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## **Private Versus Public Schools: A Comparison Of The Percentage Of Third- And Fifth-Grade Students Who Meet Kansas State Proficiency Standards In Reading And Mathematics**

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PRIVATE VERSUS PUBLIC SCHOOLS: A COMPARISON OF THE  
PERCENTAGE OF THIRD- AND FIFTH-GRADE STUDENTS WHO  
MEET KANSAS STATE PROFICIENCY STANDARDS  
IN READING AND MATHEMATICS

being

A Field Study Presented to the Graduate Faculty  
of the Fort Hays State University in  
Partial Fulfillment of the Requirements for  
the Degree of Education Specialist

by

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Major Professor

Approved \_\_\_\_\_  
Chair, Graduate Council

The research described in this field study utilized human subjects. The field study prospectus was therefore examined by the Human Subjects Research Committee of the Psychology Department, Fort Hays State University, and found to comply with Title 45, Subtitle A- Department of Health, Education, and Welfare, General Administration; Part 46 – Protection of Human Subjects.

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Date

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Ethics Committee Chairperson

## ABSTRACT

The present study examined the relationship between school sector and academic achievement as measured by the mathematics and reading portions of the Kansas State Assessments. Archival data were used to obtain the percent of third-grade and fifth-grade students who were proficient in mathematics and reading for 919 schools (813 public, 106 private) across Kansas. The data were analyzed to identify extraneous variables that affect academic achievement and to determine if attending private or public schools resulted in higher academic achievement. Results indicate that, after extraneous variables are statistically controlled for, students who attend public schools achieve equal to or higher than students who attend private schools do. Implications and limitations of the study are discussed, as well as areas of further study.

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## INTRODUCTION

For decades, our education system has been the site of a bitter struggle between the private and public sector. The 1980s saw researchers begin to make claims that private schools were superior to public schools, which was quickly countered by others who questioned the validity of the data collected, the analysis methods used, and the conclusions that were drawn. Throughout this decade and the next, neither side made many gains in the research literature, but the private sector was able to win the battle of popular opinion.

Now, in the 21<sup>st</sup> Century, little has changed. More research has been carried out and more data sources have been developed, but there is still no consensus among researchers about which sector provides a better education. This dissent is due in part to the type of data that is collected. Many researchers utilize data from government databases that consist of information gathered from a small number of schools across the country with only a small percentage of students involved. Although this may provide a glimpse at the education being attained by our students, it provides many opportunities for error within the system, in the way of non-generalizable results.

The present study attempts to improve upon previous research by utilizing data from state assessments that are in line with regulations that were set in place by the No Child Left Behind Act of 2001. This data encompasses every student enrolled in accredited Kansas schools, private and public, from third through eighth grade, and eleventh grade, with results being reported as percentages. This study is using data from

the third and fifth grades to determine if there is a sector difference in the percent of students who are proficient in reading and mathematics.

The current study hypothesizes that private and public schools will differ in the percent of students who are economically disadvantaged, the percent of students with disabilities, the percent of students who are minorities, and the percent of teachers who are highly qualified. The author then hypothesizes that these dissimilarities will explain any differences that may exist between the percent of students who are proficient in reading and mathematics in each school sector.

#### Private and Public Schools

The quality of education provided by public and private schools has been debated for decades with neither side being able to make claim at being the superior education model. Researchers have found supporting data for both education sectors, and each side has endorsed the research that agrees with their stance and has refuted the research that does not. This project will look at inconsistencies in how researchers have assessed a school's performance and inconsistencies in what standards are used to determine a school's effectiveness. It will also look at how the Elementary and Secondary Education Act of 2001 (also known as the No Child Left Behind Act) may have reduced these inconsistencies and the implications this legislation has in relation to this study. Lastly, the present study will outline some variables that have been shown to affect academic achievement and how these variables may need to be addressed if the true effects of the school sector are to be measured.

The implications of the public versus private debate are quite large considering the number of students who take part in our country's education system. There are an estimated 60 million school-aged children in the United States, with approximately 87 percent of these children being educated in public schools (Rouse & Barrow, 2008). Another two percent of children are schooled in the home. This leaves about eleven to twelve percent of school-aged children being educated in secular and parochial private schools (Rouse & Barrow, 2008). The private sector is predominately composed of parochial private schools, with a heavy emphasis on Catholic sponsored schools. At one point, Catholic schools accounted for approximately two-thirds of all private schools in the United States (Coleman, Hoffer, & Kilgore, 1981). If research, and then public opinion, points to private schools or public schools as being more effective, efficient, or superior in some way, then it is likely to lead to changes to state and federal guidelines regarding education.

Public perception in the United States is that private schools are a superior form of education in comparison to public schools (Conway, 1994). Research has indicated that students of private schools do more homework, watch less television, and have higher educational goals than do students from public schools. Parents with children in public schools are more likely to be unhappy with the education their children are receiving and nearly half of these parents would send their children to private school if they could afford it (Conway, 1994; Green & Brown, 1983). There is also a public perception that a wave of parents pulled their children from public schools in the 1960s and placed them in private schools. This was not really the case, as the percent of

students in private schools has held steady at eleven to twelve percent for the last sixty years (Newman, 1995).

Conway (1994) offers one explanation for the more positive view of private schools over public schools. He contends that the different cultures that are presented in private schools and public schools influence views of these schools. Conway used the German terms *gesellschaft* and *gemeinschaft* to describe these differences. The public schools are said to have a *gesellschaft* culture, which is based on the relationships that form from the staff and students' quest to accomplish individual goals. The private schools are described as having a *gemeinschaft* culture, which is built on the relationships that develop from shared goals, loyalties, and attitude. Thus, private schools are seen as a more cohesive unit because the staff, students, and parents of the students have common goals and beliefs. The homogeneity of private schools is well documented as private schools have been found to be less diverse than public schools (Coleman et al., 1981). The culture of the private schools is also much clearer than that of public schools because of the use of rituals and traditions to share what the school deems important.

This closeness within the private schools may also help draw in teachers, even though the available pay is lower than that in the public sector. Even with lower paid teachers, the quality of education in private schools is perceived as higher. If this education truly is of a higher quality, then there must be something that draws high-quality teachers to private schools despite less pay. The culture of the school may provide this additional incentive. The practice of merit pay, or additional pay for higher achieving students, may also serve to entice teachers to take jobs in private schools, even

though the additional pay does not completely close the wage gap between private and public school teachers. Merit pay is widely used in private schools; and has been attempted in public schools, unsuccessfully in most cases (Ballou, 2001). The close nature of private schools may also benefit students, as research indicates that students achieve higher when the parents and the student feel that they know the teacher, and the teacher knows them (Conway, 1994).

While the culture of private schools is lauded by Conway to be (at least perceived to be) a positive in regards to academic achievement, others argue that private schools, particularly parochial private schools, have negative aspects as well. Hand (2003) argues that parochial private schools are indoctrinatory because they teach religious views that are not known to be true as facts. He contends that this indoctrination distorts the critical thinking of students, making it difficult for them to make informed decisions. Lubienski, Lubienski, and Crane (2008) found that demographics contribute more to positive school climate than does the sector of the school. This suggests that characteristics of students influence climate and the culture of the school as much or more than the type of school it is.

Recent research has found conflicting information relating to the comparison of private and public schools. Dronkers and Roberts (2008) looked at reading scores for students from 22 countries to determine if private or public education made a difference. The data came from an archival source, the Organisation for Economic Cooperation and Development's Programme for International Student Assessment from 2000. These researchers found that in the United States, private school students performed

significantly better than those in public schools did, even after school and student characteristics were statistically controlled. Dronkers and Roberts explained the differences in academic achievement as related to the better school climate that was offered in the private schools.

The bulk of the research comparing academic achievement of students in private and public schools has focused on high school students (Altonji, Elder, & Taber, 2005; Coleman et al., 1981, 1982; Neal, 1997). The findings in high school studies generally point to higher academic achievement in students who attend private high schools. In one of the landmark studies in the private versus public literature, Coleman et al. (1981) looked at data from the High School and Beyond study conducted by the National Center for Education Statistics. Coleman et al. found that when family background factors were statistically controlled, students in Catholic and other private schools were shown to achieve at higher levels than students in public schools did. The team of researchers concluded that the achievement differences between students who attended private schools and those who attend public schools were attributable to the type of school they attended. Coleman et al. also determined that there is a much smaller achievement gap between Caucasian students and minority students in Catholic schools than Caucasian students and minority students in public schools. This study indicates that Catholic schools are more equitable for all students than public schools.

Even studies comparing private and public high schools that find negligible differences in academic testing scores between the two types of schools show other positive outcomes for students who attend private schools. Altonji et al. (2005) looked at

differences in the academic achievement and educational attainment of students who attended private and public schools. It was found that while there was little evidence of higher reading or mathematics scores for students who attend private schools, there was another advantage related to attending Catholic high schools. The likelihood of a student graduating high school was higher for the entire population and for minorities when they attended a Catholic high school.

Neal (1997) also found evidence for positive outcomes for students who attended Catholic high schools, specifically those in urban areas. Neal looked at educational achievement in regards to educational attainment and future wage gains. He found that attending Catholic schools increases the likelihood that a student will graduate from high school, that a student will graduate from college, and that a student will earn higher wages in adulthood. These effects were substantial for both urban and suburban minorities, with the largest effects of Catholic schooling on urban minorities. Urban Caucasians saw modest benefits from Catholic schooling, while suburban Caucasians received no observable benefits from Catholic schooling. Neal attributed the benefits for urban minorities largely to the low-quality public schools available to them.

While secondary schools saturate the private versus public literature, a few studies do address students in earlier grades. In a report by the U.S. Department of Education, scores on reading and mathematics tests by fourth and eighth graders from private and public schools were compared (Braun, Jenkins, & Grigg, 2006). This study compared the average mean of each school in each grade and subject, and found that when school and student characteristics were not controlled for, that private schools performed better in



both grades and subjects. When these characteristics were controlled, private schools remained significantly higher on eighth grade reading, whereas public schools were significantly higher on fourth grade mathematics. There were no significant differences between the two types of schools for fourth grade reading and eighth grade mathematics.

Peterson and Llaudet (2006) disputed these findings, as they claim that improper assumptions were made when identifying some students as economically disadvantaged and Title I in the Braun et al. (2006) study. The contention that this model includes bias led Peterson and Llaudet to develop three new models that remove this bias. The first of these models removes the Title I and Free Lunch variables and in their place includes parent education and location of the school. The second model kept these changes, as well as used a student report of language spoken in the home and a teacher report of a student having an IEP in place of other language and IEP indicator variables. The last model resembles Model 2 except for the exclusion of absenteeism, computer in the home, and books in the home variables. All three models found that private schools had significantly higher scores than public schools in both grade levels and subjects. The only exception was that the Peterson and Llaudet Model I found that fourth grade mathematics scores were not significantly different, although the private school's score was still found to be higher.

### School Voucher Programs

Although the debate between private and public schools influences the decisions made by parents in regards to the sector in which they choose to have their child educated, this is not the only influence on school choice. In the last couple of decades,

there has been an increased push for school voucher programs that would give parents money that they could use to enroll their children in private schools (Ladd, 2002). Currently there are few students in the United States whose parents have utilized a voucher program (Campbell, West, & Peterson, 2005). This is in large part due to the small number of voucher programs available. In 2002, there were only a handful of voucher programs that provided public funds for parents, most notably in Milwaukee, Cleveland, and Florida (Ladd, 2002). Besides these public voucher systems, there were also small private voucher systems available in New York City, Washington D.C., and Dayton, OH; and national private voucher systems such as those provided through the Children's Scholarship Fund, the largest privately funded school voucher program (Campbell et al., 2005; Ladd, 2002). Even in places where vouchers are available, the number offered is miniscule when compared to the number of students served in the area.

Opponents of proposed public voucher systems contend that the use of public funds in private schools presents potential complications due to the separation of church and state. There is precedence already established by the Wisconsin Supreme Court that allows public vouchers issued in the state to be used in parochial schools, as long as there is no preference shown toward a single religion (Rouse, 1998). Others also argue that because public funds are already used in private schools for special education that public voucher systems should be treated no differently (Taylor, 2005). One thing that is likely to occur should public voucher systems become more prevalent is greater restrictions on private schools that receive the funds, similar to how private schools have restrictions in how they spend the money they receive for special education (Ladd, 2002).

Much of the rationale behind voucher systems is that competitive markets are more efficient with their resources than those controlled by a monopoly (Rouse & Barrow, 2008). The thought is that if public schools are put in a position in which they are competing for students, and the funds associated with that student, then they will work harder to improve the education they provide. This is in line with the suggestion that private schools provide a better education because their existence depends on providing a good product, although the quality of the education provided is debated. Based on this assumption, school vouchers would require public schools to provide a better education in order to compete with private schools (Rouse & Barrow, 2008). However, this premise implies that public schools currently have no competition, which is incorrect. Not only do public schools currently compete with private schools through parent choice, they also compete with other public schools through residential choice, the concept of individuals choosing where they live based on the school district in which the residence falls under (Rouse & Barrow, 2008).

The one portion of the population that would be most influenced by school voucher systems would be those parents whose school choice is most limited by income levels (Ladd, 2002). Students from families with higher income levels are more likely to attend private school, thus they are the students for which private and public schools compete. In places where voucher systems are available, they are more likely to be applied for by minorities and lower income Caucasians, although the minority applicants are less likely to accept the voucher than their Caucasian counterparts (Campbell et al., 2005).

So far, there is no definitive answer that students benefit from participating in a voucher program. Although there is some evidence that students who participated in a voucher program achieved better in math in the private school than comparable students who did not participate in the voucher program, there is little evidence of this effect on reading scores (Rouse, 1998). Further research has also yielded no evidence that students who attended private schools using a voucher had increased academic achievement, or that students who did not use a voucher and remained in the public schools had slower academic gain.

Researchers and economic models suggest that if large scale voucher systems were established we would see an increase in the number of private schools available, as well as an increase in the number of parents who would choose the private sector for their children's education (Epple & Romero, 1998; Ladd, 2002). This exodus from public schools to private schools would only be beneficial for student academic achievement if private schools provided a better education than public schools. Thus, if conclusive evidence supported either sector as providing superior education, then it would influence school voucher policy.

#### Accountability, Measurability, and Consistency

Studies comparing private and public school achievement are difficult to compare to one another because they are not being compared to any particular standard (with the exception of the two previous studies that looked at the same data set with different applications of characteristic). Also, looking at the mean test score of students in a school does not provide enough information to determine if either type of school is

providing a quality education. A mean test score only tells you the level at which the average student in each class or school performs. Comparing schools based on this measure can yield results that may be weighted one way or the other by outliers. On the other hand, if one were to look at how many students scored at or above a particular cutoff score, then one would be able to see how many of the students are having success in each school. The percentage in each school can then be compared to help us understand which schools are providing the best education for their students.

The passing of the Elementary and Secondary Education Act of 2001 (No Child Left Behind (NCLB)) has provided researchers with a great opportunity. NCLB is built around Four Pillars: stronger accountability, more freedom for states and communities, proven education methods, and more choice for parents (U.S. Department of Education, 2004). These pillars led to the creation of a set of standards that schools are expected to meet and led to all states attempting to create an assessment system that provides valid and reliable measures of academic abilities and accountability. This not only provides researchers with results from an academic assessment, but also compares these results with the standards that are expected of the schools. This comparison allows researchers to see the percentage of students in each school who meet the standards. Schools can then be compared on the percent of students that meet these standards, instead of an arbitrary test score, something that the present study has taken full advantage of.

#### Variables That Affect Academic Achievement

It has been well established that there are a number of variables that influence the academic achievement of students. Because of this, researchers comparing academic

achievement must account for these variables as much as possible in their analyses. Because of the nature of education and the way in which the sector that students are served is parent-selected, rather than randomly selected, these variables cannot be controlled through experimental design. Instead, these variables must be controlled through statistical models. Researchers debate which variables should be controlled, and how these variables should be measured. The effect that these variables have on academic achievement is important to the present study because the author wants to be able to determine if the difference between the academic achievement of students from private schools and that of students from public schools is due to the sector in which the student is taught. This effect may be masked or amplified if these other factors are not controlled.

#### *Socioeconomic Status*

One of the most commonly controlled and debated variables when it comes to differences between public and private schools is socioeconomic status. Lubienski and Crane (2010) argue that in order for one to appropriately assess the effects that teachers and schools have on students' academic achievement it is crucial that differences in the backgrounds of students be taken into account. Lubienski and Crane also stated that socioeconomic status is one of the strongest predictors of academic outcomes. This is consistent with other findings that indicate strong positive correlations between socioeconomic status and academic achievement, as well as those that report negative correlations between measures of low socioeconomic status (free and reduced lunch status, poverty status) and academic achievement (Caro, McDonald, & Willins, 2009;

Diaz, 2008; Drukker, Feron, Mengolers, & Van Os, 2009; Dubow, Boxer, & Herman, 2009; Leonard & Box, 2009). Said another way, as a student's socioeconomic status increases, his or her level of academic achievement tend to increase as well.

There are a number of ways in which socioeconomic status is measured in studies involving student achievement. The most common methods are parental income, parental education, parental occupation, free and reduced lunch eligibility, value of housing, and welfare status (Drukker et al., 2009; Dubow et al., 2009; Sirin, 2005). Although all measures of socioeconomic status mentioned are related to academic achievement, the strength between socioeconomic status and academic achievement depends on which measure is used (Sirin, 2005). Dubow et al. (2009) provide evidence that direct measures of parent income and poverty level are stronger predictors of academic achievement than other measures of socioeconomic status.

The use of participation in the free and reduced lunch program as a measure of socioeconomic status has become more prevalent recently due to the requirement within the reauthorization of the Elementary and Secondary Education Act that States disaggregate the results of accountability tests by race, gender, socioeconomic status, and other factors. In fact, in many studies, free and reduced lunch status is the only socioeconomic status indicator used in the analysis of student achievement (Lubienski & Crane, 2010).

Just as an individual student's socioeconomic status is correlated with that student's academic achievement, so is the socioeconomic status of the other students who attend the school and the individuals who live in the student's neighborhood. Drukker et

al. (2009) found that children living in low-income neighborhoods had lower achievement scores than students from affluent neighborhoods. Research also indicates that high achieving schools are more likely to be found in affluent neighborhoods than in low-income neighborhoods (Campbell et al., 2005). In a study that looked to determine the relationship between school accreditation rankings and socioeconomic status of student populations in Mississippi, it was found that the percent of students in the free and reduced lunch program of a school was negatively correlated with the schools accreditation ranking (Leonard & Box, 2009). Accreditation rankings were based on the percent of students who met proficiency standards on the state's assessments.

#### *Race and Ethnicity*

The relationship between race and academic achievement is well documented. The achievement gap between Caucasians and racial and ethnic minorities (specifically African Americans and Hispanic Americans) has been the focus of an entire stream of literature. Districts with lower performance have been found to have fewer Caucasian students, and in turn more minority students than districts with adequate performance (Crane, Huang, Derby, Makkonen, & Goel, 2008; Crane, Huang, Huang, & Derby, 2008). Because of this, it has become common practice to control for race and ethnicity when comparing academic achievement of different school types, as in the private versus public debate (Caldas, Bernier, & Marceau, 2009; Coleman et al., 1981).

This factor is especially important when comparing private and public schools because of the disproportionate amount of Caucasians who attend private schools (Coleman et al., 1981; Sander, 1996). Broughman, Swaim, and Keaton (2009) found that



approximately 75 percent of all students who attend private schools are Caucasian. Thus, if race is related to academic achievement, then the large discrepancy in the number of minorities who attend private and public schools would make it difficult to compare the true effects that school sector has on academic achievement.

The small percentage of minority students who attend private schools is of concern because private schools have been shown to have a positive effect on the academic achievement of minority students, especially African Americans. Coleman et al. (1981) found that the minority achievement gap in Catholic schools was smaller than that in public schools. Others have also found that private schools present benefits to the academic achievement of minorities (Caldas et al., 2009; Figlio & Stone, 1999; Ladd, 2002). Even when effects on test scores are not found, minorities are still found to benefit from private schooling through increased high school graduation rates and a higher likelihood of attending institutes of higher learning (Altonji et al., 2005; Neal, 1997).

While a relationship between race and academic achievement has been established, there is evidence that this relationship is moderated through other factors. In a study in which the achievement gap between African Canadians and Caucasians in Montreal was examined, this gap was explained through a multiple regression in which single parent status, income level, and family age were included as variables (Caldas et al., 2009). Taningco and Pachon (2008) also found that the achievement gap between Caucasians and African Americans and the achievement gap between Caucasians and

Hispanic Americans completely vanished when socioeconomic status, parental expectations, and other family background information were accounted for.

### *English Language Learner Status*

Another variable that can affect academic achievement is English language proficiency. In a study looking at the academic differences that exist between students that are categorized as English language learners (ELL) and those that are not, Kim and Herman (2009) found that significant gaps in academic achievement exist between students who are ELL and students who are proficient in English. While this achievement gap is concerning in the elementary years, it is even greater in the higher grades. In the fourth grade, 46% of students who are ELL scored below proficiency in math compared to 18% of students who are not ELL. By the eighth grade, 71% of students who are ELL score this low compared to 30% of students who are not ELL. Across all grades, students who are ELL scored 20% lower on a mathematics assessment than students who are not ELL. The achievement gap found by Kim and Herman in reading was even larger than that in mathematics.

The effect of English proficiency on academic achievement is especially concerning to this study because of the difference in the number of students who are ELL that are served by public and private schools. Public schools have a larger percent of students who are ELL than do private schools (Lubienski, Lubienski, & Crane, 2008). Because of the negative effects on academic achievement that have been shown and the differences in the number of students that are ELL in each school sector, it is important

that English proficiency be statistically controlled for when comparing the effectiveness of private and public schools.

Although English language proficiency has been shown to affect academic achievement, it is important to realize that ELL status is negatively correlated with being Caucasian and socioeconomic status (Kim & Herman, 2009). This may indicate that the relationship between English language proficiency and academic achievement is modified by other variables. Because of this it is important that this study investigate this relationship before deciding on the inclusion of the percent of students who are ELL into the hierarchical linear regression model.

#### *Students with Disabilities*

Students with disabilities comprise almost 14% of all students served by our nation's schools (Chudowsky & Chudowsky, 2009). These students have a wide range of disabilities that affect the students' ability to access, participate, and benefit from the general education curriculum and instruction. These students often require additional services in order for them to progress through the curriculum. While these services can help a student with disabilities to move through the curriculum, it is not uncommon for this progression to be at a slower pace than that of students without disabilities.

Because of this slower progression, students with disabilities may not become proficient in portions of the curriculum that other students might. This is pertinent to the present study because students without disabilities and students with disabilities are assessed at the same time in the school year, which may mean that students with disabilities have not been exposed to the same material that students without disabilities

were. Thus, they may not perform as well on these assessments as students without disabilities.

Students with disabilities may be assessed in different ways depending on the level of disabilities (Chudowsky & Chudowsky, 2009). Students with disabilities may take the standard assessment with zero accommodations, they may take the standard assessment with accommodations (such as more time, having portions of the test or answers read to them, etc.), they may take a shorter version of the test in which they are assessed on the same standards as the standard assessment, or they may take part in an alternative assessment.

The present study must consider the percent of students with disabilities in each building for a couple of reasons. First, public schools often provide special education services for students with disabilities who attend private schools (Christensen, Cohodes, Fernandes, Klasik, Loss, & Segeritz, 2007). Because of this, parents of students with disabilities may choose to have their child attend the public school to make delivery of these services more efficient. With this, then, private schools do not have to commit resources to educating students with disabilities, allowing them to put their full resources toward students without disabilities.

Second, the quality of special education services provided in private schools is often not the same quality as that offered in the public schools. Eigenbrood (2005) reviewed the special education services provided by faith-based private schools and public schools. He found that while all public schools had a resource room in the building, only 83% of faith-based private schools did. He also found that faith-based

private schools were less likely to use a nationally recognized special education curriculum, are less likely to have individual education plans for students receiving resource services, and are less likely to have educators in the resource room who are qualified to work in special education. Thus, it is important to consider controlling the percent of students with disabilities in each school building because the private and public sector serve different numbers of these students and in different ways.

### *Teacher Quality*

Of all the variables that influence academic achievement, the most obvious may be the quality of the teacher that is providing the instruction to the students. Because the teacher is often the person who spends the most time with the child, aside from the parents, and is responsible for teaching the subject matter to the student, it would make sense that the skills of these individuals would be directly related to the academic achievement of their students. This assumption is supported by research.

In a study by Lubienski et al. (2008), it was found that the presence of certified teachers was directly related to academic achievement. That is, students who had access to teachers who held full-licenses in the state that they taught achieved at higher levels than students who did not have access to said teachers. Konstantopoulos (2009) also found that more highly educated and more highly qualified teachers created a positive effect on the achievement of all students. While all students seemed to benefit from higher quality teachers, these teachers had no effect on the achievement gap between Caucasian and minority students.

The effect on achievement by teacher quality is especially important when comparing private and public schools as they differ greatly in the number of teachers that are certified. Research has indicated that public schools have a higher level of certified teachers than private schools, and their teachers are more likely to participate in professional development training (Lubienski et al., 2008). These findings contradict the assumption that teacher quality in private schools is better than teacher quality in public schools from above.

The importance of well-educated and well-trained teachers was not lost on the authors of the NCLB Act of 2001. This document makes it clear that all teachers, especially those in schools with high levels of at-risk students, should be highly qualified (No Child Left Behind Act, 2008). The Kansas State Department of Education defines a highly qualified teacher as one that has a bachelor's degree or higher, is licensed and carries all of the appropriate endorsements for the courses that he or she teaches, and demonstrates subject-matter competency in each of the areas in which he or she teaches (Kansas Department of Education, 2008a). All states are required to report the percent of teachers in each core competency that are highly qualified. This allows for an ideal method of measuring the quality of teachers in each building, and allows this to be statistically controlled. The only reason this variable may not be included in the statistical model comparing academic achievement in public and private schools is that the quality of teachers is relevant to the quality of education available in a particular school. Thus, if you are comparing the effectiveness of a particular type of school, one would not want to remove the effects of quality teachers.

### *School Size*

Another widely discussed variable regarding academic achievement is school size. School size is typically discussed in terms of the number of students served within a single building, under the supervision of one administration cell. As with other variables, school size is especially important to consider when comparing private and public schools because private schools typically have fewer students under their service than public schools (Lubienski et al., 2008). Thus, if school size does have an effect on academic achievement, it is important for it to be statistically controlled in order for the effects of school sector to be accurately measured.

Going back to the middle of the twentieth century, there has been a debate regarding the effects of school size on academic achievement. Yan (2006) outlined several early studies that explore this topic and found that there was no consensus, as some research showed a positive relationship between school size and achievement, some research showed a negative relationship between the two, and other research showed no relationship. In recent years, the relationship between school size and academic achievement has become clearer.

In a study looking at the relationship that school size and socioeconomic status play on academic achievement, Howley and Howley (2004) found evidence of a relationship between school size and academic achievement in students at most socioeconomic levels. In all but the highest level of socioeconomic status, these authors found an inverse relationship between school size and academic achievement. That is, students in the low and middle socioeconomic levels received an advantage from

attending a smaller school rather than a larger school. As for students in the high socioeconomic level, they did not receive an advantage from any size of school, meaning that they were likely to achieve at the same level, regardless of the size of the school that they attended. The effect of school size on academic achievement in rural schools was found to be at the same levels as for the entire sample, showing that school size is the contributing factor, not the location or size of the community. Howley and Howley also found that there is no point where a school's size becomes so low that it has negative effects on academic achievement.

To go along with the findings of Howley and Howley, it has also been found that in districts with high rates of poverty, school size negatively impacts academic achievement (Abbott, Joireman, & Stroh, 2002). From this, it would indicate that districts with high levels of poverty would be better served by schools with lower student populations. Other research also indicates that lower student population is correlated with higher academic achievement (Lubienski et al., 2008).

#### *District Size*

In addition to the research that indicates that individual school size has an impact on academic achievement, there is also evidence that the number of students in the entire district affects a student's achievement. Driscoll, Halcousis, and Svorny (2003) found that students from larger districts score lower on a standardized achievement test than do those from districts with fewer students. This may indicate that district size has a negative effect on academic achievement.



Studies examining the characteristics of districts on improvement (districts that failed to meet annual yearly progress goals on the state assessment) indicate a relationship between district size and academic achievement (Crane, Huang, Derby, et al., 2008; Crane, Huang, Huang, et al., 2008). Districts that were categorized as on improvement oversaw a larger number of individual school buildings and a larger number of individual students than schools that were not categorized as on improvement. The type of relationship between district population and academic achievement is unclear. The relationship could be causal where the number of students served by a district directly affects how well students achieve, or the relationship could be moderated or mediated by other factors that are correlated with district size. Hentschke, Nayfack, and Wohlstetter (2009) found that the leadership styles used by superintendents of larger districts differ from those used by superintendents of smaller districts. It is not known if this difference accounts for the academic achievement differences associated with districts of different sizes.

There is slight dissention about the existence of a relationship between district size and academic achievement. In a study that looked at the reading and math scores of fourth and seventh graders, there was no significant correlation between district size and scores in either subject for either grade (Diaz, 2008). This study may provide evidence that the effects of district size on academic achievement are moderated through other variables, as the author took account of socioeconomic status and actual levy percentages. Socioeconomic status was found to be the strongest predictor of achievement for students in both grade levels in both subjects.

### *Population Density*

If the concentration of students in a building and a district are to be considered when comparing public and private schools, then it would make sense that the concentration of people that surround a school be considered as well. In a study of school districts on improvement, Crane, Huang, Derby, et al. (2008) found that 63 percent of districts on improvement were located in cities or on the urban fringe. This is compared to their finding that 49 percent of districts not on improvement were located in these areas. This provides evidence that the population density of the area around schools has a negative relationship with academic achievement.

Even if there is no direct effect of population density on academic achievement, there may still be a need to include this variable in a statistical model looking at academic achievement. Driscoll et al. (2003) contend that population density should be statistically controlled in studies of academic achievement in order to prevent the overestimation of the negative effects of larger districts on academic performance. Said another way, if population density is not controlled for, then the observable relationship between district size and academic performance will be distorted from its true nature.

A consideration of population density in a statistical model is also important for studies comparing private and public schools. This is in large part because private schools are concentrated in urban and suburban locations (Lubienski, Lubienski, & Crane, 2008). This is not surprising when one considers how private schools stay in business. If approximately 12 percent of students are attending private schools, and this percent is consistent across areas of different population densities, then there will be a

larger demand for private schools in urban and suburban areas than in rural areas. Simple economics would then dictate that more private schools would pop up to answer this demand.

### Hypotheses

H<sub>1</sub>. *Private schools will have a lower percentage of students who are economically disadvantaged than public schools.* Research indicates that private schools are predominately attended by students from families who fall into socioeconomic status levels that do not qualify for free-and-reduced lunch programs.

H<sub>2</sub>. *Private schools will have a lower percentage of students with disabilities than public schools.* Past research has indicated that fewer students with disabilities attend private schools in part due to fewer resources being available for these students in the private schools.

H<sub>3</sub>. *Private schools will have a lower percentage of minorities than public schools.* Private schools have been found to be more homogeneous than public schools.

H<sub>4</sub>. *Private schools will have a higher percentage of high quality teachers than public schools.* Research suggests that private schools provide a more positive environment for teachers than do public schools, which should in turn lead to the recruitment of higher quality teachers, despite lower pay.

H<sub>5</sub>. *The percent of students who are economically disadvantaged in a school will be negatively correlated with the percent of third-grade students who are proficient in reading, the percent of third-grade students who are proficient in mathematics, the percent of fifth-grade students who are proficient in reading, and the percent of fifth-*

*grade students who are proficient in mathematics.* Research indicates that socioeconomic status has more effect on academic performance than any other demographic. Thus, the more students in a school that are eligible for free-and-reduced lunches the fewer students one would expect to be proficient in math and reading.

H<sub>6</sub>. *The percent of Caucasian students in a school will be positively correlated with the percent of third-grade students who are proficient in reading, the percent of third-grade students who are proficient in mathematics, the percent of fifth-grade students who are proficient in reading, and the percent of fifth-grade students who are proficient in mathematics.* Race and ethnicity of a student has been shown to be related to their academic achievement. The achievement gap between Caucasians and minorities has been documented for a number of years. Thus, it is expected that the higher concentration of Caucasians that a school has, the higher the percentage of students who meet proficiency in mathematics and reading will be.

H<sub>7</sub>. *Private schools will have higher percentage of third-grade students who are proficient in reading when no variables are statistically controlled, but this difference will be nullified or reversed when percent of students economically disadvantaged, percent of minority students, percent of highly qualified elementary school teachers, percent of students with disabilities, percent of students in ELL status, building population, district population, and county density designation are statistically controlled.* Popular opinion and some research indicate that private schools provide a better education than public schools. Other research indicates that the perception of a better education is created because of the demographical differences in the students who

attend schools in the two sectors. Thus, if these demographical differences are controlled for, the achievement differences should be negated or reversed.

H<sub>8</sub>. *Private schools will have higher percentage of third-grade students who are proficient in mathematics when no variables are statistically controlled, but this difference will be nullified or reversed when percent of students economically disadvantaged, percent of minority students, percent of highly qualified elementary school teachers, percent of students with disabilities, percent of students in ELL status, building population, district population, and county density designation are statistically controlled.* Popular opinion and some research indicate that private schools provide a better education than public schools. Other research indicates that the perception of a better education is created because of the demographical differences in the students who attend schools in the two sectors. Thus, if these demographical differences are controlled for, the achievement differences should be negated or reversed.

H<sub>9</sub>. *Private schools will have higher percentage of fifth-grade students who are proficient in reading when no variables are statistically controlled, but this difference will be nullified or reversed when percent of students economically disadvantaged, percent of minority students, percent of highly qualified elementary school teachers, percent of students with disabilities, percent of students in ELL status, building population, district population, and county density designation are statistically controlled.* Popular opinion and some research indicate that private schools provide a better education than public schools. Other research indicates that the perception of a better education is created because of the demographical differences in the students who

attend schools in the two sectors. Thus, if these demographical differences are controlled for, the achievement differences should be negated or reversed.

*H<sub>10</sub>. Private schools will have higher percentage of fifth-grade students who are proficient in mathematics when no variables are statistically controlled, but this difference will be nullified or reversed when percent of students economically disadvantaged, percent of minority students, percent of highly qualified elementary school teachers, percent of students with disabilities, percent of students in ELL status, building population, district population, and county density designation are statistically controlled.* Popular opinion and some research indicate that private schools provide a better education than public schools. Other research indicates that the perception of a better education is created because of the demographical differences in the students who attend schools in the two sectors. Thus, if these demographical differences are controlled for, the achievement differences should be negated or reversed.

## METHOD

### *Participants*

This study includes archival data selected from 106 private elementary and middle schools and 813 public elementary and middle schools in the State of Kansas, for a total of 919 school buildings involved. All schools that have a record on the Kansas Department of Education's website were selected. The sample is intended to be a complete selection of all schools in the state that contain third and/or fifth grade students and have a Building Report Card on the KSDE website. For schools with proficiency information missing on their building report card, a request was made to the Kansas State Department of Education for this information. If this information was still unattainable, the school was dropped from the study. Because of the use of archival data, this study was deemed to be exempt from review by the institutional review board (See Appendix A).

A public school is defined as a school that receives full funding from local, state, or federal sources. Another requirement of public schools is that they must fall under the jurisdiction of a unified school district and its board of education. The public schools in this study represent all 105 counties in Kansas and are distributed across the state following population distributions. As such, a majority of the public schools are located around the larger municipalities in Northeastern and South Central Kansas.

A private school is defined as a school that receives a majority of its funding from non-governmental sources, such as tuitions, donations, and sponsorships. A large

majority (99.1%) of the private schools included in this study have an overt religious affiliation. One school (0.9%) is affiliated with Islam, 88 schools (83.0%) are Catholic, 14 (13.2%) are Lutheran, and two (1.8%) are other denominations of Christianity. The Catholic and Lutheran schools within the state are a part of their own districts, such as the Kansas City Catholic Diocese or the Lutheran School of Topeka. These districts can cover large areas with schools falling under these districts being as much as 250 miles apart. The private schools within this study represent 41 of the 105 counties in Kansas, and are predominately in the Northeast and South Central portions of the state.

### *Measures*

*Kansas Mathematics Assessment.* To assess their abilities in mathematics, all students within the target schools were given the Kansas Mathematics Assessment in the spring of 2009, and the results of this test were reported on the Kansas Department of Education Building Report Cards as percentages of students at each grade level that fell into one of five achievement categories: Exemplary, Exceeds Standards, Meets Standards, Approaching Standards, and Academic Warning. The percent of items correct that qualifies a student for each category differs depending on the grade level of the student. The ranges for third grade are 0-57% for Academic Warning, 58-69% for Approaching Standards, 70-84% for Meets Standards, 85-92% for Exceeds Standards, and 93-100% for Exemplary. The ranges for fifth grade are 0-53% for Academic Warning, 54-61% for Approaches Standards, 62-77% for Meets Standards, 78-87% for Exceeds Standards, and 88-100% for Exemplary (Kansas Department of Education, 2008b).



The third grade version of the Kansas Mathematics Assessment assesses the students' ability to perform grade level appropriate mathematics operations and procedures. These include using whole numbers, fractions, and money in a variety of concrete situations, modeling and explaining mathematics computations with whole numbers and money, demonstrating efficacy and accuracy in computing single-digit problems, picking up on patterns, recognizing and describing whole number relationships, and recognizing geometric shapes (Kansas Department of Education, 2004b; Kansas Department of Education, 2009a).

The fifth grade version of the Kansas Mathematics Assessment also assesses the students' abilities to perform grade level appropriate mathematics functions. These skills include using integers, fractions, and money in a variety of situations, estimating numbers, fractions, and money in a variety of situations, modeling and explaining computation of whole numbers, fractions, and decimals in a variety of situations, recognizing geometric shapes and comparing their properties in a variety of situations, showing competence with measures and measurement formulas, and displays an understanding of probability (Kansas Department of Education, 2004a; Kansas Department of Education, 2009a).

The Kansas Mathematics Assessment and the assessment system it is a part of has been compared to the requirements set forth in the Elementary and Secondary Education Act of 2001 (better known as the No Child Left Behind Act (NCLB)) and has been approved by the U.S. Department of Education. It has been approved at this level

because it serves as a reliable and valid measure and provides an acceptable amount of accountability within the system (Briggs, 2009).

*Kansas General Reading Assessment.* The students in the target schools were given the Kansas General Reading Assessment in the spring of 2009 to determine their reading abilities. The results of these assessments were published in the same reports as those for the Kansas Mathematics Assessment and were presented as percentages of students who fell in the five achievement categories. As with the Kansas Mathematics Assessment, these categories were Exemplary, Exceeds Standards, Meets Standards, Approaches Standards, and Academic Warning. The percent of answers correct required for each of these categories differs depending on the grade level. The ranges for third grade are 0-54% for Academic Warning, 55-66% for Approaches Standards, 67-79% for Meets Standards, 80-88% for Exceeds Standards, and 89-100% for Exemplary. The ranges for fifth grade are 0-56% for Academic Warning, 57-67% for Approaches Standards, 68-79% for Meets Standards, 80-87% for Exceeds Standards, and 88-100% for Exemplary (Kansas Department of Education, 2008b).

The third grade version of the Kansas General Reading Assessment assesses the students' reading abilities in relation to the grade level benchmarks and standards. These include using decoding and structural analysis skills when reading unknown words, reading and comprehending passages from across the grade level curriculum, increasing sight-word recognition, using literary concepts to interpret and respond to text, and understanding the importance of literature and its contributions to culture (Kansas Department of Education, 2003b; Kansas Department of Education, 2009b).

The fifth grade version of the Kansas General Reading Assessment assesses the students' reading skills in relation to the grade level benchmarks and standards. These include using skills in alphabetics to construct meaning from text, reading fluently and comprehending at appropriate levels, expanding sight-word vocabulary and synonym and antonym usage, using context clues and word structure to determine the meaning of a word, comprehending a variety of text types, and understanding the importance of literature and its contributions to culture (Kansas Department of Education, 2003a; Kansas Department of Education, 2009b).

The Kansas General Reading Assessment and the assessment system it is a part of has been compared to the Achieve Reading Standards and the requirements set forth in the Elementary and Secondary Education Act of 2001 (NCLB). The Achieve Reading Standards are a set of standards and benchmarks for reading designed by U.S. Governors and corporate leaders in 1996 intended to increase students' college and career readiness. The standards and benchmarks for reading established by the Kansas Board of Education within the state curriculum and measured by the Kansas General Reading Assessment are on par with the Achieve Reading Standards (Kansas Department of Education, 2009b).

The U.S. Department of Education has approved the Kansas General Reading Assessment and the assessment system in place by the State of Kansas. This approval is based on the findings that this system provides reliable and valid assessments, provides adequate accountability within the system, and meets the requirements established by NCLB (Briggs, 2009).

### *Materials*

*Thesis Coding Sheet.* All data was collected using the Thesis Coding Sheets (See Appendix B) that were developed by the author. This document was developed in Microsoft Excel and went through five revisions before arriving at the current product. Data collected on these sheets included the name of the school, the city and county in which the school was located, the density designation for the county, the sector in which the school operated, the district that the school fell under, the number of students that were served by the building and the district, whether the school was located in a county that contained a private school, the percent of students served in the building that belonged to each race/ethnicity category, the percent of elementary, English language arts, ESL, and fine arts teachers that were highly qualified in the building, the percent of students that were male and female, the percent of students who were categorized as economically disadvantaged, the percent of students that were on ELL status, the percent of students with disabilities served in the school, the percent of students in the third and fifth grades that scored in the five proficiency levels on the mathematics and reading assessment, and the percent of students in each grade that were not tested on the mathematics and reading assessment.

### *Procedure*

Data was collected from the Kansas Department of Education's Building Report Card site (<http://online.ksde.org/rcard/index.aspx>). This site is used to publish the overall results for each school building and district that participated in the state assessments. The author and two trained research assistants completed the Thesis Coding Sheets with the

author checking ten percent for accuracy. If more than two percent of those checked for reliability had contained errors, then 100 percent of the Thesis Coding Sheets would have been checked for accuracy. The error rate for the rechecked data collection sheets was below this threshold.

The Thesis Coding Sheets were used to collect a wide range of information. Identifying information of each school was collected, including the name of the school, the city where it is located, the school district it falls under, and county that the school is located, whether the school is private or public, as well as the number of students in the school and in the district. In order to control for the local culture, the schools were also coded based on county designations that are based on the population density of the county in which the school is located. These designations are frontier (less than 6 persons per square mile), rural (6-19.9 persons per square mile), densely-settled rural (20-39.9 persons per square mile), semi-urban (40-149.9 persons per square mile), and urban (150 or more persons per square mile). These designations are based on a map created by the University of Kansas School of Social Welfare (O'Brien & Holmes, 2009) using 2007 population estimates of the U.S. Census Bureau.

The author and research assistants also collected the percent of students in each building who are African American, Hispanic, White, and Other. Other includes all races and ethnicities not covered by the other three categories. Percent of students in each building who are male and female were collected, in addition to the percent of students who have a disability, are English language learners, or are economically disadvantaged. Percent of students who are economically disadvantaged is determined by how many

students qualify for the free and reduced lunch program. The percent of teachers in each building who are highly qualified was also collected. Highly qualified teachers are those teachers that have earned a bachelor's degree, qualified for a teaching license, and shown competency in their subject area (Kansas Department of Education, 2008a). Schools were also coded based on them being in a county that contains a private school or does not contain a private school. The demographics, qualifications, and population-based variables are being collected to serve as controls, as they have been shown to have an effect on school performance levels in previous studies.

For each school, the percent of students who fall in each of the five achievement categories, as well as the percent of students who did not take the assessment was collected for the reading and mathematics assessment from both third and fifth grade. The five achievement categories that data were collected for are Exemplary, Exceeds Standards, Meets Standards, Approaching Standards, and Academic Warning. If a school contained one of the target grades, but did not have the data within its Building Report Card, then the data was requested from the Kansas State Department of Education. The data the KSDE provided at this request only disaggregated the data into the total percent of students in each grade that met proficiency standards for the particular subject test, which is the accumulated percent of the top three achievement categories. If the data was still not provided for a particular school, then the school was eliminated from the study.

## RESULTS

Descriptive statistics were computed for the whole sample and each school sector (public and private). The means and standard deviation of percent of third-grade students who are proficient in reading, percent of third-grade students who are proficient in mathematics, percent of fifth-grade students who are proficient in reading, and the percent of fifth-grade students who are proficient in mathematics are reported in Table 1. The means and standard deviations of building population, percent of students who are minorities, percent of elementary teachers who are highly qualified, percent of students who are economically disadvantaged, percent of students who are English language learners (ELL), and percent of students with disabilities are reported in Table 2.

Table 1

*Means and Standard Deviations for Overall Sample (N=919), Public Schools (N=813), and Private Schools (N=106) – Percent of Students Proficient for Each Grade-*

*Level/Subject Pairing*

	% 3 <sup>rd</sup> Prof in Reading	% 3 <sup>rd</sup> Prof in Math	% 5 <sup>th</sup> Prof in Reading	% 5 <sup>th</sup> Prof in Math
	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )
Overall	86.10 (13.15)	87.87 (12.84%)	85.33 (12.85)	86.37 (13.75)
Public Schools	86.17 (12.80)	88.49 (11.75)	85.43 (12.41)	87.00 (12.62)
Private Schools	85.53 (15.54)	83.38 (18.42)	84.67 (15.48)	82.20 (19.28)

Note: Prof = Proficiency

Table 2

*Means and Standard Deviations for Overall Sample (N=919), Public Schools (N=813), and Private Schools (N=106) – Extraneous Variables*

	% of Students Econ. Dis.	% of Students Minority	% of Students ELL	% of Students with Disabilities	% HQ Elem Teachers	Building Population
	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )
Overall	45.60 (24.47)	26.22 (25.00)	9.21 (17.23)	14.97 (8.55)	97.48 (6.97)	287.76 (168.09)
Public Schools	48.86 (23.22)	26.83 (25.27)	10.15 (17.81)	16.37 (7.95)	98.38 (4.28)	297.94 (164.19)
Private Schools	20.58 (18.77)	21.57 (22.33)	2.01 (9.03)	4.20 (4.25)	89.72 (15.69)	209.74 (177.72)

Note: Econ. Dis. = Economic Disadvantaged, ELL = English Language Learner, HQ Elem = Highly Qualified Elementary

*Hypothesis 1: Private schools will have a lower percentage of students who are economically disadvantaged than public schools.*

Public schools ( $N=813$ ) were expected to have a higher percentage of students who are economically disadvantaged than private schools ( $N=106$ ). A Levene's Test for Equality of Variances was found to be significant,  $F = 7.58, p < .01$ , because of this the equal variances not assumed  $t$ -test was used for interpretation. An independent  $t$ -test was used to test the hypothesis leading to the rejection of the null hypothesis. Public schools ( $M=48.86, SD=23.22$ ) have a significantly higher percentage of students who are economically disadvantaged than private schools ( $M=20.58, SD=18.77$ ),  $t(150.28) = 14.16, p < .01$ .



*Hypothesis 2: Private schools will have a lower percentage of students with disabilities than public schools.*

Public schools ( $N = 813$ ) were expected to have a higher percentage of students with disabilities than private schools ( $N = 106$ ). A Levene's Test for Equality of Variances was found to be significant,  $F = 13.46$ ,  $p < .01$ , because of this the equal variances not assumed  $t$ -test was used for interpretation. An independent  $t$ -test was used to test the hypothesis leading to the rejection of the null hypothesis. Public schools ( $M=16.37$ ,  $SD=7.95$ ) have a significantly higher percentage of students with disabilities than private schools ( $M=4.20$ ,  $SD=4.25$ ),  $t(217.05) = 24.46$ ,  $p < .01$ .

*Hypothesis 3: Private schools will have a lower percentage of minorities than public schools.*

Public schools ( $N = 813$ ) were expected to have a higher percentage of minority than private schools ( $N = 106$ ). A Levene's Test for Equality of Variances was found to be significant,  $F = 7.56$ ,  $p < .01$ , because of this the equal variances not assumed  $t$ -test was used for interpretation. An independent  $t$ -test was used to test the hypothesis leading to the rejection of the null hypothesis. Public schools ( $M=26.83$ ,  $SD=25.27$ ) have a significantly higher percentage of minority students than private schools ( $M=21.57$ ,  $SD=22.33$ ),  $t(142.45) = 2.24$ ,  $p < .05$ .

*Hypothesis 4: Private schools will have a higher percentage of high quality teachers than public schools.*

Private schools ( $N = 92$ ) were expected to have a higher percentage of highly qualified elementary teachers than public schools ( $N = 797$ ). A Levene's Test for

Equality of Variances was found to be significant,  $F = 368.17, p < .01$ , because of this the equal variances not assumed  $t$ -test was used for interpretation. An independent  $t$ -test was used to test the hypothesis leading to the null hypothesis being retained. Public schools ( $M=98.38, SD=4.28$ ) have a significantly higher percentage of highly qualified elementary teachers than private schools ( $M=89.72, SD=15.69$ ),  $t(92.57) = 5.27, p < .01$ .

*Hypothesis 5: The percent of students who are economically disadvantaged in a school will be negatively correlated with the percent of third-grade students who are proficient in reading, the percent of third-grade students who are proficient in mathematics, the percent of fifth-grade students who are proficient in reading, and the percent of fifth-grade students who are proficient in mathematics.*

The percent of students who are economically disadvantaged was expected to be negatively correlated with the percent of third-grade students who are proficient in reading, the percent of third-grade students who are proficient in mathematics, the percent of fifth-grade students who are proficient in reading, and the fifth-grade students who are proficient in mathematics. Correlations were run to test this hypothesis leading to the null hypothesis being rejected. The percent of students who are economically disadvantaged was found to have a significant negative relationship with each of the dependent variables. Specific values of correlations are reported in Table 3.

Table 3

*Correlations*

	Third-Grade Percent Proficient Reading	Third-Grade Percent Proficient Mathematics	Fifth-Grade Percent Proficient Reading	Fifth-Grade Percent Proficient Mathematics
Percent Economically Disadvantaged	-.48**	-.33**	-.50**	-.35**
Percent Minority Students	-.57**	-.42**	-.55**	-.42**
Percent Students ELL	-.36**	-.22**	-.40**	-.23**
Percent Elementary Teachers Highly Qualified	.12*	.19**	.13**	.13**
Percent Students with Disabilities	.06	.06	-.02	-.01
Building Population	-.10**	-.02	-.04	.04
District Population	-.29**	-.19**	-.26**	-.18**
County Designation	-.20**	-.14**	-.15**	-.14**

Note: \* =  $p < .05$ , \*\* =  $p < .01$

*Hypothesis 6: The percent of minority students in a school will be negatively correlated with the percent of third-grade students who are proficient in reading, the percent of third-grade students who are proficient in mathematics, the percent of fifth-grade students who are proficient in reading, and the percent of fifth-grade students who are proficient in mathematics.*

The percent of minority students was expected to be negatively correlated with the percent of third-grade students who are proficient in reading, the percent of third-grade students who are proficient in mathematics, the percent of fifth-grade students who are proficient in reading, and the fifth-grade students who are proficient in mathematics. Correlations were run to test this hypothesis leading to the null hypothesis being rejected.

The percent of minority students was found to have a significant negatively correlated with each dependent variable. Specific values of correlations are reported in Table 3.

*Hypothesis 7: Private schools will have higher percentage of third-grade students who are proficient in reading when no variables are statistically controlled, but this difference will be nullified or reversed when percent of students economically disadvantaged, percent of minority students, percent of highly qualified elementary school teachers, percent of students with disabilities, percent of students in ELL status, building population, district population, and county density designation are statistically controlled.*

Private schools were expected to have a higher percentage of third-grade students who are proficient in reading than public schools. A Levene's Test for Equality of Variances was found to be significant,  $F = 9.67$ ,  $p < .01$ , because of this the equal variances not assumed  $t$ -test was used for interpretation. An independent  $t$ -test was used to test the hypothesis leading to the null hypothesis being retained. Private schools ( $M=85.53$ ,  $SD=15.54$ ) do not have a significantly higher percentage of third-grade students who are proficient in reading than public schools ( $M=86.17$ ,  $SD=15.54$ ),  $t(121.72) = 0.40$ ,  $p > .05$ .

In order to test the second part of the hypothesis, a hierarchical linear regression was used. To determine the order in which the predictor variables would be entered and which variables would be included in the model, a simultaneous multiple regression was performed. This analysis included building population, district population, county designation of population density, the percent of students with disabilities, the percent of

students who are ELL, the percent of students who are economically disadvantaged, and the percent of minority students, and the percent of highly qualified elementary teachers.

Of these variables, only the percent of students who are economically disadvantaged, the percent of minority students, the percent of students who are ELL, and the percent of highly qualified elementary teachers had significant beta values. Despite having a significant value, the percent of highly qualified elementary teachers was excluded from the final model because it was determined to contribute to the quality of education provided by the sector. Thus, if this were included in the model, it may remove the very effect we are trying to observe. This left the model being tested to include the percent of students who are economically disadvantaged, the percent of minority students, the percent of students who are ELL, and school sector.

The hierarchical linear regression used in this analysis was performed over four steps. Steps one through three were conducted to determine how much of the variance in the percent of third-grade students who are proficient in reading was explained by: a) the percent of students who are economically disadvantaged; b) the percent of minority students; and c) the percent of students who are ELL. Step four was conducted to determine how much of the remaining variance was explained by the school sector.

The results of the analysis showed that a significant amount of the variance in the percent of third-grade students who are proficient in reading (23.4%) was explained by Step 1, when the percent of students who are economically disadvantaged was added to the analysis (See Table 4). The percent of students who are economically disadvantaged contributed significantly to the prediction ( $\beta = -.48$ ), with the percent of third-grade

students who are proficient in reading decreasing as the percent of students who are economically disadvantaged increased (See Table 5).

Table 4

*Hierarchical Linear Regression for Effects of Predictors on the Percent of Third-Grade Students Proficient in Reading*

Variable	<i>R</i>	<i>R</i> <sup>2</sup>	Adj. <i>R</i> <sup>2</sup>	$\Delta R^2$	$\Delta F$	<i>df</i> <sub>1</sub>	<i>df</i> <sub>2</sub>	Sig. $\Delta F$
Step 1								
Percent of Students who are Economically Disadvantaged	.48	.23	.23	.23	260.20	1	853	.00
Step 2								
Step 1 Plus Percent of Minority Students	.59	.35	.35	.11	148.45	1	852	.00
Step 3								
Step 2 Plus Percent of Students who are ELL	.60	.36	.36	.01	17.64	1	851	.00
Step 4								
Step 3 Plus School Sector	.62	.38	.38	.02	24.53	1	850	.00

Note: ELL = English Language Learner

Table 5

*Hierarchical Linear Regression Analyzing Effects of Predictors on the Percent of Third-Grade Students who are Proficient in Reading – Beta Weights*

Variable	<i>B</i>	Std. Error <i>B</i>	$\beta$	<i>t</i>	<i>p</i>
<b>Step 1</b>					
Percent of Students who are Economically Disadvantaged	-.26	.02	-.48	-16.13	.00
<b>Step 2</b>					
Percent of Students who are Economically Disadvantaged	-.11	.02	-.21	-6.02	.00
Percent of Minority Students	-.23	.02	-.43	-12.18	.00
<b>Step 3</b>					
Percent of Students who are Economically Disadvantaged	-.13	.02	-.24	-6.70	.00
Percent of Minority Students	-.29	.02	-.55	-12.29	.00
Percent of Students who are ELL	.13	.03	.18	4.20	.00
<b>Step 4</b>					
Percent of Students who are Economically Disadvantaged	-.17	.02	-.32	-8.22	.00
Percent of Minority Students	-.26	.02	-.50	-11.01	.00
Percent of Students who are ELL	.12	.03	.16	3.81	.00
School Sector	-6.01	1.21	-.15	-4.95	.00

Note: ELL = English Language Learner

In Step 2, the percent of minority students was added to the model. The amount of variance explained by the percent of students who are economically disadvantaged and the percent of minority students was significant (34.7%) with the percent of minority students contributing to a  $R^2$  Change of .11,  $p < .01$ . Both the percent of students who are economically disadvantaged ( $\beta = -.21$ ) and the percent of minority students ( $\beta = -.43$ )

contributed significantly to the prediction of the percent of third-grade students who are proficient in reading. The percent of third-grade students who are proficient in reading increased as the percent of students who are economically disadvantaged and the percent of minority students decreased.

The amount of variance of the percent of third-grade students who are proficient in reading explained by Step 3, which includes the percent of students who are ELL added to the previous step, is significant (36.1%). The percent of students who are ELL explained an additional 1.3% of the variance over Step 2, which is significant. The percent of students who are economically disadvantaged ( $\beta = -.24$ ), the percent of minority students ( $\beta = -.55$ ), and the percent of students who are ELL ( $\beta = .18$ ) contributed significantly to the prediction of the percent of third-grade students who are proficient in reading. The percent of third-grade students who are proficient in reading increased as the percent of students who are economically disadvantaged and the percent of minority students decreased and the percent of students who are ELL increased.

Lastly, Step 4 includes school sector added to the model used in Step 3. Step 4 explained a significant amount the variance of the percent of third-grade students who are proficient in reading (37.9%). The inclusion of school sector explained significantly more variance of the percent of third-grade students who are proficient in reading (1.8%) than did Step 3. The percent of students who are economically disadvantaged ( $\beta = -.32$ ), the percent of minority students ( $\beta = -.50$ ), the percent of students who are ELL ( $\beta = .16$ ), and school sector ( $\beta = -.15$ ) contributed significantly to the prediction of the percent of third-grade students who are proficient in reading. The percent of third-grade students



who are proficient in reading increased as the percent of students who are economically disadvantaged and the percent of minority students decreased, the percent of students who are ELL increased. Also, as the percent of third-grades students who are proficient in reading increased, the school tended to fall into the public sector.

*Hypothesis 8: Private schools will have higher percentage of third-grade students who are proficient in mathematics when no variables are statistically controlled, but this difference will be nullified or reversed when percent of students economically disadvantaged, percent of minority students, percent of highly qualified elementary school teachers, percent of students with disabilities, percent of students in ELL status, building population, district population, and county density designation are statistically controlled.*

Private schools were expected to have a higher percentage of third-grade students who are proficient in mathematics than public schools. A Levene's Test for Equality of Variances was found to be significant,  $F = 38.02$ ,  $p < .01$ , because of this the equal variances not assumed  $t$ -test was used for interpretation. An independent  $t$ -test was used to test the hypothesis leading to the null hypothesis being retained. Private schools ( $M=83.38$ ,  $SD=18.42$ ) have a significantly lower percentage of third-grade students who are proficient in reading than public schools ( $M=88.49$ ,  $SD=11.75$ ),  $t(113.64) = 2.74$ ,  $p < .01$ .

In order to test the second part of the hypothesis, a hierarchical linear regression was used. To determine the order in which the predictor variables would be entered and which variables would be included in the model, a simultaneous multiple regression was

performed. This analysis included building population, district population, county designation of population density, the percent of students with disabilities, the percent of students who are ELL, the percent of students who are economically disadvantaged, and the percent of minority students, and the percent of highly qualified elementary teachers.

Of these variables, only the percent of students who are economically disadvantaged, the percent of minority students, the percent of students who are ELL, and the percent of highly qualified elementary teachers had significant beta values. Despite having a significant value, the percent of highly qualified elementary teachers was excluded from the final model because it was determined to contribute to the quality of education provided by the sector. Thus, if this were included in the model, it may remove the very effect we are trying to observe. This left the model being tested to include the percent of students who are economically disadvantaged, the percent of minority students, the percent of students who are ELL, and school sector.

The hierarchical linear regression used in this analysis was performed over four steps. Steps one through three were conducted to determine how much of the variance in the percent of third-grade students who are proficient in mathematics was explained by: a) the percent of students who are economically disadvantaged; b) the percent of minority students; and c) the percent of students who are ELL. Step four was conducted to determine how much of the remaining variance was explained by the school sector.

The results of the analysis showed that a significant amount of the variance in the percent of third-grade students who are proficient in mathematics (10.8%) was explained by Step 1, when the percent of students who are economically disadvantaged was added

to the analysis (See Table 6). The percent of students who are economically disadvantaged contributed significantly to the prediction ( $\beta = -.33$ ), with the percent of third-grade students who are proficient in mathematics decreasing as the percent of students who are economically disadvantaged increased (See Table 7).

Table 6

*Hierarchical Linear Regression for Effects of Predictors on the Percent of Third-Grade Students Who Are Proficient in Mathematics*

Variable	<i>R</i>	<i>R</i> <sup>2</sup>	Adj. <i>R</i> <sup>2</sup>	$\Delta R^2$	$\Delta F$	<i>df</i> <sub>1</sub>	<i>df</i> <sub>2</sub>	Sig. $\Delta F$
Step 1								
Percent of Students who are Economically Disadvantaged	.33	.11	.11	.11	103.07	1	853	.00
Step 2								
Step 1 Plus Percent of Minority Students	.43	.18	.18	.08	79.79	1	852	.00
Step 3								
Step 2 Plus Percent of Students who are ELL	.46	.21	.21	.02	25.90	1	851	.00
Step 4								
Step 3 Plus School Sector	.50	.25	.25	.04	47.93	1	850	.00

Note: ELL = English Language Learner

In Step 2, the percent of minority students was added to the model. The amount of variance explained by the percent of students who are economically disadvantaged and the percent of minority students was significant (18.4%) with the percent of minority students contributing to a  $R^2$  Change of .08,  $p < .01$ . Both the percent of students who are economically disadvantaged ( $\beta = -.11$ ) and the percent of minority students ( $\beta = -.35$ )

contributed significantly to the prediction of the percent of third-grade students who are proficient in reading. The percent of third-grade students who are proficient in mathematics increased as the percent of students who are economically disadvantaged and the percent of minority students decreased.

Table 7

*Hierarchical Linear Regression Analyzing Effects of Predictors of the Percent of Third-Grade Students Who Are Proficient in Mathematics – Beta Weights*

Variable	<i>B</i>	Std. Error <i>B</i>	$\beta$	<i>t</i>	<i>p</i>
Step 1					
Percent of Students who are Economically Disadvantaged	-.17	.02	-.33	-10.15	.00
Step 2					
Percent of Students who are Economically Disadvantaged	-.06	.02	-.11	-2.70	.01
Percent of Minority Students	-.18	.02	-.35	-8.93	.00
Step 3					
Percent of Students who are Economically Disadvantaged	-.07	.02	-.14	-3.55	.00
Percent of Minority Students	-.26	.03	-.51	-10.28	.00
Percent of Students who are ELL	.18	.03	.24	5.09	.00
Step 4					
Percent of Students who are Economically Disadvantaged	-.13	.02	-.26	-6.16	.00
Percent of Minority Students	-.22	.03	-.43	-8.72	.00
Percent of Students who are ELL	.16	.03	.21	4.61	.00
School Sector	-9.00	1.3	-.23	-6.92	.00

Note: ELL = English Language Learner

The amount of variance of the percent of third-grade students who are proficient in mathematics explained by Step 3, which included the percent of students who are ELL added to the previous step, is significant (20.8%). The percent of students who are ELL explained an additional 2.4% of the variance over Step 2, which is significant. The percent of students who are economically disadvantaged ( $\beta = -.14$ ), the percent of minority students ( $\beta = -.51$ ), and the percent of students who are ELL ( $\beta = .24$ ) contributed significantly to the prediction of the percent of third-grade students who are proficient in mathematics. The percent of third-grade students who are proficient in mathematics increased as the percent of students who are economically disadvantaged and the percent of minority students decreased and the percent of students who are ELL increased.

Lastly, Step 4 includes school sector added to the model used in Step 3. Step 4 explained a significant amount the variance of the percent of third-grade students who are proficient in mathematics (25.1%). The inclusion of school sector explained significantly more variance of the percent of third-grade students who are proficient in mathematics (4.2%) than did Step 3. The percent of students who are economically disadvantaged ( $\beta = -.26$ ), the percent of minority students ( $\beta = -.43$ ), the percent of students who are ELL ( $\beta = .21$ ), and school sector ( $\beta = -.23$ ) contributed significantly to the prediction of the percent of third-grade students who are proficient in mathematics. The percent of third-grade students who are proficient in mathematics increased as the percent of students who are economically disadvantaged and the percent of minority students decreased, the percent of students who are ELL increased. In addition, as the percent of third-grade

students who are proficient in mathematics increased, the school tended to fall into the public sector.

*Hypothesis 9: Private schools will have higher percentage of fifth-grade students who are proficient in reading when no variables are statistically controlled, but this difference will be nullified or reversed when percent of students economically disadvantaged, percent of minority students, percent of highly qualified elementary school teachers, percent of students with disabilities, percent of students in ELL status, building population, district population, and county density designation are statistically controlled.*

Private schools were expected to have a higher percentage of fifth-grade students who are proficient in reading than public schools. A Levene's Test for Equality of Variances was found to be significant,  $F = 7.91$ ,  $p < .01$ , because of this the equal variances not assumed  $t$ -test was used for interpretation. An independent  $t$ -test was used to test the hypothesis leading to the null hypothesis being retained. Private schools ( $M=84.67$ ,  $SD=15.48$ ) do not have a significantly higher percentage of third-grade students who are proficient in reading than public schools ( $M=85.43$ ,  $SD=12.41$ ),  $t(122.46) = .47$ ,  $p > .05$ .

In order to test the second part of the hypothesis, a hierarchical linear regression was used. To determine the order in which the predictor variables would be entered and which variables would be included in the model, a simultaneous multiple regression was performed. This analysis included building population, district population, county designation of population density, the percent of students with disabilities, the percent of

students who are ELL, the percent of students who are economically disadvantaged, and the percent of minority students, and the percent of highly qualified elementary teachers.

Of these variables, only the percent of students who are economically disadvantaged, the percent of minority students, and the percent of highly qualified elementary teachers had significant beta values. Despite having a significant value, the percent of highly qualified elementary teachers was excluded from the final model because it was determined to contribute to the quality of education provided by the sector. Thus, if this were included in the model, it may remove the very effect we are trying to observe. In addition, in order to maintain consistency among the models used to test hypotheses seven through ten, the percent of students who are ELL was included in this model. This left the model being tested to include the percent of students who are economically disadvantaged, the percent of minority students, the percent of students who are ELL, and school sector.

The hierarchical linear regression used in this analysis was performed over four steps. Steps one through three were conducted to determine how much of the variance in the percent of fifth-grade students who are proficient in reading was explained by: a) the percent of students who are economically disadvantaged; b) the percent of minority students; and c) the percent of students who are ELL. Step four was conducted to determine how much of the remaining variance was explained by the school sector.

The results of the analysis showed that a significant amount of the variance in the percent of fifth-grade students who are proficient in reading (24.9%) was explained by Step 1, when the percent of students who are economically disadvantaged was added to

the analysis (See Table 8). The percent of students who are economically disadvantaged contributed significantly to the prediction ( $\beta = -.50$ ), with the percent of fifth-grade students who are proficient in reading decreasing as the percent of students who are economically disadvantaged increased (See Table 9).

Table 8

*Hierarchical Linear Regression Effects of Predictors on the Percent of Fifth-Grade Students Who Are Proficient in Reading*

Variable	<i>R</i>	<i>R</i> <sup>2</sup>	Adj. <i>R</i> <sup>2</sup>	$\Delta R^2$	$\Delta F$	<i>df</i> <sub>1</sub>	<i>df</i> <sub>2</sub>	Sig. $\Delta F$
Step 1								
Percent of Students who are Economically Disadvantaged	.50	.25	.25	.25	261.12	1	788	.00
Step 2								
Step 1 Plus Percent of Minority Students	.59	.35	.34	.10	115.25	1	787	.00
Step 3								
Step 2 Plus Percent of Students who are ELL	.59	.35	.34	.00	.31	1	786	.58
Step 4								
Step 3 Plus School Sector	.61	.37	.37	.02	30.09	1	785	.00

Note: ELL = English Language Learner

In Step 2, the percent of minority students was added to the model. The amount of variance explained by the percent of students who are economically disadvantaged and the percent of minority students was significant (34.5%) with the percent of minority students contributing to a  $R^2$  Change of .10,  $p < .01$ . Both the percent of students who are economically disadvantaged ( $\beta = -.25$ ) and the percent of minority students ( $\beta = -.40$ )



contributed significantly to the prediction of the percent of fifth-grade students who are proficient in reading. The percent of fifth-grade students who are proficient in reading increased as the percent of students who are economically disadvantaged and the percent of minority students decreased.

Table 9

*Hierarchical Linear Regression Analyzing Effects of Predictors on the Percent of Fifth-Grade Students Who Are Proficient in Reading – Beta Weights*

Variable	<i>B</i>	Std. Error <i>B</i>	$\beta$	<i>t</i>	<i>p</i>
Step 1					
Percent of Students who are Economically Disadvantaged	-.26	.02	-.50	-16.16	.00
Step 2					
Percent of Students who are Economically Disadvantaged	-.13	.02	-.25	-6.88	.00
Percent of Minority Students	-.21	.02	-.40	-10.74	.00
Step 3					
Percent of Students who are Economically Disadvantaged	-.13	.02	-.26	-6.87	.00
Percent of Minority Students	-.22	.02	-.41	-9.17	.00
Percent of Students who are ELL	.02	.04	.02	.55	.58
Step 4					
Percent of Students who are Economically Disadvantaged	-.18	.02	-.35	-8.62	.00
Percent of Minority Students	-.19	.02	-.35	-7.84	.00
Percent of Students who are ELL	.00	.03	.00	.11	.91
School Sector	-6.57	1.20	-.17	-5.49	.00

Note: ELL = English Language Learner

The amount of variance of the percent of fifth-grade students who are proficient in reading explained by Step 3, which includes the percent of students who are ELL added to the previous step, is significant (34.5%). The percent of students who are ELL explained no additional variance over Step 2. Only the percent of students who are economically disadvantaged ( $\beta = -.26$ ) and the percent of minority students ( $\beta = -.41$ ), contributed significantly to the prediction of the percent of fifth-grade students who are proficient in reading. The percent of fifth-grade students who are proficient in reading increased as the percent of students who are economically disadvantaged and the percent of minority students decreased.

Lastly, Step 4 includes school sector added to the model used in Step 3. Step 4 explained a significant amount of the variance of the percent of fifth-grade students who are proficient in reading (36.9%). The inclusion of school sector explained significantly more variance of the percent of fifth-grade students who are proficient in reading (2.4%) than did Step 3. Only the percent of students who are economically disadvantaged ( $\beta = -.35$ ), the percent of minority students ( $\beta = -.35$ ), and school sector ( $\beta = -.17$ ) contributed significantly to the prediction of the percent of fifth-grade students who are proficient in reading. The percent of third-grade students who are proficient in reading increased as the percent of students who are economically disadvantaged and the percent of minority students decreased. In addition, as the percent of fifth-grade students who are proficient in reading increased, the school tended to fall into the public sector.

*Hypothesis 10: Private schools will have higher percentage of fifth-grade students who are proficient in mathematics when no variables are statistically controlled, but this*

*difference will be nullified or reversed when percent of students economically disadvantaged, percent of minority students, percent of highly qualified elementary school teachers, percent of students with disabilities, percent of students in ELL status, building population, district population, and county density designation are statistically controlled.*

Private schools were expected to have a higher percentage of fifth-grade students who are proficient in mathematics than public schools. A Levene's Test for Equality of Variances was found to be significant,  $F = 43.72, p < .01$ , because of this the equal variances not assumed  $t$ -test was used for interpretation. An independent  $t$ -test was used to test the hypothesis leading to the null hypothesis being retained. Private schools ( $M=82.20, SD=19.20$ ) have a significantly lower percentage of third-grade students who are proficient in reading than public schools ( $M=87.00, SD=12.62$ ),  $t(115.45) = 2.45, p < .05$ .

In order to test the second part of the hypothesis, a hierarchical linear regression was used. To determine the order in which the predictor variables would be entered and which variables would be included in the model, a simultaneous multiple regression was performed. This analysis included building population, district population, county designation of population density, the percent of students with disabilities, the percent of students who are ELL, the percent of students who are economically disadvantaged, and the percent of minority students, and the percent of highly qualified elementary teachers.

Of these variables, only the percent of students who are economically disadvantaged, the percent of minority students, the percent of students who are ELL, and

the percent of highly qualified elementary teachers had significant beta values. Despite having a significant value, the percent of highly qualified elementary teachers was excluded from the final model because it was determined to contribute to the quality of education provided by the sector. Thus, if this were included in the model, it may remove the very effect we are trying to observe. This left the model being tested to include the percent of students who are economically disadvantaged, the percent of minority students, the percent of students who are ELL, and school sector.

The hierarchical linear regression used in this analysis was performed over four steps. Steps one through three were conducted to determine how much of the variance in the percent of fifth-grade students who are proficient in mathematics was explained by: a) the percent of students who are economically disadvantaged; b) the percent of minority students; and c) the percent of students who are ELL. Step four was conducted to determine how much of the remaining variance was explained by the school sector.

The results of the analysis showed that a significant amount of the variance in the percent of fifth-grade students who are proficient in mathematics (12.2%) was explained by Step 1, when the percent of students who are economically disadvantaged was added to the analysis (See Table 10). The percent of students who are economically disadvantaged contributed significantly to the prediction ( $\beta = -.35$ ), with the percent of fifth-grade students who are proficient in mathematics increasing as the percent of students who are economically disadvantaged decreased (See Table 11).

Table 10

*Hierarchical Linear Regression for the Effects of Predictors on the Percent of Fifth-Grade Students Who Are Proficient in Mathematics*

Variable	<i>R</i>	<i>R</i> <sup>2</sup>	Adj. <i>R</i> <sup>2</sup>	$\Delta R^2$	$\Delta F$	<i>df</i> <sub>1</sub>	<i>df</i> <sub>2</sub>	Sig. $\Delta F$
Step 1								
Percent of Students who are Economically Disadvantaged	.35	.12	.12	.12	109.72	1	788	.00
Step 2								
Step 1 Plus Percent of Minority Students	.43	.19	.18	.06	61.59	1	787	.00
Step 3								
Step 2 Plus Percent of Students who are ELL	.44	.20	.19	.01	11.34	1	786	.00
Step 4								
Step 3 Plus School Sector	.49	.24	.24	.04	44.68	1	785	.00

Note: ELL = English Language Learner

In Step 2, the percent of minority students was added to the model. The amount of variance explained by the percent of students who are economically disadvantaged and the percent of minority students was significant (18.6%) with the percent of minority students contributing to a  $R^2$  Change of .06,  $p < .01$ . Both the percent of students who are economically disadvantaged ( $\beta = -.15$ ) and the percent of minority students ( $\beta = -.32$ ) contributed significantly to the prediction of the percent of fifth-grade students who are proficient in mathematics. The percent of fifth-grade students who are proficient in mathematics increased as the percent of students who are economically disadvantaged and the percent of minority students decreased.

Table 11

*Hierarchical Linear Regression Analyzing the Effects of Predictors on the Percent of Fifth-Grade Students Who Are Proficient in Mathematics – Beta Weights*

Variable	<i>B</i>	Std. Error <i>B</i>	$\beta$	<i>t</i>	<i>p</i>
Step 1					
Percent of Students who are Economically Disadvantaged	-.19	.02	-.35	-10.48	.00
Step 2					
Percent of Students who are Economically Disadvantaged	-.08	.02	-.15	-3.64	.00
Percent of Minority Students	-.18	.02	-.32	-7.85	.00
Step 3					
Percent of Students who are Economically Disadvantaged	-.10	.02	-.17	-4.20	.00
Percent of Minority Students	-.24	.03	-.42	-8.42	.00
Percent of Students who are ELL	.14	.04	.16	3.37	.00
Step 4					
Percent of Students who are Economically Disadvantaged	-.16	.02	-.29	-6.66	.00
Percent of Minority Students	-.19	.03	-.34	-6.90	.00
Percent of Students who are ELL	.12	.04	.13	2.90	.00
School Sector	-9.40	1.41	-.23	-6.68	.00

Note: ELL = English Language Learner

The amount of variance of the percent of fifth-grade students who are proficient in mathematics explained by Step 3, which includes the percent of students who are ELL added to the previous step, is significant (19.8%). The percent of students who are ELL explained an additional 1.2% of the variance over Step 2, which is significant. The

percent of students who are economically disadvantaged ( $\beta = -.17$ ), the percent of minority students ( $\beta = -.42$ ), and the percent of students who are ELL ( $\beta = .16$ ) contributed significantly to the prediction of the percent of fifth-grade students who are proficient in mathematics. The percent of fifth-grade students who are proficient in mathematics increased as the percent of students who are economically disadvantaged and the percent of minority students decreased and the percent of students who are ELL increased.

Lastly, Step 4 includes school sector added to the model used in Step 3. Step 4 explained a significant amount the variance of the percent of fifth-grade students who are proficient in mathematics (24.1%). The inclusion of school sector explained significantly more variance of the percent of fifth-grade students who are proficient in mathematics (4.3%) than did Step 3. The percent of students who are economically disadvantaged ( $\beta = -.29$ ), the percent of minority students ( $\beta = -.34$ ), the percent of students who are ELL ( $\beta = .13$ ), and school sector ( $\beta = -.23$ ) contributed significantly to the prediction of the percent of fifth-grade students who are proficient in mathematics. The percent of fifth-grade students who are proficient in mathematics increased as the percent of students who are economically disadvantaged and the percent of minority students decreased, and the percent of students who are ELL increased. In addition, as the percent of fifth-grade students who are proficient in mathematics increased, the school tended to fall into the public sector.

## DISCUSSION

The current study examined the effectiveness of the education provided by public and private schools. The percent of third- and fifth-grade students who were proficient in reading and mathematics in each sector was compared. Private and public schools have been compared in many studies of elementary schools (Braun et al., 2006; Peterson & Llaudet, 2006) and high schools (Altonji et al., 2005; Coleman et al., 1981; Neal, 1997). This study expanded on the literature by utilizing data from state assessments that are used in political decision making, by including every accredited private and public school in Kansas that took the assessments, and by developing a hierarchical linear model that controlled for the demographic differences between the public and private schools.

### *Test of Hypotheses*

Hypotheses one through six were tested to verify previously found differences between private and public schools in the current sample, and to also verify the relationship between certain variables and academic achievement. As expected, public schools were found to have a higher percent of students who are economically disadvantaged, a higher percentage of students with disabilities, and a higher percentage of students who are minorities. Going against the assumption that private schools have more qualified teachers and supporting the findings of Lubienski et al. (2008), public schools were found to have a higher percentage of teachers who are highly qualified than do private schools.



The present study found academic achievement to be significantly related to several of the variables that research indicated as variables affecting academic achievement. Most notably, the percent of students who are economically disadvantaged and the percent of students who are minorities were negatively correlated with the percent of students proficient in each grade level/subject combination (third-grade reading, third-grade mathematics, fifth-grade reading, and fifth-grade mathematics.) Said another way, as the percent of students who are economically disadvantaged and the percent of students who are minorities increases, the percent of students in the third and fifth grades who are proficient in reading and mathematics decreases. Other variables that were negatively correlated with the percent of students proficient in each grade level/subject combination include the percent of students who are ELL, the district population, and the county density. Building population was negatively correlated with the percent of third-grade students that are proficient in reading. The only variable included in the current study that was positively correlated with academic achievement was the percent of elementary teachers who are highly qualified. This variable was positively correlated with the percent of students proficient in each grade level/subject combination. Each of these findings is consistent with previous research.

Although a number of variables were found to be related to academic achievement, only the percent of students who are economically disadvantaged, the percent of students who are minorities, and the percent of students who are ELL were found to contribute significantly to the explanation of variance in academic achievement in either of the four grade-level/subject combinations. The percent of students who are

economically disadvantaged and the percent of students who are minorities contributed significantly to this explanation for all four grade level/subject combinations, while the percent of students who are ELL contributed to the hierarchical linear regression for only the percent of third-grade students who are proficient in reading, the percent of third-grade students who are proficient in mathematics, and the percent of fifth-grade students who are proficient in mathematics.

Testing of hypotheses 7, 8 9, and 10 showed that contrary to previous research and popular opinion (Coleman et al., 1981; Conway, 1994; Peterson & Llaudet, 2006), private schools do not have higher levels of academic achievement in reading and mathematics than public schools do. It was hypothesized that when no extraneous variables were statistically controlled for, that private schools would have higher percentages of student who are proficient at each grade level/subject combination. Instead, the present study found that there was no significant difference between the percent of third-grade or fifth-grade students proficient in reading, prior to statistical control of extraneous variables. Even still, public schools were found to have a significantly higher percentage of third-grade and fifth-grade students who are proficient in mathematics than private schools when no extraneous variables were statistically controlled. These findings, being contrary to the hypothesized results, may indicate that the mathematics instruction provided to students from private schools is not as effective as that provided in public schools.

When the percent of students who are economically disadvantaged, the percent of students who are minorities, and the percent of students who are ELL were controlled,

public schools were found to typically have a higher percentage of students who are proficient in each of the four grade level/subject combinations.

For reading, this indicates that the demographics of private schools allow them to appear on par with private schools in reading instruction, while the public schools must educate more at-risk students. When these demographics are statistically controlled, it illuminates more effective reading instruction in the public schools.

For mathematics, the present study indicates lower quality mathematics instruction being provided in private schools than in public schools. The demographic differences between the private and public schools were not even enough to mask the difference in the quality of mathematics. These results contradict findings by Rouse (1998) wherein students who attended private schools on voucher systems had higher achievement in mathematics than similar students who attended public schools. One possible explanation of these findings is that the effects of socioeconomic status, ethnicity, or English language proficiency are different depending on the subject.

The findings of the present study contribute to the literature that examines the relationship between school sector and academic achievement. These findings are consistent with those studies that suggest that public schools provide an equal or better education as that provided by private schools (Braun et al., 2006). It also disputes those studies that report higher academic achievement by students that attend private schools than those students who attend public schools (Altonji et al., 2005; Coleman et al, 1981; Neal, 1997; Peterson & Llaudet, 2006).

The current findings also dispute claims by those in support of voucher systems that would provide public funds for students to attend private schools. The assumption of these voucher systems is that public schools provide an inferior product than that provided by private schools. The present study indicates that in the State of Kansas in the elementary grade, this assumption is false.

Research indicated that several variables may affect academic achievement (Crane, Huang, Derby et al., 2008; Kim & Herman, 2009; Lubienski & Crane, 2010; Lubienski et al., 2008). The present study found that while the percent of elementary school teachers who are highly qualified, the building population, the district population, and county population density are related to academic achievement, only the percent of students who are economically disadvantaged, the percent of students who are minorities, and the percent of students who are ELL explained the variance within the academic achievement variables. This indicates that socioeconomic status, race/ethnicity, and English language proficiency are variables that need to be considered when researching academic achievement, and that these variables account for most of the effects of the other variables that were found to be related to academic achievement.

### *Limitations*

There are several limitations to the present study. First, although all possible schools were used, the number of private schools used in the study was fewer than the number of public schools. This discrepancy is undesired in most cases, but considering the totality of the sample in this study, there is nothing that could be done to remedy this problem except removing some of the public schools from the study. I believe that this

would have skewed the results more than the uneven sample might. Another limitation is that the schools involved in this study are all from a single state: Kansas. This may make generalization of these results difficult, as the level of oversight of, the expectations of, and the quality of private schools may differ among states. Also, because each state uses their own criteria to determine proficiency, students who scored proficient in this state may not score proficient in another and vice versa. The United States Department of Education approves of the criteria for each state, but slight differences may still exist.

Another limitation of the present study is that while the public schools represented the entire State of Kansas, the private schools represented only 41 of the 105 counties, and were predominately located in the Northeast and South Central portion of the state. Because of the urbanization of these areas compared to the rest of the state, which is predominately rural, the comparison of the different sectors may be influenced, even with statistical control of key demographic variables.

The current study also is limited because it only looks at the third and fifth grades. While an understanding of the quality of education in the elementary grades is important, it is difficult to generalize these results to middle school or high school. In addition, because state assessments are only given to students in the third grade and above, it would be difficult to compare the quality of education in the early elementary grades.

Lastly, the integrity of state assessments given in all states have been scrutinized (Gabriel, 2010; Kromer, 2003; Upton, Amos, & Ryman, 2011). Because of the high-stakes nature of these assessments, teachers and other school staff have reportedly provided more assistance with testing than are allowed. While there is no reason to

believe this occurred in the grade levels or schools used in the present study, there is a possibility that some of the students received higher scores than they would have on their own.

#### *Implications for Further Research*

Because of the large number of students who receive their education in the private and public schools, further research that attempts to understand the difference between the quality of education provided in one sector and the other is necessary. Although the current study indicates that public schools provide a better education, at least in the third and fifth grades, more research is needed in order to identify a pattern in the research that is currently not observable.

First, because the present study only looks at two elementary grades, future research should look at academic achievement differences that may exist in other grades, most notably middle school and high school. Other research has shown positive effects of private high schools (Altonji et al., 2005; Coleman et al., 1981; Neal, 1997), although these studies have used different procedures for measuring academic achievement than the present study. By using the methods of the present study with higher grades, it would provide a better understanding of the relationship that school sector has on academic achievement at different age and grade levels.

To address the limitations of the present study, future research may look at other states to see if a pattern emerges. The use of multiple states may allow for more equal groups, while the exploration of a single state may provide better insight into the relationship between the school sector and the quality of education that is provided. If

similar results were to be found in other states, then it would validate the findings. However, if different results were found, other factors that may contribute to academic achievement may be identified.

Because the present study indicates that public schools provide more effective reading and mathematics instruction, future research should look at the differences that exist in the curriculum, instruction, and materials presented in the public schools and that presented in the private schools. In addition, differences in the system-level operations of the schools should also be examined to determine if there are systemic differences at the classroom, building, or district level that may contribute to the differences in the achievement of the students in each sector.

Lastly, because of the concern showed by some about the procedural integrity and the validity of the state assessments used in the present study, these types of assessments should be examined to determine if they are being administered as intended. In addition, further research to determine if the assessments are measuring what the state department of education and the schools think they are is needed. Because of the high-stakes decisions that are being made with the results of these tests, it is important to know that these exams are assessing what is expected.

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Appendix A

Ethics Packet



**FORT HAYS STATE UNIVERSITY  
INSTITUTIONAL REVIEW BOARD  
FOR HUMAN SUBJECTS RESEARCH**

**APPLICATION**

Proposals for review by the IRB may be submitted at any time. With the exception of expedited reviews, complete proposals submitted no later than ten (10) business days prior to a scheduled meeting will be reviewed at that meeting. Late proposals will be reviewed at the next scheduled meeting. The IRB meeting schedule is posted on the website. Incomplete proposals will not be reviewed, and will be returned to the researcher for completion.

**Type of Request:**

- Full Review**  
Complete Application and Relevant Forms
- Expedited Review**  
Complete Application and Expedited Review Attachment
- Approved research proposal revision request (use revision /extension form)**
- Approved research proposal extension request (use revision /extension form)**
- Exempt from Review**  
Complete Application and Exempt Review Attachment

### Application Information:

1. Activity or Project Title: Private vs. Public Schools: A Comparison of the Percentage of Students Who Meet State Standards in Reading and Mathematics

2. List all people involved in research project:

Name & Title	Institution & Department	Phone	Email
*Mr. Kyle Carlin	Fort Hays State University - Department of Psychology	785-871-2404	kdcarlin@scatcat.fhsu.edu
**Dr. Carol Patrick	Fort Hays State University	785-628-4406	cpatrick@fhsu.edu

\*Principal Investigator

\*\*Faculty Research Advisor (if student is Principal Investigator)

Time period for activity: From Feb2010 to Feb2011

\*If longer than 1 year, annual review will be needed

3. Type of investigator and nature of the activity: (Check all the appropriate categories)

A. Faculty/Staff at FHSU:

- Submitted for extramural funding to:
- Submitted for intramural funding to:
- Project unfunded
- Other (Please explain)

B. Student at FHSU:  Graduate  Undergraduate  Special

- Thesis  Graduate Research Paper
- Specialist Field Study  Independent Study
- Class Project (Course Number and Course Title):
- Other (Please Explain)

C. Investigator not from FHSU but using subjects obtained through FHSU

D. Other than faculty, staff, or student at FHSU:

○ Please identify each investigator and describe the research group:

#### 4. Certifications:

I am familiar with the policies and procedures of Fort Hays State University regarding human subjects in research. I subscribe to the university standards and applicable state and federal standards and will adhere to the policies and procedures of the Institutional Review Board for the Protection of Human Subjects. I will comply with all instructions from the IRB at the beginning and during the project or will stop the project.

AND

I am familiar with the published guidelines for the ethical treatment of human subjects associated with my particular field of study.

### **Statement of Agreement:**

By electronically signing this application package, I certify that I am willing to conduct and /or supervise these activities in accordance with the guidelines for human subjects in research. Further, I certify that any changes in procedures from those outlined above or in the attached proposal will be cleared through the IRB.

*If the Principal Investigator is a student, the electronic signature of the Faculty Advisor certifies: 1) Agreement to supervise the student research; and, 2) This application is ready for IRB review. The Student is the "Principal Investigator". The Faculty Research Advisor is the "Advisor". Designees may not sign the package. It is the student's responsibility to contact their Faculty Research Advisor when the study is ready for his/her signature.*

- I certify the information provided in this application is complete and correct
- I understand that I have ultimate responsibility for the conduct of the study, the ethical performance of the project, the protection of the rights and welfare of human subjects and strict adherence to any stipulations imposed by the IRB.
- I agree to comply with all FHSU policies, as well as all federal, state and local laws on the protection of human subjects in research, including:
  - Ensuring all study personnel satisfactorily complete human subjects in research training

- Performing the study according to the approved protocol
- Implementing no changes in the approved study without IRB approval
- Obtaining informed consent from subjects using only the currently approved consent form
- Protecting identifiable health information in accordance with HIPAA Privacy rule
- Promptly reporting significant or untoward adverse effects to the IRB

## Description of Project

Completely describe the research project below. Provide sufficient information for effective review, and define abbreviations and technical terms. Do NOT simply attach a thesis, prospectus, grant proposal, etc.

A. Project purpose(s):

To compare public and private schools across 3<sup>rd</sup> and 5<sup>th</sup> grade on the math and Reading portions of the Kansas State Assessments.

All data is being collected from the Kansas Department of Education website and has been aggregated into percentages of students who meet standards within each school building. Data is in no way able to be linked to a particular student.

B. Describe the proposed participants (number, age, gender, ethnicity, etc)

C. What are the criteria for including or excluding subjects? Are any criteria based on age, gender, race, ethnicity, sexual orientation, or origin? If so, justify. School will be chosen based on them having students that fall into one of the two grades.

D. Population from which the participants will be obtained:

General Populations:

- Adult students (18-65 years) on-campus  
 Adults (18-65 years) off-campus

- FHSU Students\*  
 FHSU Employees\*

- International Research Population \*

Protected Populations\*

- Children (Less than 18 Years)  
 Elderly (65+ Years)  
 Prisoners  
 Wards of the State  
 Pregnant Women  
 Fetuses

Vulnerable Population\*

*Vulnerable to coercion  
 Vulnerable to influence  
 Economically disadvantaged  
 Educationally disadvantaged  
 Mentally disabled*

\*APPROPRIATE ATTACHMENTS MUST BE INCLUDED IN THE  
APPLICATION PACKAGE

E. Recruitment Procedures: Describe in detail steps used to recruit participants.  
Participants will not be recruited

F. Describe the benefits to the participants, discipline/field, and/or society for completing the research project.

This study may give a fresh and more complete look at the educational differences between the two types of schools.

G. Describe the potential risks to participants for completing the research project. *A risk is a potential harm that a reasonable person would consider important in deciding whether to participate in research. Risk can be categorized as physical, psychological, social, economic and legal, and include pain, stress, invasion of privacy, embarrassment or exposure of sensitive or confidential information. All potential risks and discomforts must be minimized to the greatest extent possible by using appropriate monitoring, safety devices and withdrawal of a subject if there is evidence of a specific adverse event.*

There are no risks to any participants because all data is being collected from an archival source, and no individual will be contacted or identifiable.

H. Describe the follow up efforts that will be made to detect any harm to subjects, and how the IRB be kept informed. *Serious adverse or unexpected reactions or injuries must be reported to the IRB within 48 hours. Other adverse events should be reported within 10 days.*

No follow up will be necessary because there are no participants directly involved.

I. Describe the procedures used in the research project (in detail, what will all participants experience during the research project):

There are no participants directly involved.

J. List all measures/instruments to be used in the project, include citations and permission to use (if measure/instrument is copyrighted) if needed or if it will be changed for this study. Attach copies of all measures:

- K. Describe in detail how confidentiality will be protected before, during, and after information has been collected?
- L. Data: How will the data be stored? When will the data be destroyed? Who will have access to the data? If audio or video recordings are used, how will they be kept confidential?
- M. Informed Consent: Describe in detail the **process** for obtaining consent. *If non English speaking subjects are involved, describe how consent will be obtained.*
- N. If informed consent is to be waived or altered, complete Supplemental: Consent Waiver Form
- O. If written documentation of consent is to be waived, complete Supplemental: Documentation Waiver Form
- N. Explain Debriefing procedures/end of study information that will be given to all participants.
- O. Emergencies. How will emergencies or unanticipated adverse events related to the research be handled if they arise?
- P. Will information about the research purpose and design be held from subjects? If yes, justify the deception.
- R. If the research involves protected health information, it must comply with the HIPAA Privacy Rule.
- Do you plan to use or disclose identifiable health information outside FHSU?  
*If yes, the consent form must include a release of protected health information.*
  - The IRB may make a waiver of authorization for disclosure if criteria are met under the HIPAA Privacy Rule.  
*If a waiver of authorization is being requested, the researcher must contact the IRB chair prior to submitting this application.*
  - Will the protected health information to be used or disclosed be de identified or will a limited data set be used or disclosed?
- S. Each individual with a personal financial interest or relationship that in the individual's judgment **could reasonably appear to affect or be affected by the proposed study** involving human subjects should attach a Supplemental Form:

Conflict of Interest. It is unnecessary to report any financial interests or relationships that do **not** reasonably appear to affect or be affected by the proposed study.

**Definitions:**

*“Conflict of interest”* occurs when an independent observer may reasonably question whether an individual's professional actions or decisions are influenced by considerations of the individual's private interests, financial or otherwise.

Conflicting financial interests do not include:

- Salary and benefits from Fort Hays State University;
- Income from seminars, lectures, teaching engagements, or publishing sponsored by federal, state, or local entities, or from non-profit academic institutions, when the funds do not originate from corporate sources;
- Income from service on advisory committees or review panels for governmental or non-profit entities;
- Investments in publicly-traded mutual funds;
- Gifts and promotional items of nominal value; and
- Meals and lodging for participation in professional meetings.

*“Principal investigator or other key personnel”* means the principal investigator and any other person, including students, who are responsible for the design, conduct, analysis, or reporting of research involving human subjects.



<p><i>The decision to exempt a study from IRB review must be made by someone other than the researcher associated with the project.</i></p>	<p><b>Fort Hays State University Institutional Review Board Office for Scholarship and Sponsored Projects</b> 600 Park Street Hays, KS 67601 (785) 628-4349 E- mail: <a href="mailto:lp Paige@fhsu.edu">lp Paige@fhsu.edu</a></p>
<p><b>Request for Exemption</b> From IRB Review</p>	

<p><b>Study Title:</b> Private vs. Public Schools: A Comparison of the Percentage of Students Who Meet State Standards in Reading and Mathematics.</p>		
<p><b>Name of Principal Investigator:</b> Kyle Carlin</p>		
	<p>Departments with Human Subjects/Ethics Review Committees</p>	<p>Departments without Human Subjects/Ethics Review Committees</p>
<p>Departmental Representative (Department</p>	<p>Departments with Human Subjects/Ethics Review Committees</p>	
<p>Date of Departmental</p>		
<p>Committee Members:</p>		
<p>Votes for:</p>		
<p>Votes Against:</p>		
<p>Abstained:</p>		
<p></p>		

<b>EXEMPT CRITERIA</b>
<p>Research must be "<b>minimal risk</b>" to qualify for an Exemption. Minimal risk means that the probability and magnitude of harm or discomfort anticipated in the research are not greater than those ordinarily encountered in daily life or during the performance of routine physical or psychological examinations or tests.</p>
<p><b>A. Risk Level:</b> Does this research pose more than minimal risk to participants? <input type="checkbox"/> Yes* <input checked="" type="checkbox"/> No * Greater than minimal risk research must be reviewed by the university IRB. <u>Please request a full IRB review.</u></p>
<p><b>B. Public Data:</b> Will the study use archived data, documents, records or biological specimens? <input checked="" type="checkbox"/> Yes* <input type="checkbox"/> No * Provide Source: *When were these data collected: Spring 2009</p>

**C. Special Subject Populations** (generally not eligible for exemption, unless the study qualifies for an educational exemption).

1. Minors (under 18 years of age). Not applicable to educational research. **Not exempt.**
2. Fetuses or products of labor and delivery
3. Pregnant women (in studies that may influence maternal health)
4. Prisoners
5. Wards of the state
6. Elderly (65+)
7. Individuals with a diminished capacity to give informed consent

Does the study include any special subject populations?  Yes\*  No

\* Indicate population:

**E. Categories of Sensitive Information** (generally not eligible for exemption)

1. Information relating to sexual attitudes, preferences, or practices.
2. Information relating to the use of alcohol, drugs or other addictive products.
3. Information pertaining to illegal conduct.
4. Information that if released could reasonably damage an individual's financial standing, employability, or reputation within the community.
5. Information that would normally be recorded in a patient's medical record and the disclosure of which could reasonably lead to social stigmatization or discrimination.
6. Information pertaining to an individual's psychological well-being or mental health.
7. Genetic information.

Does the study include collection of any sensitive information?  Yes\*  No

**F. Exempt Categories (45 CFR 46.101(b))** Check Category that best describes the study:

(1) Research conducted in established or commonly accepted educational settings, involving normal educational practices, such as (i) research on regular and special education instructional strategies, or (ii) research on the effectiveness of or the comparison among instructional techniques, curricula, or classroom management methods.

**This applies only Normal educational research in regular educational settings.**

(2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless:

(i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation. **This exemption does not apply to children or prisoners**

(3) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior that is not exempt under paragraph (b)(2) of this section, if:

(i) the human subjects are elected or appointed public officials or candidates for public office; or (ii) federal statute(s) require(s) without exception that the confidentiality of the personally identifiable information will be maintained throughout the research and thereafter.

**This applies only to elected officials, not officials appointed via a regular hiring process**

(4) Research involving the collection or study of existing data, documents, records, pathological specimens, or diagnostic specimens, if these sources are publicly available or if the information is recorded by the investigator in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects.

**All data must exist when the application is submitted (if data will be used that is collected or will be collected for clinical purposes, complete the IRB Review Form)**

(5) Research and demonstration projects which are conducted by or subject to the approval of department or agency heads, and which are designed to study, evaluate, or otherwise examine:

(i) Public benefit or service programs; (ii) procedures for obtaining benefits or services under those programs; (iii) possible changes in or alternatives to those programs or procedures; or (iv) possible changes in methods or levels of payment for benefits or services under those programs.

**This applies only to research and demonstration projects under the Federal Social Security Act. This does NOT apply to state or local public service projects that are not pursuant to the Social Security Act.**

(6) Taste and food quality evaluation and consumer acceptance studies, (i) if wholesome foods without additives are consumed or (ii) if a food is consumed that contains a food ingredient at or below the level and for a use found to be safe, or agricultural chemical or environmental contaminant at or below the level found to be safe, by the Food and Drug Administration or approved by the Environmental Protection Agency or the Food Safety and Inspection Service of the U.S. Department of Agriculture.

**PROCESS:**

This form should be completed and attached to the Application Package for Human Subjects Research. All components must be included:

- Application
- Informed Consent Process and Documentation (if needed)
- Recruitment materials
- Any research instruments that will be used for the study (interviews, questionnaires, advertisements) If the study is designed to develop instruments and test the instruments for validity, state this in the Research Summary. Provide a copy of the materials to the OHRPP once developed using an Amendment Form.

Departments with Human Subjects/Ethics Review Committees:

The Chair of the Committee provides the completed form to the Principal Investigator to upload.

Departments without Human Subjects/Ethics Review Committee:

The Department Chair provides the completed form to the Principal Investigator to upload, and recommends the study be considered for exemption.

<b>ELECTRONIC SIGNATURES</b>
<b>PRINCIPAL INVESTIGATOR</b>
Your electronic signature means that the research described in the application and supporting materials will be conducted in full compliance with FHSU policies, as well as federal, state, and local laws on the protection of human subjects in research. You have the ultimate responsibility for the conduct of the study, the ethical performance of the project, and the protection of the rights and welfare of human subjects. In the case of student protocols, the faculty supervisor and the student share responsibility for adherence to policies.
<b>FACULTY RESEARCH ADVISOR- REQUIRED FOR STUDENT RESEARCH</b>
Your electronic signature certifies that you have read the research protocol submitted for IRB review, and agree to supervise these activities in accordance with the guidelines for human subjects in research. Although the Principal Investigator has ultimate responsibility for the conduct of the study, the ethical performance of the project, the protection of the rights and welfare of human subjects and strict adherence to any stipulations imposed by the IRB, faculty who are serving as the Principal Investigator's Faculty Advisor are responsible for providing appropriate supervision.
<b>DEPARTMENT HUMAN SUBJECTS/ETHICS REVIEW COMMITTEE CHAIR REQUIRED FOR FACULTY OR STUDENT RESEARCH FOR DEPARTMENTS WITH HUMAN SUBJECTS/ETHICS REVIEW COMMITTEES</b>
Your electronic signature certifies that the Committee has reviewed the application and all supporting documents pertaining to this research protocol. The Committee has determined that the proposed activity meets the criteria for exemption from IRB review.
<b>SIGNATURE OF DEPARTMENT CHAIR REQUIRED FOR FACULTY RESEARCH FOR DEPARTMENTS WITHOUT HUMAN SUBJECTS /ETHICS REVIEW COMMITTEES</b>
Your electronic signature affirms you have been informed of the research, and recommend that this study be considered for exemption.

Appendix B  
Thesis Coding Sheet

Type:	County Des:	W/Priv:	Per Wh:	Per EcD:	
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### Thesis Coding Sheet

<b>School Name:</b>			<b>School Type:</b>		<b>Subject Number:</b>	
<b>City:</b>	<b>County:</b>	<b>Designation:</b>				
<b>Building Population:</b>		<b>District:</b>	<b>Dist. Pop.:</b>	<b>County with Priv school: Y N</b>		
<b>Race/Ethnicity</b>		<b>Highly Qualified Ed.</b>	<b>Other Demographics</b>			
<b>African Americans:</b>		<b>Elem:</b>	<b>Male:</b>			
<b>Hispanics:</b>		<b>Eng Lang Arts:</b>	<b>Female:</b>			
<b>Whites:</b>		<b>ESL:</b>	<b>Economically Disadvantaged:</b>			
<b>Other:</b>		<b>Fine Arts:</b>	<b>English Language Learners:</b>			
<b>Students with Disabilities:</b>						
<b>3rd Grade Reading (2009)</b>						
<b>Exemplary</b>	<b>Exceeds Standards</b>	<b>Meets Standards</b>	<b>Approaches Standards</b>	<b>Academic Warning</b>	<b>Not Tested</b>	
<b>3rd Grade Math (2009)</b>						
<b>Exemplary</b>	<b>Exceeds Standards</b>	<b>Meets Standards</b>	<b>Approaches Standards</b>	<b>Academic Warning</b>	<b>Not Tested</b>	
<b>5th Grade Reading (2009)</b>						
<b>Exemplary</b>	<b>Exceeds Standards</b>	<b>Meets Standards</b>	<b>Approaches Standards</b>	<b>Academic Warning</b>	<b>Not Tested</b>	
<b>5th Grade Math (2009)</b>						
<b>Exemplary</b>	<b>Exceeds Standards</b>	<b>Meets Standards</b>	<b>Approaches Standards</b>	<b>Academic Warning</b>	<b>Not Tested</b>	

## VITA

Kyle D. Carlin

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**Education:** Associate of Arts Degree, 2006  
Fort Hays State University, B.A., Psychology, 2009  
Fort Hays State University, Master of Science, 2010  
Fort Hays State University, Education Specialist, 2011

Field Study: Fort Hays State University, 2009-2011

**Professional Membership:**

National Association of School Psychologists (NASP)

Kansas Association of School Psychologists (KASP)

**Professional Experience**

School Psychology Practicum: USD 208 – Trego County Schools

August 2010 - May 2011

**Field Study** typed by Kyle Carlin using MS Word on an Acer computer and printed on an HP LaserJet P1404n printer.