Verstegen	2.086096	2.501169	2.835953	-29%*
Actual Expenditures Below the Median	$143,516,687	$81,545,215	$63,749,400	-65%
Actual Expenditures Above the Median	$502,232,540	$459,774,375	$463,208,577	-7.5%

* Verstegen index coefficients moving further away from 1.0 represent a negative change in equity.

above the median decreased by an average of only 7.5%. While no inverse relationship between capital outlay expenditures and equity was noted in this data, there was a markedly greater

percentage decrease in equity than in actual expenditures above the median in the top half of the distribution in this fund category for the three year period. Overall longitudinal changes in horizontal equity in both halves of the distribution for the general funds category were graphically charted in Figure 4.

Next, a coefficient of variation test was administered to determine whether or not horizontal equity improved during the three year study period across the total distribution. In the all funds category, the test yielded a coefficient of variation of .0134 or 1.34% and a mean of $907 for the 2000-2001 school year; .0134 or 1.34% and a mean of $901 for the 2001-2002 school year; and .0142 or 1.42% and a mean of $801 in the 2002-2003 school year. In each study year there was an inverse relationship between coefficient of variation and the mean, i.e. as the mean increased the coefficient of variation percentage decreased. While there was little change in the coefficient of variation in the all funds category of capital outlay expenditures, there was more fluctuation in the general fund category of spending. In the general fund category, the test yielded a coefficient of variation of 2.26% and a mean of $128 for the 2000-2001 school year; 2.85% and a mean of $105 for the 2001-2002 school year; and 2.39% and a mean of $100 for the 2002-2003 school year. Capital outlay equity was somewhat better in the all funds category than in the general fund category over the three-year period of the study as evidenced in higher coefficients of variation in general funds capital outlay expenditure distributions. Coefficients of variation were lower for both categories of spending in those years where aggregate spending was higher in both halves of the distribution.

Finally, in order to measure horizontal equity across the upper and lower extremes of the distribution, a federal range ratio test was administered to the data. A measure of horizontal equity, the federal range ratio measures distributions below the lowest 5% and the highest 5%.

The federal range ratio is the difference between the per-pupil expenditures at or above which 5% of the pupils fall and the per-pupil expenditures at or below which 5% of the pupils fall. The lower the federal range ratio is, i.e. the closer the number is to one, the higher the level of equity between the extremes in the distribution. In the all funds category in 2000-2001, per pupil capital outlay expenditures averaged $3,095.55 at the 95th percentile and $99.09 for districts in the 5th percentile producing a federal range ratio of 30.24 (Table 5). In 2001-2002, districts in the 95th percentile of per pupil capital outlay spent an average of $3,089.66 while districts in the 5th percentile spent $52.23 resulting in a federal range ratio of 58.15.

Finally, in this category in 2002-2003, per pupil capital outlay spending averaged $2,989.25 in districts in the 95th percentile and $52.21 in districts in the 5th percentile, resulting in a federal range ratio of 56.26. An analysis of general fund expenditures produced somewhat lower federal range ratios. In the 2000-2001 study year, districts spending at the 95th percentile in per pupil capital outlay spent an average of $394.67 while those at the 5th percentile spent and average of $20.22 resulting in a federal range ratio of 18.52 (Table 6). Equity decreased markedly in the two following study years with districts at the 95th percentile spending $325.61 per pupil on average while districts at the 5th percentile spent only $6.98 per pupil for capital outlay. The large reduction in spending by those at the bottom 5% of the distribution resulted in a federal range ratio of 45.65. In 2002-2003 top spending districts spent an average $325.83 at the 95th percentile while those districts at the 5th percentile spent and average $7.06 per pupil for capital outlay, resulting in a federal range ratio of 45.18. Equity decreased dramatically in this funding category during the three year period of the study, indicating that gross inequities exist in per pupil capital outlay expenditures between the top 5% of the distribution and the bottom 5% of the distribution.

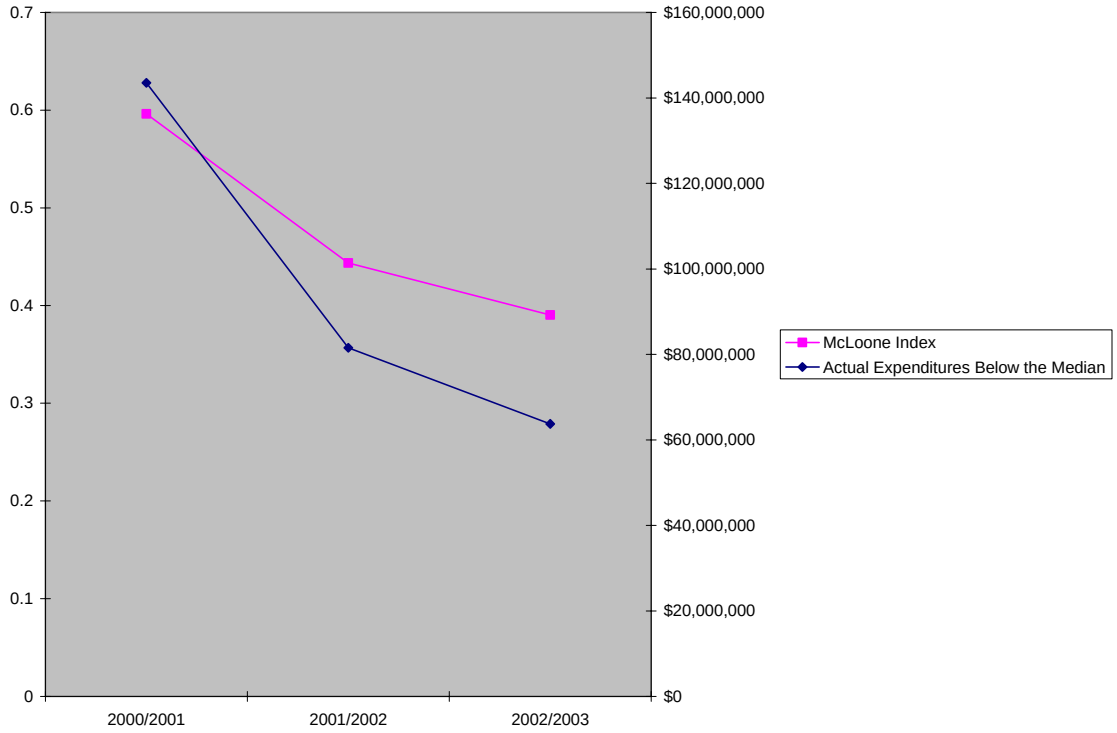

Figure 3. Longitudinal changes in equity below the median and capital outlay spending – general funds.

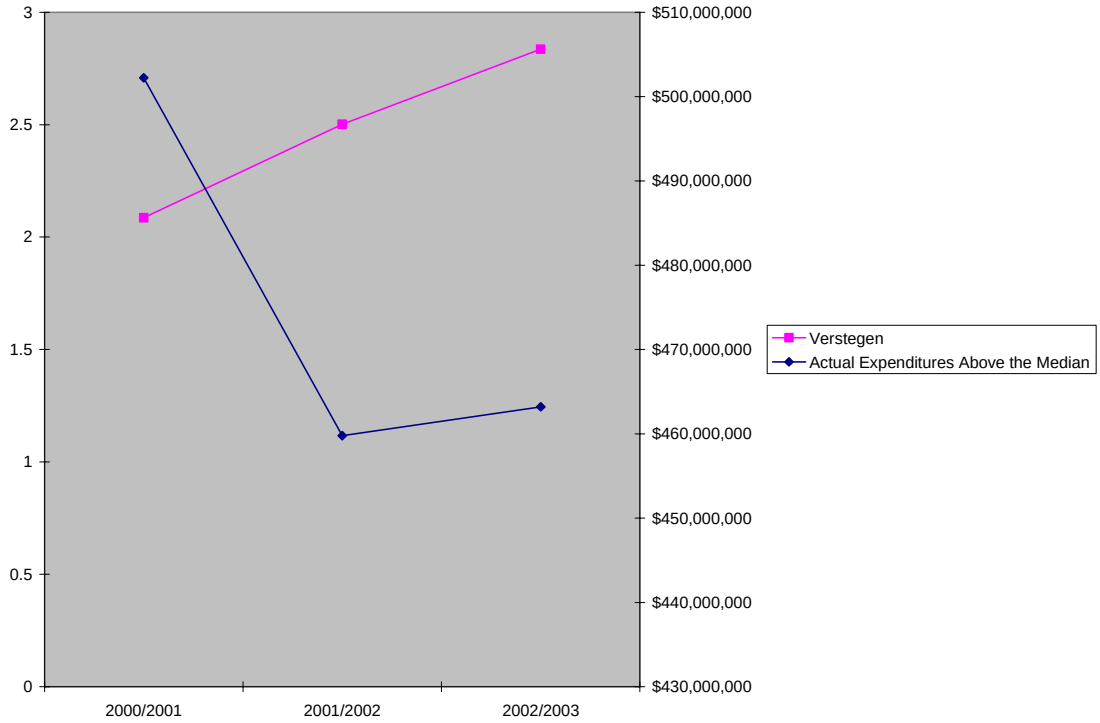

Figure 4. Longitudinal changes in equity above the median and capital outlay spending – general funds.

Table 5

Federal Range Ratio – Comparison of Per Pupil Capital Outlay Expenditures at the 95th and 5th Percentiles – All Funds Category

	2000-2001	2001-2002	2002-2003	Avg. Change
95th Percentile	$3,095.55	$3,089.66	$2,989.25	-4%
5th Percentile	$99.09	$52.23	$52.21	-47%
Federal Range Ratio	30.24	58.15	56.26	-45%*

* Federal range ratio expressions moving further from 1.0 represent a negative change in equity.

Table 6

Federal Range Ratio – Comparison of Per Pupil Capital Outlay Expenditures at the 95th and 5th Percentiles – General Funds Category

	2000-2001	2001-2002	2002-2003	Avg. Change
95th Percentile	$394.67	$325.61	$325.83	-17.5%
5th Percentile	$20.22	$6.98	$7.06	-64%
Federal Range Ratio	18.52	45.65	45.18	-40%*

*Federal range ratio expressions moving further from 1.0 represent a negative change in equity.

Vertical Equity Test Results

Vertical equity may be defined as the unequal treatment of unequal students (Berne and Stiefel, 1984). Vertical equity was determined by how different students were treated differently.

Weighted measures were used in statistical tests involving vertical equity measurements. In order to address vertical equity with regard to court established equity standards, the Odden-Picus Adequacy index (OPAI) was utilized. Specifically a measure of adequacy, the OPAI includes vertical equity measures when calculated on the basis of weighted students. Weighted average daily attendance (WADA) for the 1,034 school districts in the study was used for the OPAI measurements. The OPAI identifies an adequate spending level per pupil and the percentage of districts spending above that level. The spending level established by the court in *Edgewood v. Meno* (1995) as an adequate and equitable level stated at least 85% of all weighted students (WADA) would be in the equalized system. For this reason, the OPAI adequacy level was set at the 85th percent level of the distribution. The measure then uses a McLoone index type ratio to indicate a percentage of the sum of all observations below the adequacy level to the sum if all observations were at the adequacy level. The measure expresses values in terms of 1.0 or 100% to a percentage less than 100. Numbers closer to 1.0 indicate a more adequate system. The OPAI includes the entire distribution but focuses on the distribution below adequacy levels (Odden & Picus, 2004). Again the tests were run for all funds and general funds separately to determine equity levels of both categories. In the all funds category, actual expenditures below the median were $2,697,055,097 for the 2000-2001 study year, and the OPAI yielded an index coefficient of .430686 (Table 7). For the 2001-2002 year, the test yielded a coefficient of .335064 with actual expenditures below the median amounting to $2,485,010,092. An OPAI coefficient of .317679 was measured for 2002-2003 with actual expenditures below the median of $2,192,389,976. The general funds category yielded an OPAI coefficient of .464589 for the 2000-2001 year with $375,889,936 spent on capital outlay expenditures below the median. In the 2001-2002 study year $298,142,347 was spent below the median, yielding a coefficient of .442131. Finally, in

2002-2003, a coefficient of .365295 was yielded with $262,996,406 spent on capital outlay below the median (Table 7). With the application of the court standard to spending in the distribution, vertical equity decreased as total capital outlay expenditures below the median decreased indicating that when applied at the prescribed court standard of 85% an influx of dollars to capital outlay spending may affect equity (Figure 5). While equity in both fund categories were more sensitive to capital outlay expenditures below the median, the general fund proved to be the most sensitive with the percentage of reduction in the equity coefficient matching exactly the percentage of reduction in capital outlay over the three year study period (Table 7). Notably, total spending for all three years was disproportionately higher above the 85% median adequacy level. In the all funds category in 2000-2001, the top 15% of the total distribution of school districts spent $1,876,175,230 or 41% out of a total $4,573,230,327 in capital outlay expenditures (Table 8). In 2001-2002, the top 15% of capital outlay spenders accounted for $2,148,703,346 or 46% out of a total spending amount of $4,633,713,438. In 2002-2003, the top 15% of the distribution spent 48% or $2,013,391,179 out of total expenditures state-wide of $4,205,781,155. The disproportionate share of aggregate capital outlay spending was also pronounced in the general fund category with the top 15% of the distribution spending 42% or $269,857,245 out of a total spending of $645,747,181 in 2000-2001; 45% or $243,148,907 out of a total spending of $541,291,254 in 2001-2002; and a full 50% or $263,961,571 out of a total spending amount of $526,957,977 in 2002-2003 (Table 9)

Table 7

Comparison of Capital Outlay Expenditures Below the 85th Percentile Set by the Odden-Picus Adequacy Index (OPAI) – All Funds and General Funds Categories

	2000-2001	2001-2002	2002-2003	Avg. Change
Expenditures below the 85th percentile – All Funds	$2,697,055,097	$2,485,010,092	$2,192,389,976	-20%
OPAI Coefficient	.430686	.335064	.317679	-27%
Expenditures below the 85th percentile – General Funds	$375,889,936	$298,142,347	$262,996,406	-23%
OPAI Coefficient	.464589	.442131	.365295	-23%

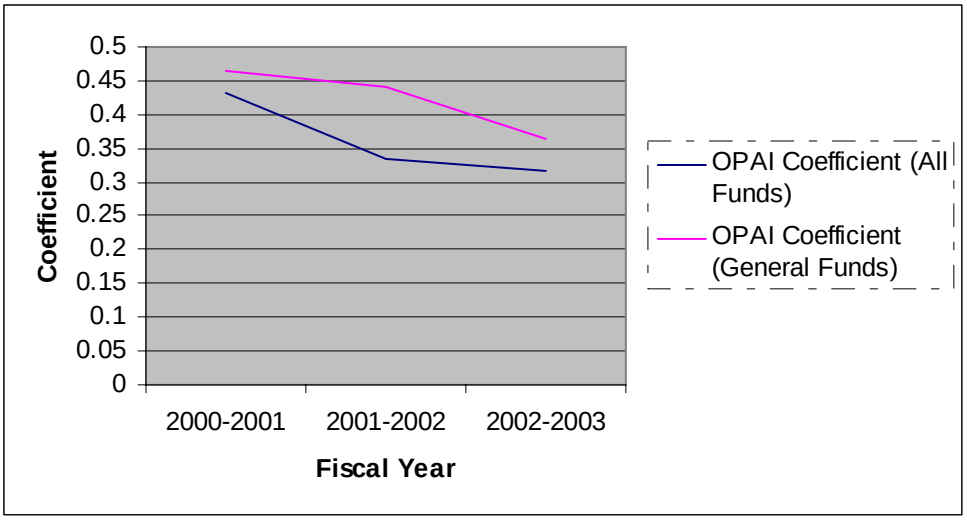

Figure 5. Longitudinal changes in the Odden-Picus Adequacy index (OPAI) – all funds and general funds categories.

Table 8

Comparison of Total Spending to Spending Above the 85% Level of 1034 Texas School Districts – All Funds Category

	2000-2001	2001-2002	2002-2003
Total capital outlay expenditures	$4,573,230,327	$4,633,713,438	$4,205,781,155
Total capital outlay expenditures above the 85% level	$1,876,175,230	$2,148,703,346	$2,013,391,179
% of Total Spending	41%	46%	48%

Table 9

Comparison of Total Spending to Spending Above the 85% Level of 1034 Texas School Districts – General Funds Category

	2000-2001	2001-2002	2002-2003
Total capital outlay expenditures	$645,747,181	$541,291,254	$526,957,977
Total capital outlay expenditures above the 85% level	$269,857,245	$243,148,907	$263,961,571
% of Total Spending	42%	45%	50%

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Wealth Neutrality Test Results

Wealth neutrality in education may be defined as “relationship measures where, in most cases, perfect equity is defined as the absence of a relationship" (Berne & Stiefel, 1984). In other words, wealth neutrality equity exists for students when there is no relationship between the wealth of the school district and educational opportunity of the students. In order to test for wealth neutrality, the Pearson Product Moment Correlation test was used. The test expresses

relationships or correlations between school district wealth and per pupil facilities capital outlays. The coefficient involves computing the sums of cross-product variables x and y then summing these computations across the study sample n. The coefficient is expressed as the sum of the cross-products of the standard scores divided by n – 1 (Hinkle et al., 1998). To determine the direction of the significance, two-tailed tests were administered with the correlation significance set at the .01 level.

In order to determine if equity existed in the weighted system, the initial test was administered to the data to determine whether or not a correlation existed between the per pupil capital outlay expenditures for the study period and school district per pupil wealth per weighted average daily attendance (WADA). The results for the 2000-2001 school year when WADA was correlated to per pupil capital outlay spending for that year was .055 indicating no statistically significant correlation. Results for the 2001-2002 school year were similarly non-significant with a correlation of .051. Results for the 2002-2003 school year were also non-significant with a correlation of .014 (Table 10). The results of the test satisfied the requirement for wealth neutrality when data was tested within the weighted system. Next, unweighted data was tested to determine a correlation between school district wealth per pupil and capital outlay spending per pupil in the all funds category. Data tested for the 2000-2001 school year yielded a correlation coefficient of .740 indicating statistical significance between per pupil capital outlay spending and per pupil district wealth in that year. Similarly, data tested for the 2001-2002 school year indicated a statistically significant correlation, yielding a correlation coefficient of .705. In the 2002-2003 school year, the data yielded a coefficient of .608, again indicating statistical significance between school district per pupil wealth and per pupil capital outlay spending for that year (Table 11). The results of the test did not satisfy the requirements for wealth neutrality

Table 10

Pearson Product-Moment Correlations Between District Property Wealth Per Weighted Average Daily Attendance (WADA) and Capital Outlay

	1	2	3	4	5	6	7	8	9	10
Capital Outlay (All-Funds) 00-01 - 1	1.00									
Capital Outlay (All-Funds) 01-02 -2	.881**	1.00								
Capital Outlay (All-Funds) 02-03 -3	.769**	.859**	1.00							
Wealth Per WADA (00-01) -4	.055	.046	.027	1.00						
Wealth Per WADA (01-02) -5	.060	.051	.031	.963**	1.00					
Wealth Per WADA (02-03) -6	.040	.032	.014	.875**	.954**	1.00				
Instructional Facilities Allotment - 7	.543**	.554**	.530**	-.059	-.066	-.075	1.00			
General Funds (00-01) - 8	.660**	.639**	.594**	.007	.012	.001	.467**	1.00		
General Funds (01-02) - 9	.602**	.595**	.524**	.015	.019	.007	.461**	.766**	1.00	
General Funds (02-03) -10	.520**	.508**	.425**	-.011	-.011	-.020	.277**	.551**	.618**	1.00

**. Correlation is significant at the 0.01 level (2-tailed).

Table 11

Pearson Product-Moment Correlations Between District Property Wealth and Capital Outlay – All Funds

	1	2	3	4	5	6
District Wealth (00-01) - 1	1.00					
District Wealth (01-02) - 2	.999**	1.00				
District Wealth (02-03) - 3	.998**	.999**	1.00			
Capital Outlay (All-Funds) 00-01 - 4	.740**	.748**	.751**	1.00		
Capital Outlay (All-Funds) 01-02 - 5	.697**	.705**	.709**	.881**	1.00	
Capital Outlay (All-Funds) 02-03 - 6	.597**	.603**	.608**	.769**	.859**	1.00

**. Correlation is significant at the 0.01 level (2-tailed).

Standardized beta coefficient is the same as a correlation coefficient when there is only one predictor variable.

when data was tested within the unweighted system. The same statistical test was administered to the data for the general funds only category. The results indicated statistical significance between district wealth and per pupil capital outlays in this fund category for all three years of the study period. The results were .723 for 2000-2001; .751 for 2001-2002; and .492 for 2002-2003, again

indicating that the requirements for wealth neutrality in this fund category were not met (Table 12). A regression analysis was not applied to this data as the standardized beta coefficient was the same as the correlation coefficient with the existence of only one predictor variable.

Table 12

Pearson Product-Moment Correlations Between District Property Wealth and Capital Outlay – General Funds

	1	2	3	4	5	6
District Wealth (00-01)-1	1.00					
District Wealth (01-02)-2	.999**	1.00				
District Wealth (02-03)-3	.998**	.999**	1.00			
Capital Outlay (General Funds) 00-01 - 4	.723**	.725**	.726**	1.00		
Capital Outlay (General Funds) 01-02 - 5	.755**	.751**	.743**	.766**	1.00	
Capital Outlay (General Funds) 02-03 – 6	.497**	.498**	.492**	.551**	.618**	1.00

** Correlation is significant at the 0.01 level (2-tailed).

Finally, as the IFA and the NIFA are the only state mechanisms for equalizing the facilities funding system, these awards were applied to the data and compared to per pupil capital outlay spending and per pupil school district wealth per weighted average daily attendance (WADA) in an effort to determine whether or not a statistically significant correlation existed between these variables. Results of this test for 2000-2001 were reported as IFA and yielded a correlation coefficient of -.059, indicating a negative correlation when IFA monies were applied. Results of the test for 2001-2002 and 2002-2003 indicated similar findings, yielding coefficients of -.066 and -.075 for those years respectively (Table 13). In all three years of the study period, tests indicated a statistically negative correlation between per pupil district wealth per WADA and IFA monies awarded. The results of the test satisfied the requirements for wealth neutrality

when IFA monies were compared to school district wealth. The negative correlation indicated that as school district wealth per WADA increased, their tendency to receive IFA monies decreased. This finding was consistent with the structure of the IFA, as IFA awards are based in part on lower school district wealth. Finally, the test yielded statistically significant correlations between IFA monies and per pupil capital outlays in both fund categories. The test indicated coefficients for all funds of .543 for 2000-2001; .554 for 2001-2002; and .530 for 2002-2003 and coefficients for general funds of .467 for 2000-2001; .461 for 2001-2002, and .277 for 2002-2003 (Table 13). Since IFA and NIFA monies were awarded for the purpose of facilities construction, these findings were consistent with the purpose of IFA.

Table 13

Pearson Product-Moment Correlations between District Property Wealth and Instructional Facilities Allotment

	1	2	3	4	5	6	7	8	9	10
Capital Outlay (All-Funds) 00-01	1.00									
Capital Outlay (All-Funds) 01-02	.881*,	1.00								
Capital Outlay (All-Funds) 02-03	.769*,	.859*,	1.00							
Wealth Per WADA (00-01) -4	.055	.046	.027	1.00						
Wealth Per WADA (01-02) -5	.060	.051	.031	.963*,	1.00					
Wealth Per WADA (02-03) -6	.040	.032	.014	.875*,	.954*,	1.00				
Instructional Facilities Allotment -	.543*,	.554*,	.530*,	-.059	-.066	-.075	1.00			
General Funds (00-01) - 8	.660*,	.639*,	.594*,	.007	.012	.001	.467*,	1.00		
General Funds (01-02) - 9	.602*,	.595*,	.524*,	.015	.019	.007	.461*,	.766*,	1.00	
General Funds (02-03) -10	.520*,	.508*,	.425*,	-.011	-.011	-.020	.277*,	.551*,	.618*,	1.00

**. Correlation is significant at the 0.01 level (2-tailed).

Summary

Equity levels in the current Texas facilities funding system were determined utilizing six measures of equity. Equity levels were determined by applying tests to per pupil capital outlay expenditures, average daily attendance, weighted average daily attendance, and district per pupil

wealth in 1,039 school districts in the state. Two fund categories, all funds expended and general funds expended, were utilized when tests were administered using per pupil capital outlay expenditures. Horizontal equity levels were determined using a McLoone index for districts spending in the lower half of the distribution and a Verstegen index for districts spending in the upper half of the distribution. A coefficient of variation test was used to determine horizontal equity levels over time across the entire distribution and a federal range ratio was computed to determine horizontal equity among the outlying upper and lower 5% of the distribution. Vertical equity was measured using the Odden-Picus Adequacy index with weighted average daily attendance (WADA) to create a measure of vertical equity. Finally, wealth neutrality was measured using the Pearson product-moment correlation test to determine whether a correlation existed between district wealth and capital outlay.

CHAPTER 5

SUMMARIES, CONCLUSIONS, AND IMPLICATIONS

Summary of Literature Review

The need to establish appropriate, adequate, and decent educational facilities for school children across the nation has been well-established (United States General Accounting Office, 1995; National Education Association, 2000). The ability of school districts in each state to build these facilities has varied widely in the past. Historically, most facilities funding ability for school districts has come from the local community and has been tied to property wealth and the ability of the community to raise significant tax dollars to pay for school buildings. In many states, heavy reliance on property taxation to fund school construction and renovation has led to litigation to address issues of equity and adequacy. Throughout the latter half of the twentieth century and into the early years of the twenty-first century, school facilities funding equity continued to be an issue across the nation, and many states responded with the development of school funding systems that were more equitable.

While few programs were implemented by states to address specifically the inequities in capital outlay spending ability among districts, many states responded to the educational needs and expectations of their communities by increasing expenditures for capital outlay programs (United States General Accounting Office, 2000; Sielke, 2001). In many states, this was a response to court decisions that required the legislatures of those states to create and implement school funding systems that provided for greater equity and addressed the facilities needs of students and communities. Even with increased expenditures for school facilities across the nation and increased litigation involving facilities funding equity issues, the ability of school districts to fund capital outlay projects still corresponded highly with the local community's

economic development and taxing capacity. With the development of clear funding equity concepts by Berne and Stiefel (1984) and the development of various statistical methodologies to address equity, types of equity funding were addressed. While horizontal and vertical equity, as well as wealth neutrality could be addressed in current operations funding, little research was examined with specific regard to public school facilities funding equity.

In Texas, school facilities funding issues were addressed initially by the state with incentive aids for construction in the early part of the twentieth century and again in 1971 (Texas Education Agency, 1994). The state acted again in 1983 by authorizing the use of the corpus of the Permanent School Fund as a vehicle to guarantee bonded indebtedness for school districts (Clark, 2001). While this guarantee did little to impact facilities funding equity in the state, it did allow school districts to receive higher bond ratings and eased the sale of bonds. Facilities funding equity was not specifically addressed until the historic *Edgewood v. Kirby* (1989) court case. Even then, the court merely included school facilities as a component in their definition of an overall effective school system. Subsequent litigation specifically addressed facilities funding needs in Texas by indicating that the lack of a separate facilities funding component could render the entire school funding system unconstitutional (*Edgewood v. Meno*, 1995). The state legislature responded to facilities needs in 1997 with the creation of the instructional facilities allotment (IFA) and again in 1999 with the creation of the existing debt allotment (EDA) and the new instructional facilities allotment (NIFA). Only if the IFA and the NIFA were awarded based on school district need could this funding potentially affect facilities funding equity. More recent litigation in the state dealt with the overall constitutionality of the basic state funding system and did not focus specifically on facilities funding, leaving the state's school districts with the

responsibility to provide for their facilities funding needs primarily through their local communities and their taxing capacity.

Summary of Research Approach

In this study, equity levels in the current Texas facilities funding system were determined utilizing information regarding per pupil capital outlay expenditures (ex ante), inputs-based data, average daily attendance, weighted average daily attendance, and district per pupil wealth in 1,039 school districts in the state. In order to delineate differences between capital outlay expenditures provided from debt service and those provided from operational funds, two fund categories were reviewed. These fund categories were the all funds category and the general funds category. All funds included monies from facilities funding from bonded indebtedness as well as operational monies and federal funds expended. General funds included operational funds only. Since monies awarded to school districts from the Existing Debt Allotment (EDA) fund was given at the same percentage level for all schools during each legislative authorization, these monies were assumed as part of every district's ability to expend capital outlay funds. Instructional Facilities Allotment (IFA) and New Instructional Facilities Allotment (NIFA) dollars were compared to school districts' per pupil wealth to determine whether or not a correlation existed between these equalized funds, capital outlays and district wealth.

Horizontal and vertical equity issues were determined by administering several tests designed specifically to determine equity levels among distributions. School districts' capital outlay expenditures were measured for horizontal equity utilizing the McLoone and the Verstegen indexes to determine equity levels in and between the top and bottom halves of the total distribution of school districts. A federal range ratio test was administered to determine

information regarding equity among the top and bottom 5% of the distribution and to isolate outliers in the study. A coefficient of variation test was administered to determine horizontal equity by examining fluctuations in the standard deviation from the weighted mean over the three-year period of the study. Vertical equity was addressed through the administration of the Odden-Picus Adequacy index which, when administered to weighted data, indicates vertical equity levels. Finally, wealth neutrality correlations were examined through the administration of the Pearson product-moment correlation test. This test was applied to data from all school districts and included comparisons between per pupil district wealth and capital outlay expenditures. Instructional Facilities Allotment and New Instructional Facilities Allotment awards were compared to determine a correlation between those monies, capital outlays and district wealth.

Conclusions

Overall capital outlay expenditures for all funds fluctuated widely during the three year period of the study. The legislature in the state of Texas meets each biennium in January. During the three year study period, the legislature met in January 2001, thereby making the 2001-2002 school year a first year of a funding cycle. The largest fluctuations in overall capital outlay spending occurred during this year with an inverse relationship in the distribution between districts spending below the median and those spending above the median. Expenditures above the median increased significantly in the 2001-2002 school year while expenditures below the median decreased significantly during the same period (Table 1). Since research data shows a significant correlation between per pupil district wealth and per pupil capital outlay spending, these spending levels provided a comparison that indicated that the wealthier districts spent more

and the poorer districts spent less in the first year of the funding cycle. This comparison may be accounted for by two separate reasons. First, districts may be waiting for the second year of a funding cycle before passing bond issues in anticipation of the possibility of less favorable conditions subsequent to the imminent but unknown actions of the legislature. Under this condition, bond monies would be received but not expended until construction begins in the first year of the funding cycle. If so, this accounts for the inverse relationship as wealthier districts appeared to have much more bonding capacity, and therefore much more capital outlay spending ability than poorer districts. A second reason that the percentage of fluctuations in capital outlay spending is much greater below the median than above may be simply due to the larger impact of adjustments on the smaller amount of dollars being spent. The average percentage of change for the districts spending below the median for the three year study period is -30% while the percentage of change for the districts spending above the median for the same period is -2% (Table 2). This difference indicates a large gap in overall per pupil capital outlay expenditures between the top half of the distribution and the bottom half of the distribution and points to an inadequacy of expenditures in the bottom half of the distribution. Fluctuations in capital outlay spending tied to bonded indebtedness may be due to arbitrage restrictions that require those monies to be spent within a specified time period once the bonds are levied. Smaller percentages of change in those school districts in the upper half of the distribution may be due to capital outlay tied to ongoing bond issues as those districts respond to rapid growth. Since the general fund category is not tied to bonded indebtedness, the same pattern did not appear during the period of the study. Actual expenditures both above and below the median for the study period peak during the 2000-2001 school year or the last year of a funding cycle (Table 3). This indicates that schools are spending operating capital for facilities in an effort to meet unmet

needs from the exhaustion of other capital outlay resources and perhaps to avoid the development of large undesignated reserves.

Horizontal Equity

The bottom half of the distribution of school districts per pupil capital outlay expenditures is measured utilizing the McLoone index. The test measures the amount of effort it would take to bring the bottom half of the distribution up to the median. Very little equity is found in the bottom half of the distribution. With coefficients of .403431 for 2000-2001; .440570 for 2001-2002; and .381889 for 2002-2003 in the all funds category (Table 2), the results indicate that it would require approximately 60% more spending for 2000-2001; 55% more spending for 2001-2002; and 62% more spending for 2002-2003 to bring the bottom half of spenders to the median level of per pupil capital outlay spending. The equity levels expressed by the McLoone index are far less than the equity levels indicated by the court in *Edgewood v. Meno* (1995) requiring 85% of all weighted students in the equalized system. The levels of horizontal equity in the bottom half of the distribution of school district capital outlay spenders in the sample of 1,039 school districts is below the equity standard set by law. Interestingly, while actual expenditures below the median decreased for 2001-2002, the first year of the funding cycle, equity in that distribution actually improved that year indicating that per pupil capital outlay expenditures are distributed more evenly and with less variation. As poorer districts all spent less, equity among those districts improved or, as might be expressed, they are all poor at a closer level. Over the three year period of the study, equity among the bottom half of the distribution actually improves by an average of 5%.

While there are large discrepancies in capital outlay spending between the top half of the distribution and the bottom half of the distribution, there is less discrepancy in capital outlay spending among those school districts in the bottom half of the distribution. The top half of the distribution of school districts per pupil capital outlay expenditures is measured utilizing the Verstegen index. Since the test measures perfect equity to be at 1.0 in the index, the results of the Verstegen test indicate poor equity all three years. Less equity is indicated in the top half of the distribution with more variance from year to year and an average reduction in equity over the three-year study period of 18% (Table 2). As mentioned, per pupil capital outlay expenditures in this half of the distribution increases dramatically in the 2001-2002 school year or the first year of the funding cycle. Despite more money spent in this half of the distribution, equity actually decreases significantly that same year, dropping to a coefficient of 3.548512 from a coefficient of 2.013723 the previous year (Table 2). This inverse proportion indicates that, while more money was spent among the top capital outlay spenders, it is concentrated within the distribution and is not equitably distributed. Again, since a significant correlation exists between school district wealth and capital outlay spending, it appears that the concentration is among the wealthiest districts or, as might be expressed, the richer districts are richer together. This finding does not account for growth factors within these school districts which may affect some larger urban and suburban districts during the study period.

These variances, as well as the presence of many outlier districts in the raw data, indicates that the entire facilities funding system in the state of Texas has very poor equity within and between school district dispersions in the all funds category. In the general funds category, McLoone indexes for the three-year study period are .596117 for 2000-2001; .443605 for 2001-2002; and .390300 for 2002-2003 (Table 3). While overall equity is better in this category in the

bottom half of the distribution, equity levels actually decrease over the study period. While an inverse relationship between equity levels and per pupil capital outlay exists in the all funds category, equity levels decrease as per pupil capital outlays decrease in the general funds category. This relationship is reasonable since the general fund expenditures reflect smaller expenditures and revenues from the weighted system indicating that one way to improve equity is to provide equalized dollars for facilities funding to school districts. General funds category equity is better overall with less fluctuation in the top half of the distribution as well, with Verstegen indexes of 2.086096 for 2000-2001; 2.501169 for 2001-2002; and 2.835953 for 2002-2003 (Table 3). As in the bottom half of the distribution, the highest spending year for the top half of the distribution is 2000-2001, indicating that the higher spending districts are responding to the same incentives to spend as the lower spending districts. There is also a relationship between the amount of expenditures and decrease in equity. Equity drops in the top half of the distribution as spending decreases. Again, smaller expenditures than in the all funds category and the reflection of expenditures from equalized revenues explain this relationship. Equity decreases in the third year of the study in this half of the distribution although per pupil capital outlay expenditures increase slightly, indicating that this half of the distribution is less sensitive to dollars spent within it.

The coefficient of variation test is used on data to determine the statistical measure of the percentage of deviation of per pupil capital outlay expenditures from the mean. The test is applied to determine specifically if the standard deviation changes over the three year period of the test. Zero percent change indicates no change in the standard deviation and perfect equity, while numbers further away from zero represent less equity in the distribution. Coefficients of variation for the three-year study period in the all funds category are 1.34% for 2000-2001;

1.34% for the 2001-2002; and 1.42% for 2002-2003. The mean per pupil expenditures for those years are $907, $901, and $801, respectively. As the mean per pupil capital outlay expenditures increases, the coefficient of variation for the corresponding year decreases, indicating that increased expenditures in the system improves horizontal equity across the distribution. In the general fund, category coefficients of variation are recorded for the three-year study period as 2.26% for 2000-2001; 2.85% for 2001-2002; and 2.39% for 2002-2003. The mean per pupil expenditures for those years are $128, $105, and $100 respectively. In two of the study years, 2000-2001 and 2001-2002, the coefficient of variation manifests an inverse relationship to per pupil capital outlay expenditures indicating improved horizontal equity with monies spent. In the 2002-2003 year, however, the coefficient actually decreases with a decrease in dollars spent indicating a more equitable distribution during that year. Smaller amounts in the general fund category make the data susceptible to larger anomalies than are found in the all funds category. Additionally, data reflects less overall horizontal equity in this category indicating a more uneven distribution. The coefficient of variation increases over the three-year study period in this category due to the ability of wealthy districts to spend more capital outlay monies.

Finally, in order to measure horizontal equity across the upper and lower extremes of the distribution of per pupil capital outlay expenditures, a federal range ratio is utilized. The ratio measures districts above the 95^{th} percentile and below the 5^{th} percentile to determine equity among the extremes of the distribution, setting an indicator of 1.0 to express perfect equity. A federal range ratio in the all funds category for each of the three study years indicates expressions of 30.24 for 2000-2001; 58.15 for 2001-2002; and 56.26 for 2002-2003 representing an average change over three years of -45% (Table 5). The distance from the standard for perfect equity represented in these figures is quite large, indicating that there is very poor equity in the

distribution between the top and bottom spenders of per pupil capital outlays. The bottom 5% of the distribution spends very little for per pupil capital outlay when compared to the top 5% of the distribution. Again, since tests show a significant correlation between capital outlay expenditures and district wealth, these ratios indicate that the wealthiest districts spend a great deal while the poorest districts spend very little. Some of the increased capital outlay spending may be accounted for by significant growth in larger districts that fall within the top half of spenders, but these districts still clearly maintain a facilities advantage based on their taxing capacity and district wealth. Considering that the standard for wealth neutrality is not met in correlation tests and that the greatest ability to gain revenue for capital outlays comes from taxing capacity for bonded indebtedness, it seems reasonable to project that the poorer districts have less ability to raise revenue for needed capital outlays. Equity is somewhat better in the general funds category between the 95^{th} percentile and the 5^{th} percentile of capital outlay spenders. A federal range ratio is expressed for the study period of 18.52 for 2000-2001; 45.65 for 2001-2002; and 45.18 for 2002-2003 (Table 6). Again, the movement away from perfect equity corresponds to an overall reduction in per pupil capital outlay expenditures at the top and the bottom of the distribution. Equity is doubtless affected in this fund category by the expenditure of revenues from the equalized system but this does not affect these extremes of the distribution as significantly as the top and bottom halves of the distribution in previous horizontal equity tests. This finding implies that, even among the extremes of the distribution, equity can be improved when monies used for capital outlay expenditures are equalized among the school districts.

Vertical Equity

In order to determine levels of vertical equity, the Odden-Picus Adequacy index (OPAI) is used to determine vertical equity if capital outlay expenditures are equalized at the 85% level set by the court in *Edgewood v. Meno* (1995). Per weighted pupil capital outlay expenditures are measured by setting a false mean at the 85th percentile of the distribution of 1,039 school districts and administering a McLoone index test at this level. In the all funds category, the OPAI yields coefficients of .430686 for 2000-2001; .335064 for 2001-2002; and .317679 for 2002-2003 (Table 7). When compared with coefficients from the bottom half of the distribution in determining horizontal equity of un-weighted capital outlay expenditures in the McLoone index (Table 2), the OPAI coefficients are lower for two years of the three-year study period (Table 7). This indicates that when tests are administered at the 85% level mandated by the court, the vertical equity levels of weighted data are still lower than horizontal equity levels of unweighted data. Clearly, when the court standard is applied to the all funds category, capital outlay spending equity is minimal. OPAI coefficients for the general fund category are lower (Table 7) than horizontal equity coefficients using the McLoone index (Table 3). Again this indicates poorer equity when the court standard is applied to the weighted data. In both fund categories, equity decreases with decreased expenditures below the 85th percentile indicating that while vertical equity is low at this level, an influx of dollars to capital outlay spending affects equity positively. Finally, a disproportionate share of per pupil capital outlay spending occurred above the 85th percentile with the top 15% of districts spending 42% of total expenditures in 2000-2001; 45% in 2001-2002; and a full 50% in 2002-2003 (Table 9). This further indicates gross inequities in per pupil capital outlay spending among Texas public school districts. Although growth factors are not accounted for in these percentages, this finding implies that there are vast capital outlays

spending disparities among the state's school districts, with a few school districts spending nearly half of the total of capital outlay expenditures over the three year period of the study. Since most large capital outlay expenditures are for facilities, newer and presumably better facilities will be found in 15% of the school districts in the state.

Wealth Neutrality

Wealth neutrality, or the absence of relationship between per pupil capital outlay expenditures and district property wealth, is determined utilizing the Pearson Product-Moment Correlation test. The test is first administered to weighted pupil data to see if a significant correlation exists between per pupil capital outlay expenditures and district wealth per weighted average daily attendance (WADA). Tests for all three years of the study period indicate no significant correlations (Table 10). These results indicate that wealth neutrality exists when the capital outlay expenditures are applied to a weighted system. In Texas, the weighted system is applied to each school district in the state on the basis of WADA. Each category of student is designated a specific weight and these weights are considered in the school funding formulas to determine WADA for the school district. In this manner, the system becomes equalized in an effort to meet the needs of all learners. Capital outlay expenditures applied in an equalized system result in no relationship between capital outlay spending and district wealth per WADA and therefore result in wealth neutrality or equal opportunity for students in that system. When the test is applied to capital outlay spending and district wealth per pupil, however, the results are significantly different. In all three years of the study period, tests show a statistically significant correlation between per pupil district wealth and per pupil capital outlay expenditures (Table 11). These results indicate that there is a strong connection between district wealth and the ability to

spend capital outlay monies in the un-equalized system and does not satisfy the requirements for wealth neutrality or equal opportunity for students. Similar results are noted when the test is administered to capital outlay expenditures from the general fund category.

While this category shows overall movement toward wealth neutrality, it still does not satisfy the requirements for providing students with equal opportunity (Table 12). While general fund dollars are equalized funds, the ability of districts to expend for capital outlays out of operating capital is clearly tied to school district wealth. As the primary facilities funding mechanism for Texas public schools is bonded indebtedness, which is based on the taxing capacity of districts and the economic development of communities, facilities funding appears to be inequitable with regard to wealth neutrality. Since the IFA and the NIFA are the only state mechanisms for equalizing the facilities funding system, these allocations are compared to per pupil capital outlay spending and per pupil school district wealth per WADA to determine whether or not a statistically significant correlation exists between these variables. Results of this test yield a negative correlation coefficient for those variables for all three years of the study (Table 13). This indicates that IFA and NIFA have a negative correlation to school district wealth per pupil and satisfy the standard for wealth neutrality equity. This finding is consistent with the structure of the IFA and NIFA as awards are based in part on lower district wealth. When IFA and NIFA are compared to per pupil capital outlay expenditures, tests yield statistical significance in both all funds and general funds categories (Table 13). Since funds awarded are required to be spent on facilities funding, this finding is consistent with the nature of IFA and NIFA. While data indicates IFA and NIFA awards are appropriately awarded and expended, there is still poor horizontal and vertical equity of the funding system. While both funding mechanisms are attempts to introduce funding equity, low levels of equity remain and are due

primarily to small IFA and NIFA allocation amounts provided by the legislature for each biennium.

Implications of Findings Compared to the Review of Literature

Poor levels of equity in the three equity categories of vertical equity, horizontal equity, and wealth neutrality provide several implications when considered in view of the literature review regarding public school facilities funding. Although the demand for the state's role in education has increased, there still seems to be a heavy reliance on the ability of the local school district to fund their own facilities. Bonded indebtedness is still the favored method of school facilities funding. This method has not changed significantly since the latter part of the 1800s (Thompson, 1985) and continues to lead to disparities in school facilities as the fiscal capacity for property rich schools is much greater than their property poor counterparts (Green-Driscoll, 1998). While school desegregation litigation has changed the manner in which districts address students and where those students may attend school (*Brown v. the Board of Education of Topeka*, 1954), methods of facilities funding that require local economic taxing capacity accommodates de facto segregation on the basis of economic disadvantage rather than race. The reduced taxing capacity of economically depressed school districts forces those students to attend public school facilities that are far below the quality of facilities of students in wealthier school districts.

Although several courts of law, including Texas courts have addressed the need for state government to accept more of the burden for facilities construction and renovation, this does not seem to be happening at the level necessary to reduce widespread inequities. Measures put into place in the mid and late 1990s to address facilities funding in Texas have not kept pace with the

facilities needs of the state's schools nor have they measured up to the standard set by the court in *Edgewood v. Kirby* (1989) also known as *Edgewood I*. The findings of the *Edgewood I* case include the notion of wealth neutrality that districts should have the ability to raise similar revenues per pupil with similar levels of tax effort. The data in this study shows that wealth neutrality tests are not satisfied with regard to facilities funding issues and the requirements of the court are not met. Subsequent litigation specifically address the need for a separate facilities component in the state's funding mechanism and indicate that the absence of such a component could render the entire Texas public school funding system unconstitutional at a later date (*Edgewood v. Meno*, 1995). Attempts to create funding instruments such as EDA, IFA, and NIFA have not resolved horizontal, vertical, and wealth neutrality equity issues among and between the state's school districts. The EDA is applied to all school districts on a flat percentage basis and therefore does little to affect vertical or wealth neutrality equity. The IFA and NIFA are allocated in such small portions that their impact on equity is statistically non-significant.

Recent litigation has spurred a review of Texas' overall school funding system and has revolved around local districts' meaningful discretion when setting a maintenance and operations tax rate (*West Orange Cove CISD v. Alanis*, 2003). While the case led to several proposed funding systems to replace the existing one, none of those proposals resulted in legislation that addressed public school facilities funding issues significantly. One proposed bill addressed the facilities component specifically (HB 3382, 2003) but the fiscal note on the bill was so large that it failed to pass. The implication is that Texas struggles with both an adequacy and an equity problem whereas the funding of school facilities is concerned. With the state struggling to pay

for its basic foundation program, it appears unable to address its facilities funding needs to improve equity levels among its public schools.

Finally, the finding of the Texas Supreme Court in *Neely v. West Orange Cove CISD* (2005) and subsequent legislation in response to this finding may have damaged the cause of school facilities funding in the state. In the *Neely* case, the court upheld the finding of the lower court that under the existing funding system, districts across the state have lost meaningful discretion in setting their maintenance and operations tax rates. The court gave the legislature until June 1, 2006 to correct the problem. The resulting legislation was House Bill 1 which restructured the school funding system and reduced the property tax for maintenance and operations by 33% over a two-year period and replaced the lost revenue with a series of bills. While this bill did not address school facilities funding specifically and did not reduce the cap on the amount schools could levy for debt service, it does have far reaching implications. According to Lavine (2006) the bill will result in a $10.5 billion revenue gap in the 2008-2009 school year. As a result, districts facing lost revenue and increasing needs may turn to allowable debt instruments to finance operational costs for items like buses or computers. This will reduce their taxing capacity when facilities construction needs arise and will further widen the facilities funding equity gaps that exist in the state.

Recommendations and Policy Implications

As the state of Texas continues to address equity issues in the overall funding system, several recommendations for facilities funding need to be considered. First, since a limitation of the study is that no baseline for facilities needs is available, the state should begin immediately collecting data regarding facilities information and needs based on the numbers of students in

WADA, wealth of the school district, and the value of their existing properties and facilities. This study will provide information for research to determine baseline facilities adequacy in order to better inform state funding decisions to improve facilities funding equity across the state. Otherwise, even providing equalized state facilities funding mechanisms will result in an uneven playing field for the state's school districts as some districts have already utilized taxing capacity to incur bonded indebtedness to provide higher quality facilities for their students. The state should explore other data to use in a facilities assessment.

Second, the state should develop a per pupil baseline for facilities funding. Horizontal and vertical equity could be greatly improved by providing funding based on a per pupil basis for all districts in the system. This baseline should incorporate data from facilities needs assessments performed by the state, per pupil district wealth, average daily attendance (ADA), and WADA. Third, a growth rate of school districts should be calculated to determine future facilities needs for each funding cycle. Since the legislature meets biannually, formulas should be developed to meet the facilities needs of students in districts from year to year.

Fourth, the state should equalize revenue for facilities funding. In the three year period of the study, whenever equalized dollars are used for capital outlay expenditures, equity improved, both horizontally and vertically. Under both Senate Bill 7 and House Bill 1, the *ad valorem* tax rate for debt service, called interest and sinking in Texas, was capped at 50 cents. Revenues for facilities came primarily from bonded indebtedness with a non-significant amount funding for very few school districts in the form of IFA and NIFA monies. In order to provide greater levels of horizontal and vertical equity in the system, facilities funding mechanisms must be equalized in the same manner as maintenance and operations funding mechanisms. By applying recapture

provisions to taxing capacity, the state can provide for more overall dollars to be distributed more evenly for facilities needs among the school districts.

Fifth, the state should adopt a state property tax for school facilities funding. A repeal of the state's constitutional ban on a state property tax will accomplish equalization and will allow the state to address issues with the overall funding system and the manner in which school facilities are inequitably funded. Given recent litigation (*Neely v. West Orange Cove CISD*, 2005) this action seems unlikely to occur anytime soon. With the passage of HB1 (2006) the state has effectively set a state property tax for overall school funding while allowing for districts to enhance their tax revenues through voter approval. The rate is set low at 66% of the district's former rate before the bill passed and does not allow enough replacement revenue from other bills to make up the gap (Lavine, 2006). A state rate should be set at a more adequate level for school facilities funding.

Sixth, the state should address issues of wealth neutrality through the use of an equalized wealth level for school districts. When testing was administered to the weighted data from each school district, there is no significant correlation between per pupil capital outlay expenditures and district wealth, thereby satisfying the wealth neutrality standard. When the same test is administered to un-weighted data there is a significant correlation between per pupil capital outlay expenditures and district wealth. The equalization of the 50 cents available for bonded indebtedness will help to create a truly wealth-neutral or equal opportunity system by allowing for some monies recaptured from wealthy districts maintenance and operations levies to go to a statewide facilities fund. An equalized wealth level already exists for maintenance and operations recapture now. Some of these resources should be used for facilities funding as well.

Seventh, the state should review the facilities funding practices of other states to inform facilities funding decision-making. Eighth, the state should adopt facilities funding formulas that account for the facilities needs of all classifications of weighted students. Formulas would necessarily include the special needs of students and would require facilities capacity studies across the state. Examples of such weights would be applied for students in need of assistive technology, life skills rooms, behavior units, and increase square footage. Beyond the provision of a state property tax, the state should continue to explore the possibility of other tax bases that are inelastic for the funding of public school facilities. A progressive graduated state income tax should be considered. The state should provide incentives for consolidation.

The consolidation of school districts should be considered where appropriate. The construction of shared facilities such as sports stadiums and parks could also be considered where consolidation is unwieldy or inappropriate.

The state should integrate monies for IFA, NIFA, and EDA into a new system with formulas developed based on the previously proscribed criteria. Current funding formulas include a tier for basic foundations and a tier for guaranteed yield for poorer school districts. A true third tier for facilities should be created to address facilities funding needs within the system.

Future Research Implications

While the conclusions in this paper indicate that there are numerous inequities in the facilities funding mechanisms in the state of Texas, there are still several areas where further research is needed to explore equity issues in the state's facilities funding approaches. The study did not account for increases in construction costs in various locations around the state. Research

is needed to determine construction cost indexes to fully determine the level and quality of public school facilities per dollars spent in each district for capital outlay. There may be discrepancies with regard to the amount of per pupil capital outlays and completed facilities construction that affect overall equity.

No state-wide facilities needs assessment exists as a baseline measurement for districts. Future research should revolve around the development of a facilities survey to determine facilities needs for each district in the state. The survey should include capacity indicators to determine levels of existing facilities development and need. Standard building requirements already in place could be utilized to formulate future facilities construction for each district.

Future research is needed to attempt to measure ex post or outcomes based facilities equity. Other potential facilities funding mechanisms should be researched. While this study recommended several other funding mechanisms, research is needed to determine whether or not those mechanisms would improve equity. Further research is needed to determine correlations between the state's funding cycle and fluctuations in dollars spent and equity levels.

Research is needed to determine the equalization percentile at which increases in per pupil capital outlay expenditures yield consistently greater equity. When the OPAI is administered with a false median set at 85%, greater equity is realized with increased per pupil capital outlay expenditures. Future research will indicate whether or not this occurs at a lower percentile and/or whether it remains consistent at a higher percentile. OPAI tests should be administered to the data with false means set at various levels to determine the level where increased funding yields greater equity.

Further research is needed to determine the level of equalization where wealth neutrality is reached. Correlation tests indicate that weighted data yield no significant correlation between

per pupil capital outlay expenditures and district wealth but yield a significant correlation between per pupil capital outlay expenditures and district wealth when testing un-weighted data. More research is needed to determine the equalization point where non-significance and therefore wealth neutrality occurs. Future research is needed to determine whether or not a correlation exists between the state's funding cycle and per pupil capital outlay expenditures among school districts.

Summary

The need to develop and fund our public school facilities in order to impact student learning positively has been established in research (Bowers and Burkett, 1987; Cash, 1993; Earthman and Lemasters, 1998; Schneider, 2002; United States GAO, 1995; NEA, 2000). Although many states, including Texas, have responded to litigation with legislation that addresses the needs of their public school facilities funding systems, the primary reliance for capital outlay spending continues to rest on local school districts. While Texas has put into place several facilities funding mechanisms, data indicates that those mechanisms do little to improve facilities funding equity among the state's public school districts. When equity measures are applied to three equity standards to determine levels of vertical, horizontal, and wealth neutrality equity, tests indicate there is poor equity in all three years of the study period. While there is some fluctuation in horizontal equity wherein equity improved from one year to the next, it remains poor across the board for each year of the study. Vast discrepancies in capital outlay spending are noted between the top 15% of spenders and the bottom 85% of spenders, with the top 15% spending nearly half of all expenditures in the state on capital outlay. Vertical equity issues are noted as being particularly poor when the 85% level is applied. However, increased

capital outlay expenditures at this level result in improved equity over the three year period of the study, indicating that increased funding at this level may improve equity.

While the equalized facilities funding mechanisms provided by the state and weighted student counts met the standard of wealth neutrality, average daily attendance of students did not meet the standard and their was a significant correlation between capital outlay spending and district wealth. As so little money comes to so few school districts through the equalized facilities funding mechanisms, it was noted that these efforts have little effect on school facilities funding equity.

Finally, several implications arise from a review of the data. Texas should continue to address equity issues with regard to facilities funding by providing for a statewide facilities study; the development of a baseline facilities funding formula; the utilization of growth rates for facilities funding; the equalization of school facilities funding revenues; the consideration of various tax structures; student weights and a special funding tier for facilities. Future research should revolve around the determination of regional construction costs, a statewide facilities assessment, potential facilities funding mechanisms, and the equalization percentile at which increased expenditures yields increased equity.

While discussions and deliberations regarding overall school funding equity have continued in states across the nation and in Texas in particular, there is little doubt that facilities funding issues will continue to be considered as well. Future litigation regarding facilities funding equity is sure to follow. The prudent course of action for the state of Texas is to determine an equitable facilities funding approach, implement appropriate funding mechanisms, and engage in long-range facilities needs assessments and planning for the future. In order to

provide an effective public school system for the state's children, the development of equitable facilities funding mechanisms is critical.

APPENDIX A

2000-2001 SUMMARY OF ALL FUND EQUITY MEASURES (WADA)

Mean	$ 906.59
Median	$ 727.58
Standard Deviation	$ 1,214.87
Coefficient of Variation	1.34
Actual Expenditures Below Median	$ 735,640,945
Median Edpenditures Below Median	$ 1,835,111,619
McLoone Index	0.400869864
Actual Expenditures Above Median	$ 3,837,589,382
Median Expenditures Above Median	$ 1,835,111,619
Verstegen Index	2.091202160
Highest	$ 22,291.94
Lowest	$ -
Range	$ 22,291.94
90th Percentile	$ 1,836.23
10th Percentile	$ 125.20
Restricted Range	$ 1,711.03
95th Percentile	$ 2,575.90
5th Percentile	$ 67.18
Federal Range	$ 2,508.72
Federal Range Ratio	37.34
Actual Expenditures Below Median	$ 2,697,055,097
Median Expenditures Below Median	$ 6,262,217,063
Odden-Picus Adequacy Index	0.430686939

APPENDIX B

2001-2002 SUMMARY OF ALL FUND EQUITY MEASURES (WADA)

Mean	$	901.09
Median	$	571.85
Standard Deviation	$	1,206.69
Coefficient of Variation		1.34
Actual Expenditures Below Median	$	519,951,386
Median Expenditures Below Median	$	1,470,337,696
McLoone Index		0.3536272
Actual Expenditures Above Median	$	4,113,762,052
Median Expenditures Above Median	$	1,470,337,696
Verstegen Index		2.7978349
Highest	$	16,031.42
Lowest	$	-
Range	$	16,031.42
90th Percentile	$	2,138.29
10th Percentile	$	72.56
Restricted Range	$	2,065.73
95th Percentile	$	2,527.34
5th Percentile	$	36.27
Federal Range	$	2,491.06
Federal Range Ratio		68.67
Actual Expenditures Below Median	$	2,485,010,092.00
Median Expenditures Below Median	$	7,416,510,861.21
Odden-Picus Adequacy Index		0.3350646

APPENDIX C

2002-2003 SUMMARY OF ALL FUND EQUITY MEASURES (WADA)

Mean	$	800.78
Median	$	559.03
Standard Deviation	$	1,139.69
Coefficient of Variation		1.42
Actual Expenditure Below Median	$	554,610,135
Median Expenditures Below Median	$	1,468,023,688
McLoone Index		0.377793723
Actual Expenditures Above Median	$	3,651,171,020
Median Expenditures Above Median	$	1,468,023,688
Verstegen Index		2.487133587
Highest	$	16,365.99
Lowest	$	(11.21)
Range	$	16,377.20
90th Percentile	$	1,863.63
10th Percentile	$	76.81
Restricted Range	$	1,786.82
95th Percentile	$	2,634.92
5th Percentile	$	35.01
Federal Range	$	2,599.92
Federal Range Ratio		74.27
Actual Expenditures Below Median	$	2,192,389,976
Median Expenditures Below Median	$	6,901,267,323
Odden-Picus Adequacy Index		0.31767933

APPENDIX D

2000-2001 SUMMARY OF GF EQUITY MEASURES (WADA)

Mean	$	128.01
Median	$	96.15
Standard Deviation	$	289.32
Coefficient of Variation		2.26
Actual Expenditure Below Median	$	142,704,684
Median Expenditures Below Median	$	242,521,259
McLoone Index		0.58842134
Actual Expenditures Above Median	$	503,042,497
Median Expenditures Above Median	$	242,521,259
Verstegen Index		2.074220212
Highest	$	3,653.24
Lowest	$	-
Range	$	3,653.24
90th Percentile	$	226.44
10th Percentile	$	33.48
Restricted Range	$	192.96
95th Percentile	$	305.96
5th Percentile	$	17.44
Federal Range	$	288.53
Federal Range Ratio		16.55
Actual Expenditures Below Median	$	375,889,936
Median Expenditures Below Median	$	809,080,194
Odden-Picus Adequacy Index		0.46458922

APPENDIX E

2001-2002 SUMMARY OF GF EQUITY MEASURES (WADA)

Mean	$	105.26
Median	$	74.57
Standard Deviation	$	299.53
Coefficient of Variation		2.85
Actual Expenditure Below Median	$	96,937,163
Median Expenditures Below Median	$	191,735,992
McLoone Index		0.505576246
Actual Expenditures Above Median	$	444,354,091
Median Expenditures Above Median	$	191,735,992
Verstegen Index		2.317530928
Highest	$	3,766.18
Lowest	$	-
Range	$	3,766.18
90th Percentile	$	207.37
10th Percentile	$	12.67
Restricted Range	$	194.70
95th Percentile	$	259.59
5th Percentile	$	5.90
Federal Range	$	253.70
Federal Range Ratio		43.03
Actual Expenditures Below Median	$	298,142,347
Median Expenditures Below Median	$	674,329,758
Odden-Picus Adequacy Index		0.442131381

APPENDIX F

2002-2003 SUMMARY OF GF EQUITY MEASURES (WADA)

Mean	$	100.33
Median	$	62.72
Standard Deviation	$	239.39
Coefficient of Variation		2.39
Actual Expenditure Below Median	$	69,483,208
Median Expenditures Below Median	$	164,709,453
McLoone Index		0.421853189
Actual Expenditures Above Median	$	457,474,769
Median Expenditures Above Median	$	164,709,453
Verstegen Index		2.77746517
Highest	$	3,383.87
Lowest	$	-
Range	$	3,383.87
90th Percentile	$	211.33
10th Percentile	$	8.12
Restricted Range	$	203.21
95th Percentile	$	260.49
5th Percentile	$	5.87
Federal Range	$	254.61
Federal Range Ratio		43.37
Actual Expenditures Below Median	$	262,996,406
Median Expenditures Below Median	$	719,954,647
Odden-Picus Adequacy Index		0.365295796

APPENDIX G

2000-2001 SUMMARY OF ALL FUND EQUITY MEASURES (ADA)

Mean					$ 1,137.04
Median					$ 940.81
Standard Deviation					$ 1,897.65
Coefficient of Variation					1.67
Actual Expenditure Below Median					$ 763,295,867
Median Expenditures Below Median					$ 1,892,007,249
McLoone Index					0.403431788
Actual Expenditures Above Median					$ 3,809,978,878
Median Expenditures Above Median					$ 1,892,007,249
Verstegen Index					2.013723193
Highest					$ 39,507.68
Lowest					$ -
Range					$ 39,507.68
90th Percentile					$ 2,349.87
10th Percentile					$ 168.02
Restricted Range					$ 2,181.85
95th Percentile					$ 3,095.55
5th Percentile					$ 99.10
Federal Range					$ 2,996.45
Federal Range Ratio					30.24

APPENDIX H

2001-2002 SUMMARY OF ALL FUND EQUITY MEASURES (ADA)

Mean	$	1,032.72
Median	$	517.77
Standard Deviation	$	1,762.01
Coefficient of Variation		1.71
Actual Expenditure Below Median	$	511,769,007
Median Expenditures Below Median	$	1,161,605,807
McLoone Index		0.44057029
Actual Expenditures Above Median	$	4,121,972,767
Median Expenditures Above Median	$	1,161,605,807
Verstegen Index		3.548512536
Highest	$	27,569.11
Lowest	$	-
Range	$	27,569.11
90th Percentile	$	2,339.07
10th Percentile	$	97.41
Restricted Range	$	2,241.66
95th Percentile	$	3,089.66
5th Percentile	$	52.23
Federal Range	$	3,037.43
Federal Range Ratio		58.15

APPENDIX I

2002-2003 SUMMARY OF ALL FUND EQUITY MEASURES (ADA)

Mean	$	965.64
Median	$	632.66
Standard Deviation	$	1,782.03
Coefficient of Variation		1.85
Actual Expenditure Below Median	$	526,147,968
Median Expenditures Below Median	$	1,377,748,186
McLoone Index		0.381889792
Actual Expenditures Above Median	$	3,679,633,187
Median Expenditures Above Median	$	1,377,748,186
Verstegen Index		2.67075887
Highest	$	28,056.07
Lowest	$	(16.31)
Range	$	28,072.38
90th Percentile	$	2,365.87
10th Percentile	$	74.44
Restricted Range	$	2,291.43
95th Percentile	$	2,989.25
5th Percentile	$	52.21
Federal Range	$	2,937.04
Federal Range Ratio		56.26

APPENDIX J

2000-2001 SUMMARY OF GF EQUITY MEASURES (ADA)

Mean	$	160.55
Median	$	119.72
Standard Deviation	$	513.96
Coefficient of Variation		3.20
Actual Expenditure Below Median	$	143,516,687
Median Expenditures Below Median	$	240,752,348
McLoone Index		0.596117496
Actual Expenditures Above Median	$	502,232,540
Median Expenditures Above Median	$	240,752,348
Verstegen Index		2.086096121
Highest	$	6,720.47
Lowest	$	-
Range	$	6,720.47
90th Percentile	$	278.16
10th Percentile	$	40.86
Restricted Range	$	237.30
95th Percentile	$	394.67
5th Percentile	$	20.22
Federal Range	$	374.45
Federal Range Ratio		18.52

APPENDIX K

2001-2002 SUMMARY OF GF EQUITY MEASURES (ADA)

Mean	$	120.64
Median	$	81.94
Standard Deviation	$	519.17
Coefficient of Variation		4.30
Actual Expenditure Below Median	$	81,545,215
Median Expenditures Below Median	$	183,823,771
McLoone Index		0.443605388
Actual Expenditures Above Median	$	459,774,375
Median Expenditures Above Median	$	183,823,771
Verstegen Index		2.501169319
Highest	$	7,016.15
Lowest	$	-
Range	$	7,016.15
90th Percentile	$	227.27
10th Percentile	$	15.35
Restricted Range	$	211.91
95th Percentile	$	325.61
5th Percentile	$	6.98
Federal Range	$	318.63
Federal Range Ratio		45.65

APPENDIX L

2002-2003 SUMMARY OF GF EQUITY MEASURES (ADA)

Mean	$	120.99
Median	$	75.00
Standard Deviation	$	462.78
Coefficient of Variation		3.82
Actual Expenditure Below Median	$	63,749,400
Median Expenditures Below Median	$	163,334,347
McLoone Index		0.390300026
Actual Expenditures Above Median	$	463,208,577
Median Expenditures Above Median	$	163,334,347
Verstegen Index		2.835953276
Highest	$	7,290.06
Lowest	$	-
Range	$	7,290.06
90th Percentile	$	245.88
10th Percentile	$	9.67
Restricted Range	$	236.21
95th Percentile	$	325.83
5th Percentile	$	7.06
Federal Range	$	318.77
Federal Range Ratio		45.18

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