Code Compliant School Buildings Boost Student Achievement

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Abstract
Much of the focus in the literature in raising student achievement has included parental involvement, principal leadership, quality of instruction, students’ socioeconomic status, curriculum, and use of technology. Limited empirical research relates the condition of the school building as a variable that affects student achievement. Furthermore, there is no research that has examined the impact of building codes on achievement outcomes in the state of Florida. This research determined whether academic achievement of 4th-, 8th-, 9th-, and 10th-grade students as measured by the mathematics and reading subtests of the Florida Comprehensive Achievement Test (FCAT) increased in new school buildings compliant to the 2000 Florida State Requirements for Educational Facilities. A causal-comparative design determined whether the independent variables, old and new school building influenced student achievement as measured by students’ FCAT mathematics and reading subtest scores. The control group was two cohorts of 4th-, 8th-, 9th-, and 10th-grade students who attended school in old buildings. The experimental group was two cohorts of 4th-, 8th-, 9th-, and 10th-grade students who attended school in new buildings. Transition from an old school into a new school was the treatment. Two hypotheses were formulated for testing and the research question for the inquiry was whether the percentage of students passing the FCAT mathematics and reading subtests increases after transitioning from an old school building into a new 2000 UBC (Uniform Building Code) compliant facility.

Keywords
school facility, student achievement, Florida building code, state requirements for educational facilities

Purpose of the Study
The purpose of this research was to determine whether academic achievement of 4th-, 8th-, 9th-, and 10th-grade students as measured by the mathematics and reading subtests of the Florida Comprehensive Achievement Test (FCAT)
increased in new school buildings compliant to the 2000 state requirements for educational facilities (SREF).

**Facility Influences on Student Achievement**

One of the most significant civil rights cases in the United States, *Brown v. Board of Education*, 347 U.S. 483 (1954) ordered the desegregation of all public schools. At the core of the Brown cases (Briggs v. Elliott, Davis v. County School Board of Prince Edward County, Bolling et al. v. Melvine Sharpe, and Belton v. Gebhart, and Bulah v. Gebhart) was the petition for adequate and equal school buildings. Supreme Court Chief Justice Warren wrote for the majority that access to public education is a right, which must be made available to all students by the states on equal terms (Brown Foundation, 2012). Nearly 60 years after Brown, however, policy designers and implementers are still searching for innovations to provide quality public education to America’s students.

Environmental conditions that prevail in a school facility such as acoustics, lighting, indoor air quality, and temperature can influence academic achievement (Edwards, 2006; Tanner & Lackney, 2006). The location and condition of a school’s facility affects how students learn and behave (Hines 1996; Schneider, 2002). Bosch (2006) remarked that researchers from the fields of education, environmental psychology, and architecture have recognized a relationship between the physical environment of school facilities and student academic achievement. Incidentally, the United States Department of Education (USDOE) National Center of Education Statistics (NCES) reported that 48% of teachers transferred to another school and 39% switched professions because their workplaces were in a state of disrepair (Chaney & Lewis, 2007). Cash (1993) asserted that the condition of a school’s facility contributes to either low or high student achievement.

To increase student learning outcomes, many states have developed standardized tests to measure academic performance. The No Child Left Behind Act (NCLB) of 2001 was a federal effort to improve student academic achievement. NCLB defined a healthy and high performance school as a facility where design, construction, operation, and maintenance (a) use energy efficiently with affordable practices and materials (b) are cost-effective, (c) enhance indoor air quality, and (d) protect and conserve water. A NCLB directive required the Secretary of Education to research the health and learning impact of environmentally unhealthy public school buildings on students and teachers (Healthy Schools Network, 2013). This order suggests an awareness of the relationship between the condition of a school’s facility and student achievement.

Global Green USA (2005) summarized findings of several studies linking the quality of school buildings with improved student performance. Standardized test scores at Charles Young Elementary School were tracked before and after renovation in 1997. Prior to renovation, approximately half of the students scored in the bottom quartile on national tests. Each year since renovation, standardized test scores have risen. The most significant gain in scores was associated with students in the lower quartiles. According to Global Green USA, scores of 50% of lower performing students rose to national levels and 23% of students scored above the national average on the National Assessment of Educational Progress (NAEP) in the new school buildings.

Buckley, Schneider, and Shang (2005) studied the relationship between health and safety compliance and academic performance as measured by California’s Academic Performance Index (API) in the Los Angeles Unified School District (LAUSD). A school’s score on the API, like the A through F grades from the FCAT in Florida, was an indicator of a school’s performance level. Each of the 1,000 schools in the LAUSD was evaluated on 14 measures of compliance, such as accident prevention, fire and life safety, asbestos abatement, chemical spills, pest control, campus security, lead management, restroom facilities, indoor air quality, safe school plan, maintenance and repair, emergency preparedness, traffic and pedestrian flow, and science lab safety. Buckley et al. deduced that health and safety compliance and what it indicated about the condition and management of the school facility were related to academic achievement.

Chaney and Lewis (2007) conducted research through the USDOE NCES. A survey was mailed to 1,205 public schools in the 50 states and the District of Columbia. Approximately 44% of principals cited inadequate environmental factors such as deficient lighting; odious indoor air; overcrowded or awkwardly designed rooms; poor acoustical control; building decay; and insufficient heating, ventilation, and air conditioning (HVAC), which interfered with instruction.

Roberts, Edgerton, and Peter (2008) examined the impact of the learning environment on student achievement in Canadian schools. They alleged that facility condition affects the climate of a school through student morale and teacher satisfaction. More than 25,000 Canadian students and 1,100 principals were surveyed. Important elements in a school’s facility, such as thermal comfort, proper lighting, clean air, and acoustical control were essential to achieving a school environment that promoted teaching and learning in Canada. Roberts et al. reported that worsening conditions and a deteriorating infrastructure in school facilities negatively affected the morale of those within the buildings. In addition, when morale, commitment, pride of place, and enthusiasm were high, teaching and learning were most effective.

The Healthy Schools Network (2009) asserted that inadequate school building features such as HVAC adversely affected the health and productivity of students and the educators committed to their intellectual growth. Peterson (2011) presented a Powerpoint to the National Center for the Learning Environment titled the *Impact of School Facility Condition on Student Achievement*. Citing the American Society of Civil Engineers, Peterson proclaimed that 75% of
the nations’ school buildings were so deteriorated that they hindered learning and 74% needed extensive repair or replacement. Peterson concluded that inadequate school facilities foster negative attitudes just as exceptional designs may encourage student achievement.

Through a meta-analysis of research, Rydeen (2009) found that New York City’s public school students in new buildings consistently outperformed those in older facilities on every measure of achievement. Rydeen cited the Carnegie Foundation for the Advancement of Teaching and the National Clearinghouse for Educational Facilities (NCEF) noting that students in refurbished buildings consistently outperformed their counterparts in dilapidated school facilities on standardized test in New York. In addition, Rydeen referred to findings by the Acoustical Society of America that associated higher student achievement with schools with less noise. Rydeen also substantiated observations by Tanner and Lackney (2006) that deteriorating school buildings may be perceived by students and the community as a lack of concern for occupant health and commitment to educational outcomes.

Research conducted through the Philip R. Lee Institute for Health Policy Studies (2010) examined the relationship between the condition of school buildings and student achievement in California. The Philip R. Lee Institute for Health Policy Study emphasized that maintaining healthy school buildings improves the well-being and health of students, increases academic achievement, and improves graduation rates. It was noted that the health of California’s students had a direct impact on school drop-out rates, attendance, academic performance, school revenues, and the ability to reach the achievement goals set by the state.

Florida School Building Codes

Student comprehension requires attentiveness. Listening, writing, reading, conducting science experiments, and solving mathematics problems all require a reasonable level of concentration in the classroom. To help design and construct educational facilities that optimize the opportunity for learning, Florida Statute, Chapter 1013 implemented the State Uniform Building Code for Public Educational Facilities Construction (UBC). The UBC is contained in the USDOE publication, State Requirements for Educational Facilities (SREF), 1999, (Volume I—Process and Rule and Volume II—Building Code). The SREF became effective January 5, 2000 and required all educational and ancillary facilities constructed by a school board or community college board to comply with the UBC. In January 2001, the UBC merged into the Florida Building Code, and the Florida Fire Prevention Code. The Florida Building Code created uniform standards that apply to the design, construction, erection, alteration, modification, repair, or demolition of public or private buildings, structures, or facilities in this state to protect public safety at the most reasonable cost to the consumer (Florida Senate Website Archive, 2013). School boards must adhere to the UBC, which is a part of the Florida Building Code, and the Florida Fire Prevention Code as the state building codes and life safety codes for public educational facilities (Florida Department of Education [FLDOE], 2013). As a result, any proposed project must comply with SREF requirements, the UBC, and Florida Building Code. The FLDOE Office of Educational Facilities is responsible for reviewing SREF and recommending any changes to the State Board of Education.

The UBC required school boards to adopt policies, administer procedures, and conduct annual inspections to maintain safety and health standards for occupants in schools (Healthy Schools Network, 2009). The SREF was last updated in 2012 and required school boards to establish policies adopting the Integrated Pest Management in Schools Guidelines developed by the EPA Environmental Protection Agency. This guideline was formulated to decrease the prevalence of asthma in school aged children that is triggered by dust mites and antigens found in cockroach feces, saliva, eggs, and cuticles.

SREF provides guidelines to school administrators, architects, planners, and politicians involved in the various stages of educational facilities design and construction in Florida. The UBC supersedes any other ordinance used to guide the construction of educational and ancillary facilities in state (FLDOE, 2012). Florida Department of Education. A Codes of several organizations, the American National Standards Institute (ANSI), American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE), and the Occupational Safety and Health Administration (OSHA) were incorporated into Florida’s UBC. number of organizations, American National Standards Institute (ANSI); American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE); Florida Department of Community Affairs; Americans With Disability Act of 1993; Florida Accessibility Code for Building Construction of 1997; the Florida Energy Efficiency Code of Building Construction; and the Occupational Safety and Health Administration (OSHA), codes were incorporated into Florida’s UBC. With the SREF and UBC, there are uniform design and construction standards for all public school buildings in Florida.

New K-12 Public School Construction

In Florida, all public K-12 school boards, colleges or universities, university developmental research schools, and the Florida School for the Deaf and the Blind must complete an educational plant survey in conformance with Section 1013.31 (1), F.S. An educational plant survey is a systematic study of an agency’s physical plant needs conducted at least every 5 years to evaluate existing buildings and to plan for future facilities to meet proposed program needs. All remodeling and renovation projects for existing structures and new
construction identified in the 5-year facilities work program must be adopted by the school board and included in the educational plant survey. The completed survey reports submitted to Florida’s Commissioner of Education for approval must contain recommendations for housing educational programs, services, leased space used for conducting an education agency’s instructional programs, projected student population, and other information required by Section 1013.31, F.S. (FLDOE, 2013). Each school district must validate its inventory and condition of existing facilities and recommended additional student spaces.

The educational plant survey must include a current inventory of all existing board-owned and long-term leased educational, ancillary, and auxiliary facilities and plants, including all satisfactory lease-rented, lease-purchased, owned, and rented portable buildings. The educational plant surveys will also include recommendations for remodeling, renovation, new construction, site acquisition, development, and improvement for existing and new educational, ancillary, and auxiliary facilities. SREF rating system includes the following:

1. Capital Outlay Classification 1–Satisfactory (C-1): adequate site; satisfactory facilities; or projected membership within desirable size range for the type of school; recommendation for continued use.
2. Capital Outlay Classification 2–Satisfactory (C-2): in need of renovation, repair, or maintenance with insufficient evidence to recommend replacement.
3. Capital Outlay Classification 3–Unsatisfactory (C-3): inadequate site or declining enrollment where the needs of students can be better and more economically served at other educational plants.

Unsatisfactory educational plants that currently house students should be closed as soon as adequate facilities are available. A facility with a C-3 classification does not earn Public Education Capital Outlay and Debt Service Trust Fund (PECO) maintenance dollars.

The Office of Educational Facilities must verify that local school boards’ proposed building program and the priority of projects conform to the provisions of the Constitution of the State of Florida, laws, and SREF. Chapter 230 of the Florida School Laws authorized local school boards to develop a proposed building program. School boards are required to have a 5-year educational plant survey reviewed and approved by the Office of Educational Facilities. This proposed building program prioritized projects is based on a current approved educational plant survey and is sent to the Office of Educational Facilities for approval.

Approved projects appear on a Project Priority List (PPL), board planned, survey-recommended construction projects approved by Florida’s Commissioner of Education on behalf of the State Board of Education for expenditure of Capital Outlay and Debt Service (CO&DS) funds. Funding priority is for (a) new construction, remodeling, or renovation of educational and auxiliary facilities and plants; and (b) maintenance and repair of an educational plant recommended for continued use in an educational plant survey. Local school boards report data to the statewide Educational Facilities Information System (EFIS). EFIS provides an integrated database of facility functions for school districts, for Florida colleges, and for state-level management of facilities information. The EFIS system exists for the purpose of managing and reporting data related to facility inventories, student enrollment in schools, educational plant surveys, 5-year district facility work plans, tracking facilities projects, and funding of capital programs from state and local resources.

For a new school building to be approved for construction by the Florida Commissioner of Education, the older facility has to be determined structurally deficient, inadequate to meet the district’s educational goals, or in such a state of disrepair that renovation is impractical. All new construction, renovation, and remodeling shall meet the requirements of 6A-2.0010, FAC[Florida Administrative Code], SREF, Florida Statutes, and federal laws and rules.

### Method

Causal-comparative research was used to determine whether the independent variables, state of school, old or new, influenced student achievement. A pre-and post-test group design was used for the research and is shown in Table 1. The pre–posttest group design compared homogeneous groups. The

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**Table 1. Pre–Posttest Group Model Utilized in This Study.**

| Control group | Treatment | Experimental group |
|---------------|-----------|-------------------|
| **Before transition** | **State of school building: old or new (the school transitions into its newly constructed 2000 UBC facility)** | **Year 1 FCAT mathematics and reading subtest scores: 4th, 8th, 9th, 10th grade** |
| Year 1 FCAT mathematics and reading subtest scores: 4th, 8th, 9th, 10th grade | **Treatment** | Year 2 FCAT mathematics and reading subtest scores: 4th, 8th, 9th, 10th grade |
| Year 2 FCAT mathematics and reading subtest scores: 4th, 8th, 9th, 10th grade | | Year 2 FCAT mathematics and reading subtest scores: 4th, 8th, 9th, 10th grade |
| Pre-test | | Post-test |

**Note.** FCAT = Florida Comprehensive Achievement Test; UBC = Uniform Building Code.
control group consisted of two cohorts of 4th-, 8th-, 9th-, or 10th-grade students who attended an old elementary, middle, or high school building. The experimental group was two cohorts of 4th-, 8th-, 9th-, and 10th-grade students who attended a new elementary, middle, or high school building. The treatment was the change in the state of a school from the old building to the new. A one-factor ANOVA with equal ns was used to analyze student FCAT scores from the schools that met the requirements for inclusion in this study. All new schools in the study replaced old facilities deemed deficient by the local school boards and approved for replacement by Florida’s Commissioner of Education. In addition, these schools reported 2 years of FCAT scores in the old buildings and 2 years of FCAT scores in the new. New schools constructed to respond to population growth were not included because there were no prior FCAT scores. All new schools were in the same school districts, thereby controlling for socioeconomic status, student demographics, neighborhood conditions, curriculum, and faculty. Two university lab schools changed principals and were not included in this study. The selected independent variable was hypothesized to contribute to the variations in student FCAT scores in the North Florida Region (see the appendix).

In this study, an old school is defined as a facility that the local board has evaluated and the Commissioner of Education has certified as unsatisfactory and should be replaced. A new school is defined as a facility constructed that is compliant to the 2000 UBC and SREF. Only new constructed facilities are included in this study because SREF exempts unmodified sections of the building from meeting current codes. More specifically, only that portion of the building being remodeled or renovated must be brought into compliance with the Florida Building Code unless the remodeling adversely affects the existing life safety systems and exiting of the building.

Hypotheses

A null and alternative hypothesis was formulated for testing. Hypotheses testing results reported reflect aggregate data. The null and alternative hypotheses are as follows:

**Hypothesis 0 (H0):** Academic achievement of 4th-, 8th-, 9th-, and 10th-grade students as measured by the mathematics and reading subtests of the FCAT will not increase in new 2000 SREF compliant school buildings.

**Hypothesis 1 (H1):** 4th-, 8th-, 9th-, and 10th-grade students’ FCAT mathematics and reading passing percentages will be higher in a new 2000 SREF compliant school building.

Variables

The categorical independent variables for the research were state of school building, old, constructed prior to the 2000 UBC, and new, erected after. The continuous dependent variable is student achievement, which was measured by the sum of percentages of 4th-, 8th-, 9th-, and 10th-grade students who scored 3, 4, or 5 on the mathematics and reading subtests of the FCAT. For example, 4th-grade students’ passing percentages on the FCAT mathematics subtest at School X are, Level 3, 40%; Level 4, 25%; and level 5, 10%. Therefore, the percentage of students passing the FCAT mathematics subtest at School X was 75%.

Population and Sample

The targeted population was all 4th-, 8th-, 9th-, and 10th-grade students attending public elementary, middle, and high schools in the 33 school districts in the North Florida Region. The FLDOE (2012) identified 405 elementary, 126 middle, 190 high, and 69 combination schools in the North Florida Region. The FLDOE also reported 35,889 fourth-, 33,938 eighth-, 34,135 ninth-, and 30,655 tenth-grade students (N = 126,941) enrolled in the North Florida Region in the 2010 school year.

Facility directors in the 33 North Florida Region schools districts were contacted to identify the schools that transitioned from an old into a new 2000 UBC building. Facility directors provided a list of elementary, middle, and high schools that were replaced with a 2000 UBC facility. Student scores from 15 elementary, 10 middle, and 12 high schools met the criteria for inclusion. The sample was homogeneous, in that each cohort of 4th-, 8th-, 9th-, or 10th-grade students transitioned from an old elementary, middle, or high school into a new 2000 UBC compliant facility.

Results

In examining the residual plot and Levene’s homogeneity of variance test (p = .114), the assumptions were satisfied. Independence was satisfied in that the administration of the FCAT assures that students do not collaborate during testing or influenced future scores by sharing previous questions. Normality was confirmed by the residual plot. Scores were normally distributed. As shown in Table 2, the ANOVA is statistically significant (F = 10.783, df = 11, p = 0.000), effect is rather large (η² = .466), and the observed power (1.000) for the state of the facility’s influence on FCAT scores was maximal. There is enough evidence to conclude that the state of a school facility (old or new) affected 4th-, 8th-, 9th-, and 10th-grade student performance on the FCAT mathematics and reading subtests. Results from the statistical analysis led to a decision to reject H0. Results from the analysis led to a decision to fail to reject H1.

In old elementary school buildings, fourth-grade students’ mean passing percentage on the FCAT mathematics subtest was 54.60. In new elementary school buildings, fourth-grade students’ mean passing percentage on the FCAT mathematics subtest was 60.93. Fourth-grade students’ scores on the
FCAT mathematics subtest in the new buildings reflect a 6.33 percentage point increase over those in the old facilities. In old elementary school buildings, fourth-grade students’ mean passing percentage on the FCAT reading subtest was 61.93. In new elementary school buildings, fourth-grade students’ mean passing percentage on the FCAT reading subtest was 63.73. Fourth-grade students’ scores on the FCAT reading subtest in the new buildings reflect a 1.80 percentage point increase over those in the old facilities.

As shown in Table 3, at the middle school level, eighth-grade students’ mean passing percentage on the FCAT mathematics subtest was 47.40 in the old buildings. In new middle school buildings, eighth-grade students’ mean passing percentage on the FCAT mathematics subtest was 56.90. Eighth-grade students’ scores on the FCAT mathematics subtest in the new buildings reflect a 9.50 percentage point increase over those in the old facilities. In old middle school buildings, eighth-grade students’ mean passing percentage on the FCAT reading subtest was 39.40. In new middle school buildings, eighth-grade students’ mean passing percentage on the FCAT reading subtest was 44.70. Eighth-grade students’ FCAT reading subtest scores reflect a 5.30 percentage point increase over those in the old facilities.

As shown in Table 3, fourth-grade students’ scores on the FCAT mathematics subtest in the new buildings reflect a 6.33 percentage point increase over those in the old facilities. Fourth-grade students’ scores on the FCAT reading subtest in the new buildings reflect a 1.80 percentage point increase over those in the old facilities. At the middle school level, eighth-grade students’ scores on the FCAT mathematics subtest in the new buildings reflect a 9.50 percentage point increase over those in the old facilities. Eighth-grade students’ FCAT reading subtest scores reflect a 5.30 percentage point increase over those in the old facilities. At the high school level, 10th-grade students’ scores on the FCAT mathematics subtest in the new building reflect a 3.84 percentage point increase over those in the old facilities. Ninth-grade students’ scores on the FCAT reading subtest reflect a 2.0 percentage point increase over those in the old facilities.

Students’ total mean passing percentages on the FCAT mathematics and reading subtests increased from the old school buildings to the new. Students’ mean passing percentage on the FCAT reading subtest was 22.42. In new high school buildings, ninth-grade students’ mean passing percentage on the FCAT reading subtest was 24.42.

Ninth-grade students’ scores on the FCAT reading subtest reflect a 2.0 percentage point increase over those in the old facilities.

As shown in Table 3, fourth-grade students’ scores on the FCAT mathematics subtest in the new buildings reflect a 6.33 percentage point increase over those in the old facilities. Fourth-grade students’ scores on the FCAT reading subtest in the new buildings reflect a 1.80 percentage point increase over those in the old facilities. At the middle school level, eighth-grade students’ scores on the FCAT mathematics subtest in the new buildings reflect a 9.50 percentage point increase over those in the old facilities. Eighth-grade students’ FCAT reading subtest scores reflect a 5.30 percentage point increase over those in the old facilities. At the high school level, 10th-grade students’ scores on the FCAT mathematics subtest in the new building reflect a 3.84 percentage point increase over those in the old facilities. Ninth-grade students’ scores on the FCAT reading subtest reflect a 2.0 percentage point increase over those in the old facilities.

Students’ total mean passing percentages on the FCAT mathematics and reading subtests increased from the old school buildings to the new. Students’ mean passing percentage on the FCAT mathematics subtest was 48.11 in the old buildings. Students’ mean passing percentage on the FCAT reading subtest was 41.25. Students’ aggregate mean scores on the FCAT mathematics subtest reflect a 6.55 percentage point increase over those in the old facilities. Students’ mean passing percentage on the FCAT reading subtest was 22.42. In new high school buildings, ninth-grade students’ mean passing percentage on the FCAT reading subtest was 24.42.

Note. FCAT = Florida Comprehensive Achievement Test.
percentage on the FCAT reading subtest was 41.25 in the old buildings and 42.28 in the new. In the new school buildings, students’ aggregate mean scores on the FCAT reading subtest reflect a 1.03 percentage point increase over those in the old facilities. This result is an affirmative response to the research question generated for this inquiry, which was whether the percentage of students passing the FCAT mathematics and reading subtests increases after transitioning from an old school building into a new 2000 UBC compliant facility.

Conclusion
The search for interventions to increase student achievement continues. To date, educators have introduced numerous initiatives into the teaching and learning environment, including tutorials, games, computers, reduced class size, charter and year round schools, extended day, highly qualified teachers, and transformational leaders in hopes of increasing student academic achievement. Millions of dollars have followed these initiatives, yet student achievement remains a national concern. Lyons (2001) stated, “Facility condition may have a stronger effect on student performance than the combined influences of family background, socioeconomic status, school attendance, and behavior” (p. 9). Cash (1993) and Tanner (2009) asserted that students are affected and influenced by the quality of school buildings. Roberts et al. (2008) concluded that school facility conditions contribute to students’ academic achievement. Thomas (2011) opined that at a minimum, adequate funding should be provided to transform inadequate school buildings into facilities to enhance teaching and learning.

The Healthy Schools Network (2009) estimated that 32,000,000 children in the United States and 1,829,986 K-12 students in Florida were at a high risk daily because of inadequate and unsatisfactory conditions in a school building. Results of this research revealed an increase in the percentage of students passing the FCAT mathematics and reading subtests in new 2000 UBC schools, which illuminates the impact of school facility on student achievement. Data from this research can inform school board members, superintendents, parents, and architects who design school buildings. This research reinforces the importance of the school building as a key component in the quest to improve students’ academic success and gives educational policy makers and school administrators a viable intervention that can be implemented to assist in the effort to increase student academic achievement. Earthman (1998) asked whether money spent on school building upgrades would yield a return in increased student achievement as measured by standardized test. Results from this research are conclusive with regard to that question. Moreover, this research supports Tanner and Lackney’s (2006) argument for the implementation of educational policies to fund, design, and construct new school buildings or renovate existing facilities to maintain or elevate academic achievement.

Appendix

Counties in the North Florida Region

| Region | Counties                          |
|--------|----------------------------------|
| 1      | Escambia and Santa Rosa          |
| 2      | Okaloosa and Walton              |
| 3      | Calhoun, Holmes, Jackson, Liberty, and Washington |
| 4      | Bay, Franklin, and Gulf          |
| 5      | Gadsden, Leon, and Wakulla       |
| 6      | Hamilton, Jefferson, Lafayette, Madison, Suwannee, and Taylor |
| 7      | Columbia, Dixie, Gilchrist, and Union |
| 8      | Baker, Clay, Duval, Nassau, Putnam, and St. Johns |
| 9      | Alachua and Bradford             |

The study area consists of the 33 school districts in Regions 1 through 9. In Florida, each county is a school district. The geographical area in this study will be referred to as the North Florida Region. Image source: http://www.bing.com/

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