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A Comparison of the Academic Achievements of Intermediate Students Based on  
Socioeconomic Status and Participation in an After-School Program

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A dissertation

presented to

the faculty of the Department of Educational Leadership and Policy Analysis

East Tennessee State University

In partial fulfillment

of the requirements for the degree

Doctor of Education

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by

Anthony Fayne Maxwell

August 2007

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Dr. Jean Hamm

Dr. James Lampley

Keywords: 21st Century Community Learning Center, Socioeconomic Status, Kentucky Core  
Content Test, Commonwealth Accountability Testing System (CATS)

## ABSTRACT

### A Comparison of the Academic Achievements of Intermediate Students Based on Socioeconomic Status and Participation in an After-School Program

by

Anthony Fayne Maxwell

The purpose of this study was to determine what, if any, associations exist between students' academic success on achievement tests and the predictor variables of students' socioeconomic status, participation in an after-school program, and gender. Middlesboro Intermediate School contains a high number of students who participate in the federal free- or reduced-price school meals program, as well as attend the after-school program. This study factored in the student's academic success on the Kentucky Core Content Test and the socioeconomic status of students based on their qualification for the federal free- or reduced-cost school meals program, their participation in the after-school program, and their gender. This study was based on test results for students in the fourth grade in the areas of math, science, reading, writing on demand, and writing portfolio, as well as the test results for the fifth-grade students in the areas of arts and humanities, practical living-vocational studies, social studies, math, and reading. The entire school population was included except for students never attending the after-school program and students receiving testing modifications on the Kentucky Core Content Test.

Based on the analysis of the data and findings of this study, the implementation of an after-school program appears to have benefits for all students regardless of socioeconomic status; however, student success differs by content areas and the number of days of attendance in the after-school program.

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## CHAPTER 1

### INTRODUCTION

*“If you have ever been poor, you remain poor at heart all your life”*

Arnold Bennett (1867-1931)

*(Concise Columbia Dictionary of Quotations, 1989).*

Middlesboro Independent School District is a rural district located in the heart of the Appalachian Mountains in Middlesboro, Kentucky. The area has a high percentage of low-income households with 78% of the students within the district receiving free- or reduced-priced meals (Kentucky Department of Education, 2006c), 25% of the residents living below the poverty line, and 38.5% of the adult residents having less than a high school diploma (U.S. Census Bureau, 2000).

On any given school day, approximately 1,643 students in grades kindergarten through 12 arrive at a Middlesboro independent school to receive their formal education. Students within this school district come from a variety of backgrounds. A high percentage of students receiving free- or reduced-priced meals clearly defines the socioeconomic status of this student population. Of the student population, approximately 240 attend the Middlesboro Intermediate School. This school houses grades four and five. This school is a key to accountability as determined by the Kentucky Education Reform Act because of the quantity of testing in which the students participate during grades four and five (Kentucky Department of Education, 2006c).

During the 2004-2005 testing cycle, the students participated in a battery of testing that is part of the Commonwealth Accountability Testing System (CATS). All fourth-grade students in this building, as well as those throughout the commonwealth of Kentucky, are tested in the areas of reading, writing, science, and math. The writing component of the assessment consists not only of a writing-on-demand section but also of a writing portfolio that is a collection of the students' work. All fifth-grade students in this building, as well as those throughout the

commonwealth of Kentucky, are tested in the areas of arts and humanities, math, social studies, practical living-vocational studies, and reading. The testing consists of multiple choice as well as open-response questions (Kentucky Department of Education, 2006c).

Middlesboro Intermediate School is fortunate to offer a variety of after-school activities; many are funded through the Extended School Services, whereas others are courtesy of a 21<sup>st</sup> Century Learning Grant. The study's population consisted of 86 fourth-grade students and 103 fifth-grade students who participated in the after-school program. Not all of the students enrolled in Middlesboro Intermediate School participate in the after school program. This comprised the entire student body who participated in the after-school program and who completed the assessment with the exception of individuals with testing modifications.

#### *Purpose of the Study*

The purpose of this study was to determine what, if any, associations exist between students' academic success on achievement tests and the predictor variables of students' socioeconomic status, participation in an after-school program, and gender. Middlesboro Intermediate School contains a high number of students who participate in the federal free- or reduced-price school meals program. A large number of students in this school also participate in the 21st Century after-school program. The researcher factored in the socioeconomic status of students based on their qualification for the federal free- or reduced-priced school meals program, their participation in the after-school program, gender, and their academic success on the commonwealth's assessment test. The criterion for receiving free- or reduced-priced meals is based on the income of the family. The guidelines are arranged by household size with income guidelines broken down annually, monthly, and weekly (See Table 1).

Table 1

*Income Chart for Free- and Reduced-Price Meals*

Household Size	Annual Income	Monthly Income	Weekly Income
1	\$18,130	\$1,511	\$349
2	24,420	2,035	470
3	30,710	2,560	591
4	37,000	3,084	712
5	43,290	3,608	833
6	49,580	4,132	954
7	55,870	4,656	1,075
8	62,180	5,180	1,196
*For each additional family member, add	+6,209	+525	+121

Note. From "Letter to Households: National School Lunch Program/School Breakfast Program," by D. Mayes, Director Middlesboro, Kentucky, School Food Service. (2006).

These criteria also allow others to qualify, including foster children (regardless of foster parents' income), migrant students, homeless students, students from Women, Infants, and Children (WIC) households, and individuals benefiting from food stamps or Kentucky's Transitional Assistance Program.

*Research Questions*

The following research questions were formulated to guide the study:

1. To what extent, if any, are participation in the free- and reduced-cost meals program, participation in the after-school program, and gender associated with fourth-grade writing on demand and writing portfolio classifications?

2. To what extent, if any, are socioeconomic status and participation in an after-school program associated with fourth-grade test scores for reading, science, and math?
3. To what extent, if any, are gender and participation in an after-school program associated with fourth-grade test scores for reading, science, and math?
4. To what extent, if any, are socioeconomic status and participation in an after-school program associated with fifth-grade test scores for arts and humanities, math, social studies, practical living-vocational studies, and reading?
5. To what extent, if any, are gender and participation in an after-school program associated with fifth-grade arts and humanities, math, social studies, practical living-vocational studies, and reading test scores?

#### *Background of the Study*

In 1999, an estimated 85% of the student population at Middlesboro Intermediate School was classified as receiving free- or reduced-price meals. The city of Middlesboro is home to 14 housing projects. According to the U. S. Census Bureau (2000), the city itself had 720 families in poverty from a 2000 Census population of 10,384. The 2000 Census included the following population status as shown in Table 2.

Table 2

*Population Status of Middlesboro, Kentucky, for 2000 Census*

Status	#	%
In Households	10,207	100
Householder	4,443	44
Spouse	1,917	19
Child	2,953	29
with own children under 18 years	2,121	21
Other Relatives	642	6
Under 18 years	285	3
Nonrelatives	252	2
Unmarried partner	143	1

Note. From U. S. Census Bureau (2000).

The demographics of the 4,443 households in Middlesboro, Kentucky, are shown in Table 3.

Table 3

*Demographics of Households in Middlesboro, Kentucky, for 2000 Census*

Status	#	%
Family Households (families)	2,929	22
With own children under 18 years	1,264	10
Married-couple family	1,917	15
With own children under 18 years	755	6
Female householder, no husband present	815	6
With own children under 18 years	434	3
Nonfamily households	1,514	12
Householder living alone	1,401	11
Householder 65 years and over	631	5
Households with individuals under 18 years	1,452	11

Note. From U. S. Census Bureau (2000).



When looking at the population and considering socioeconomic status, one must also note the educational attainment of the population of 25 years and over. This information is shown in Table 4 (U. S. Census Bureau, 2000).

Table 4

*Education Attainment of Population 25 Years and Older in Middlesboro, Kentucky*

Education Attainment	# Older Than 25 Years	%
Less than 9th grade education	1,354	19
9th to 12th grade, no diploma	1,376	19
High school graduates	2,333	33
Some college; no degree	1,013	14
Associates degree	220	3
Bachelor's Degree	402	6
Graduate or professional degree	386	5
Total population 25 years and over	7,084	
Percentage of adults over the age of 18 with a high school or higher graduates		61.5%
Percentage of adults over the age of 18 with Bachelor's degree or higher		11.1%

Note. From U. S. Census Bureau (2000).

U.S. Census Bureau (2000) reported the following for the year 2000: The number of grandparents living in households with one or more of their own grandchildren under 18 years was 232; the number of grandparents responsible for grandchildren was 132. Consequently, 56.9% of the grandparents residing in homes with their grandchildren were the responsible caregivers for their grandchildren in this community.

No greater factor impacts socioeconomic status than that of income. U.S. Census Bureau (2000) reported the following information for the year 1999 as shown in Table 5 concerning income and poverty for residents of Middlesboro, Kentucky:

Table 5

*Economic Status in 1999 for Residents in Middlesboro, Kentucky*

Economic Status	# of Residents	%
<u>Income:</u>		
Less than \$10,000	1,278	28
\$10,000 to \$14,999	468	10
\$15,000 to \$24,999	996	22
\$25,000 to \$34,999	542	12
\$35,000 to \$49,999	613	14
\$50,000 to \$74,999	402	9
\$75,000 to \$99,000	103	2
\$100,000 to \$149,000	60	1
\$150,000 to \$199,000	10	1
\$200,000 or more	<u>50</u>	<u>1</u>
Total Households	4,522	100
*Median household income: \$19,565		
<u>Poverty Status in 1999:</u>		
Families:	720	
with related children under 18 years	565	
with related children under 5 years	215	
with female householder, no husband present	461	
with related children under 18 yrs	410	
with related children under 5 yrs	162	
Individuals:	2,885	
18 years and over	1,910	
65 years and over	265	
Related children under 18 years	959	
Related children ages 5 to 17	690	
Unrelated individuals 15 years and over	826	

Note. From U. S. Census Bureau (2000).

*Significance of the Study*

The fact that a large population of students in Middlesboro Intermediate School qualifies for and participates in the federal free- or reduced-price meals program based on their

socioeconomic status justified the need for a study to reveal any possible associations to academic achievement. It is important to understand the association between socioeconomic status and the academic achievement of students.

This study also focused on the association, if any, between participation in an after-school program and the academic success of fourth- and fifth-grade students. The after-school program is currently funded by a grant that will expire in 2007. The findings from this study might offer justification for continued support at the local level for a program such as the current after-school program.

### *Definitions of Terms*

The following are definitions of terms used in this study:

1. *Commonwealth Accountability Testing System (CATS)*: This is the assessment system for all kindergarten- through 12th-grade schools in the commonwealth of Kentucky. This testing system begins in third grade where students take the Comprehensive Test of Basic Skills (CTBS/5). The McGraw-Hill Corporation produces this multiple-choice assessment for use in a number of states nationwide (Kentucky Department of Education, 2006b).
2. *National School Lunch Program (NSLP)*: This is a federally assisted meal program that provides low cost or free meals to eligible students. It is sometime referred to as the free- or reduced-price meals program. Free meals are offered to those students whose family incomes are at or below 130% of the poverty level; reduced-price meals are offered to those students whose family incomes are between 130% and 185% of the poverty level (NAEP, 2006).
3. *21st Century Community Learning Center*: This program supports the creation of community learning centers that provide academic enrichment opportunities for children, particularly students who attend high-poverty and low-performing schools. The program helps students meet state and local standards in core academic subjects

- such as reading and math, offers students a broad array of enrichment activities that can complement their regular academic studies, and offers literacy and other educational services to the families of participating children (U. S. Department of Education, 2003a).
4. *Socioeconomic Status*: This is defined as an individual or group's position within a hierarchical social structure. Socioeconomic status depends on a combination of variables including occupation, education, income, wealth, and place of residence. Sociologists often use socioeconomic status as a means of predicting behavior (Hirsch, Kett, & Trefil, 2002).
  5. *Extended School Services (ESS)*: Extended School Services is a proactive program designed to assist individual students who are having difficulty in one or more content areas. ESS funds are allocated to every school district for the purpose of operating a program for students having short- or long-term academic difficulties. ESS offers extra instructional time outside regular school hours and may take a variety of formats including after school- or before-school activities, evening sessions, Saturday learning opportunities, summer programs, and intercessions. Districts also have the opportunity to request a waiver to offer ESS services during the school day. There is close collaboration between the regular day and the ESS program to best meet the students' needs. ESS programs being implemented across the state offer a wide array of curricular activities and instructional formats. Many of these programs are designed to gain the interest of and inspire motivation in students (Kentucky Department of Education, 2006a, n. p.).
  6. *Intelligence Quotient (IQ)*: As determined by a subject's responses to a series of test problems, this is a number intended to represent a measure of relative intelligence. The IQ was originally computed as the ratio of a person's mental age to his or her chronological (physical) age, multiplied by 100, but use of the concept of mental age has been largely discontinued, and IQ is now generally assessed on the basis of the

statistical distribution of scores. The most widely used intelligence tests are the Stanford-Binet test for children and the Wechsler Test, originally for adults but now also for children. A score above 130 is considered to reflect “giftedness,” while a score below 70 is considered to reflect mental impairment or mental retardation. Intelligence tests have provoked great controversy, particularly about what kinds of mental ability constitute intelligence and whether IQ adequately represents these abilities, and about cultural and class bias in test construction and standardization procedures (Encyclopedia Britannica Online, 2006, n. p.).

### *Delimitations and Limitations*

The study was delimited by a number of factors. The population included all students at the intermediate school who took the commonwealth's exam during the 2005-2006 school year, with the exception of students with special needs. Students with special needs were not included because of the modifications that are required as a result of their individualized education plans. The results of this study may not be generalized to any other populations.

### *Overview of the Study*

Chapter 1 provides an introduction to the area that is the focus of the study. It includes a statement of the problem, the research questions and null hypotheses, the background and significance of the study as well as definitions, delimitations, and limitations of the study. Chapter 2 provides a review of literature relating to the study. Chapter 3 presents the research methodology of the study, research design, population, instrumentation, and data analysis procedures. Chapter 4 presents findings from the research conducted, and chapter 5 provides a summary of the findings, conclusions, and recommendations for practice and further research.

## CHAPTER 2

### REVIEW OF LITERATURE

There are five sections included in this review of literature to provide the reader with a greater understanding of the topic: (a) discussion of factors that make up socioeconomic status, (b) impact of low socioeconomic status on children, (c) accountability in Kentucky, (d) socioeconomic status and academic achievement, and (e) after-school programs. Even though a great number of articles, studies, and other literature exists on the topics of academic achievement, after-school programs, and socioeconomic status, efforts were made to obtain information relative to the previously mentioned areas with particular attention given to literature that offers insight into the interconnectedness of these topics.

#### *Discussion of Factors That Make up Socioeconomic Status*

According to a public interest paper by the American Psychological Association (2000) titled "Resolution on Poverty and Socioeconomic Status," during the past 20 years, an annual earning discrepancy has continued to grow with the bottom 20% of the population's income (the deprived) being down 6% and the top 20% of the population's income (the wealthy) up 30%. According to the U. S. Census Bureau (2000), "in 1998, 12.7% of all people in the United States were living in poverty" (n. p.).

When socioeconomic issues are mentioned, people usually think of finances; however, socioeconomic status is a complex qualifier with many attributes. These attributes include, but are not limited to, occupational status, family income, parental education level, living needs (rent, medical, etc), number of children in the home, number of parents in the home, and the presence of a grandparent. Several analyses have indicated that the relationship between family income and parental education often depends on the number of siblings present in the household.

Duncan and Magnuson (2005) listed the following as indicators that could impact an individual's socioeconomic status:

1. mother being a dropout;
2. having a single parent;
3. having no or a low-prestige job;
4. living in a low-quality neighborhood;
5. having three or more siblings;
6. living in residential instability;
7. spanking;
8. having access to few children's books;
9. having had a low birth weight;
10. having had a teen mother; or
11. having a mother who is depressed (p. 38).

Socioeconomic status is classified by financial capital (material resources), human capital (nonmaterials resources, such as education), social capital (resources achieved through social connections), or a combination of these three principal categories. Being in a single parent household has been a common predictor of poverty level (Rusk & Mosley, 1994).

An understanding of the history of socioeconomic factors is important in order to comprehend the impact that a low socioeconomic classification has on society. Tarter and Hoy (2004) reinforced findings that social class and school outcomes were interconnected and have been related to social and economic community resources. As cited in Tarter and Hoy, Coleman examined the extent that a home's social irregularities have been brought to school, a place trying to maintain and establish equalities. Tarter and Hoy pointed out that even though schools were attempting to offer a quality education to all, students came to these institutions with great diversity that often has been caused by varying socioeconomic status. Tarter and Hoy reported on the importance of the educational level of parents and its association with students' success: The higher the educational level attained by the parent(s) the more likely it was that neither the

student nor the family would live in poverty.

After stating, "The impact of poverty on young children is significant and long lasting" (n. p), the American Psychological Association (2000) added:

Poverty is associated with substandard housing, homelessness, inadequate child care, unsafe neighborhoods, and underresourced schools and poor children are at greater risk than higher income children for a range of problems, including detrimental affects on IQ, poor academic achievement, poor socioemotional functioning, developmental delays, behavioral problems, asthma, poor nutrition, low birth weight and pneumonia. (n. p.)

### *Impact of Low Socioeconomic Status on Children*

Duncan and Magnuson (2005) acknowledged that having economic assets has afforded individuals and families access to appropriate healthcare, nutrition, supportive learning situations, stable homes, and childcare, as well as additional enriching experiences. With this stated, the impact of socioeconomic status of the home and family on the student has been evident. In this section, the literature addresses both the family and the home in regard to the role that socioeconomic status plays in students' achievement.

Henniger (2004) stated that children in poverty were apt to be exposed to situations such as insufficient nutrition, environmental toxins, fewer interactions with adults, physical abuse, limited childcare provisions, or drug and alcohol abuse. Duncan and Magnuson (2005) noted that there were several disadvantages that often plagued families in poverty including large family size, residential instability, harsh discipline, lack of educational resources, low birth weight, young parents, and depression.

As educators have said for years, the home is the first school; having a home that is afforded the luxury of resources, such as books, should give students a head start on their education. Coleman and Kahlenberg (2002) stated that the learning environment within the home has had a great influence on the academic success of students. Students from home environments with a large number of books, newspapers, and learning opportunities have regularly achieved greater academic success than have those from homes lacking such resources (Duncan & Magnuson, 2005). Factors such as socioeconomic status, homes with rich print



environments, and participation in early childhood programs have benefited reading readiness and academic success.

Duncan and Magnuson (2005) suggested that if family income grew, chances for academic success would also increase. Perhaps the increase in income could provide families with resources to purchase materials or offer experiences that might augment the education of the children. Borman and Overman (2004) concluded that schools that offered support and guidance for students in high poverty homes also were more likely to create successful students.

Parental human capital is a term that includes parents' abilities using either formal or informal skills that make the parent marketable. Additional schooling or training could lead to greater demand, thus better earnings and employment. According to Duncan and Magnuson (2005), psychological status also has played a role in many families in poverty.

One of the first researchers to study the relationship between family and education was James Coleman (Kahlenberg, 2001). Coleman stated that a student's relatives have had an important role to play in the academic potential of a child and that the amount of money spent on formal education did not appear to have a direct impact on academic success. Coleman pointed out that heterogeneity of family educational backgrounds has had a great impact on students from low socioeconomic backgrounds and has had no effect on students from high socioeconomic backgrounds. Kahlenberg agreed with these findings that families bring diversity to the educational setting and in order to achieve student success, teachers must build relationships with parents (Kahlenberg). According to Bradley and Corwyn (2002):

The relationship between socioeconomic status and child cognitive and language competence via the stimulation found in the home appear to be a complex one that is associated with both the degree of crowding in the residence and the numbers of siblings present. (p. 11)

Bradley and Corwyn further stated, "The distresses and distractions connected with crowding result in fewer and less rich exchanges between parents and children. Having more siblings results in less allocation of time and attention to each child" (p. 11).

Furthermore, parents of low socioeconomic status were found to be "less likely to

purchase reading and learning materials for their children, less likely to take their children to educational and cultural events, and less likely to regulate the amount of television their children watched" (Bradley & Corwyn, 2002, p. 11). As a result, according to Battin-Pearson et al. (as cited in Bradley & Corwyn), "Low socioeconomic status children will frequently experience school failure (even in the early grades) that moves them on a trajectory of either conduct problems or withdrawal behaviors" (p. 11.).

As noted by Bradley and Corwyn (2002), associations with socioeconomic status have reflected "parental attitudes, expectations, and styles of interacting with children" (p. 11.). Emphasis was given to verbal skills, independence, achievement, and creativity. According to Bradley and Corwyn:

High socioeconomic status parents engage children in more conversations, read to them more, and provide more teaching experiences. Their conversations are richer, contain more contingent responsiveness, and include more efforts to elicit children's speech from infancy through adolescence (Shonkoff & Phillips, as cited in Bradley & Corwyn, p. 11).

Additionally, parents from lower socioeconomic status have been less likely to advocate or provide enrichment activities for their children (Entwisle, Alexander, & Olson, 2005).

Maggi, Hertzman, Kohen, and D'Angiulli (2004) reported an association between the perceived relationship of the home life, family structure, and neighborhood socioeconomic status and the growth of reading and math skills. In neighborhoods with higher socioeconomic status, students were less likely to display cognitive delays and or developmental vulnerability.

It has been documented that parents' occupational status was associated with their parenting skills (Bradley & Corwyn, 2002). Bradley and Corwyn cited several researchers who noted that what parents experienced at work, they incorporated into their style of parenting. In addition, Persell (2000) found that mothers who worked in occupations with a variety of tasks and problem-solving opportunities provided more warmth and support and a greater number of stimulating materials. In addition, their children manifested more advanced verbal competence.

According to Entwisle et al. (2005), although parents' education and the level of educational attainment were most strongly reflected by the family's socioeconomic status, the

family's attitude and the child's personality also affected academic success. Factors such as community, race, socioeconomic status, and gender of first graders have produced the ability to predict their educational status at age 22 (Entwisle et al.).

Parents' expectations and plans as well as their own education and relationships with educators have been perceived as having a great impact on students. Entwisle et al. (2005) found that parents or guardians from low socioeconomic status were often at a disadvantage in these areas.

Even though the review of literature indicated the importance of socioeconomic factors and status on the academic achievement of children, perhaps more important for students' achievement in school would be the expectations placed on the students by their families.

#### *Accountability in Kentucky*

The beginning of the current accountability system in Kentucky dates back to the *Kentucky Education Reform Act* (KERA) of 1992. With KERA, the Kentucky Instructional Results Information System (KIRIS) was designed to determine the effectiveness of instructional programs across the commonwealth. A program was put in place to reward schools making progress as well as to offer assistance to schools not maintaining results or meeting goals (Kentucky Department of Education, 2006b).

Before the *Kentucky Education Reform Act* of 1990, the commonwealth ranked in the bottom 25% on every educational quality indicator. In functional literacy, Kentucky's residents have been consistently among the lowest in the nation (Kentucky Department of Education, 2006b). KERA instigated sanctions and rewards many years before the advent of the *No Child Left Behind Act*. KERA also has set a goal to have 100% of students proficient before 2014. According to Hoyt and Murray (2006), KERA has not appeared to be making much progress in achieving equity in educational endeavors as measured on formal state assessments.

KIRIS served the commonwealth amid much criticism, in part, based on the exclusion of a nationally recognized norm-referenced test while at the same time, being shown great respect

for its forward-thinking design. KIRIS was replaced with the Commonwealth Accountability Testing System (CATS) in 1998. CATS included the Comprehensive Test of Basic Skills (CTBS) at the not-tested grades of three, six, and nine. The Kentucky Core Content test has accounted for 95% of the CATS index, while the remaining 5% has been determined by the CTBS results (Kentucky Department of Education, 2006b). Lyons (2004) noted that the majority of schools in Kentucky had outcomes that were inequitable according to the 2001 desegregated accountability assessment results.

The Commonwealth Accountability and Testing Systems (CATS) has been the assessment system for all kindergarten- through 12th-grade schools in the commonwealth of Kentucky. This testing system begins in third grade where students take the Comprehensive Test of Basic Skills (CTBS/5). The McGraw-Hill Corporation has produced this multiple-choice assessment for use in many states nationwide (Kentucky Department of Education, 2006b).

In the fourth grade, the students participate in the Kentucky Core Context Test (KCCT). This assessment has included open-response questions in addition to multiple-choice questions. The fourth-grade assessment has included the following content areas: writing on demand, writing portfolio, reading, science, and math (Kentucky Department of Education, 2006b).

The fourth-grade assessment has included six open-response questions for reading and science, as well as another that is being field-tested for use in the future. The writing section has included the writing portfolio that is a collection of works over time by each student as well as one writing-on-demand prompt. The fifth-grade assessment is similar to the fourth-grade assessment but with different content areas assessed. The fifth-grade content areas have been arts and humanities, math, social studies, practical living-vocational studies, and reading (Kentucky Department of Education, 2006b).

One benefit the commonwealth of Kentucky has had over other states is its size. The commonwealth is not too large; the smaller school population has made scoring open-response questions possible. On the other hand, Kentucky is large enough to have the resources to construct and implement a test designed specifically for the curriculum. According to the

Kentucky Department of Education (2006b), Kentucky assesses more content areas than many states do and does it with a much greater breadth and depth than do most states. Kentucky's educators have been focused on improving instruction in order to produce more successful students. Kentucky's assessment has been constructed for Kentucky's standards. The only portion of the KCCT that has not been created by Kentuckians is the CTBS/5 portion. Kentucky teachers who were recognized as curriculum leaders wrote the test. These teachers were then recommended by administrators to serve on the content advisory committee. Per content area, the content advisory committee might write more than 30 open-response questions as well as over 100 multiple-choice questions. Annually, 20% of the questions are replaced (Kentucky Department of Education, 2006b). According to the Kentucky Department of Education (2006b), West Ed currently serves as the contractor responsible for producing the test. The contractor edits the questions to provide the highest quality assessment. The contractor creates six different forms per content area. Each form has two editions, A and B. Different forms have been used for "scaling" and "linking" the assessment over time. This allows for a check and balance of the assessment (Kentucky Department of Education, 2006b).

The assessment for Kentucky has placed students in four categories: novice (the lowest), apprentice, proficient, and distinguished (the highest). Proficient has been the goal for all schools and students in the commonwealth by 2014. This has been defined as making a score of 100 points out of a possible 140 points. The test was designed using the core content for assessment that includes a portion of what students learn in school (Kentucky Department of Education, 2006a).

Teachers assisting with the creation of the design of the assessment must sign confidentiality documents that guarantee security. Teachers under the direction of the building assessment coordinator administer the test. A scale score of 325 to 800 has been used by Kentucky for all content assessments except writing. This scaling has provided a check-and-balance system over time to ensure validity (Kentucky Department of Education, 2006a).

As stated by the Kentucky Department of Education (2006a), Kentucky has six goals for

learners as established by law:

1. Students shall use basic communication and math skills for purposes and situations they will encounter throughout their lives.
  2. Students shall develop their abilities to apply core concepts and principles from mathematics, the sciences, the arts, the humanities, social studies, and practical living-vocational studies to what they will encounter throughout their lives.
  3. Students shall develop their abilities to become self-sufficient individuals.
  4. Students shall develop their abilities to become responsible members of a family, work group, or community including demonstrating effectiveness in community service.
  5. Students shall develop their abilities to think and solve problems in a variety of situations they encounter in life.
  6. Students shall develop their abilities to connect and integrate experiences and new knowledge from all subject matter fields with what they have previously learned and build on past learning experiences to acquire new information through media sources.
- (n. p.)

Lyons (2004) used the 2001 Kentucky accountability test (e.g. CIDS-5 KCCT) results to determine if there was a significant difference between test scores of students of diverse backgrounds, including disadvantaged students, and their peers. Findings of this study showed results were very different between disadvantaged students and their peers. Lyons' study of 17 states required the disaggregation of data before the implementation of the *No Child Left Behind* Act. Kentucky was one of those 17 states. With the current demands of making Adequate Yearly Progress, the need for knowing the level of students of diverse populations has been greater than ever.

Within the commonwealth of Kentucky, the accountability system has been designed with particular goals and objectives in place to support commonwealth standards, as well as an assessment tool to determine the performance of the students. In addition to this system, there is

a system to recognize progress as well as to identify schools in need (Kentucky Department of Education, 2006a).

### *Socioeconomic Status and Academic Achievement*

“Education can be a great equalizer” (Vasquez, Teferi, & Schicht, 2003, p. 16).

Bradley and Corwyn (2002) stated, “For over 70 years, findings on the relationships between SES and intellectual/academic competence has accumulated” (p. 5). Perhaps more than ever, the importance of academic achievement has become a must, not only for students, but also for schools and educators. Often the qualifier of socioeconomic status has been a student’s participation in the federal free- or reduced-price meals program.

Using the cost of living changes, the guidelines for the free- or reduced-price meals program have been established annually by the federal government. The *National School Lunch Program* is a federally assisted meal program that has provided low-cost or free meals to eligible students. It has sometimes been referred to as the free- or reduced-price meals program (U. S. Department of Agriculture, Food, and Nutrition Service, 2005). Free meals have been offered to those students whose family incomes are at or below 130% of the poverty level; reduced-price meals have been offered to those students whose family incomes are between 130% and 185% of the poverty level (NAEP, 2006).

Researchers have determined that participation in a federal free- or reduced price-meals program has had an independent negative impact on the academic achievement of the participating students (Okpala, Okpala, & Smith, 2001). As early as kindergarten, the gap has begun to widen, often by the socioeconomic status of the family (Meyer, Princiotta, & Lawrence, 2006).

Traditionally, students from low socioeconomic backgrounds have had a likelihood of falling behind their wealthier peers. Often, this was enhanced by the school's inability to develop a supportive culture or provide resources needed to overcome the socioeconomic status of the students. Borman and Overman (2004) pointed out that if students from socioeconomically

challenging backgrounds had been afforded the opportunity to attend well-funded quality schools with academically successful students and were provided quality resources, they likely would have been more successful. Socioeconomic status has been closely connected to the academic success of students and often was associated with school academic performances (Rusk & Mosley, 1994).

Plata (2005) noted, "... socioeconomic status impacts quality of students' social and cognitive development, decisions they make, and ultimately, the quality of task performance" (p. 5). According to Chase (2004), "Gender, race, and socioeconomic standing factor into achievement gaps, but should not determine how students achieve" (p. 11).

Bradley and Corwyn (2002) reviewed evidence that the association between socioeconomic status and cognitive performance begins in infancy. According to the authors, "Numerous studies have documented that poverty and low parental education are associated with lower levels of school achievement and IQ later in childhood" (p. 5). Bradley and Corwyn reviewed a study by Kennedy and colleagues from a random sample of first- through sixth-grade African American children selected to represent African Americans living in the southeastern United States and reported, "The mean IQ of the highest SES group was 25 points higher than the mean of the lowest SES group" (Bradley & Corwyn, p. 5).

The case for the role of socioeconomic status has continued to grow and includes evidence suggesting a particularly strong relationship between socioeconomic status and verbal skills. According to Bradley and Corwyn (2002), these findings were reinforced in 1995 by researchers who "found major differences in the language proficiency of children from high SES and low SES families" (p. 5).

In their review of psychological research, Bradley and Corwyn (2002) reported, "Hoff-Ginsberg (1991) also found substantial socioeconomic status differences in language performance for children beginning early in life" (p. 5). In addition, Bradley and Corwyn wrote:

Mercy and Steelman found that each SES (socioeconomic status) measure used in the Health Examination Survey (family income, maternal education, paternal education) predicted intellectual attainment, with education being the best predictor. Maternal



education was a stronger predictor than paternal education. Scarr and Weinberg (1978) found maternal and paternal education to be equally good predictors. This discrepancy may reflect differences in the ages of the children assessed. (p. 5)

As stated in the first section of this chapter, among the traditional measures of socioeconomic status, family income accounted for the greatest amount of variance, but socioeconomic status measures that were combined with two or more indicators accounted for more variance than single indicators. Bradley and Corwyn (2002) determined that ". . . each SES indicator (income, education, occupation) was associated with better parenting, which in turn affected school achievement via skill-building activities and school behavior" (p. 5).

An increased level of student failure has existed for children from poverty in the areas of academic achievement because of a diversity of factors such as preschool education, parents' educational levels, parenting skills, birthrates, and home environments (Future of Children, 2005).

McCoy (2005) noted that scores of low performing algebra students often appeared to be connected to their gender, race, or socioeconomic status. Experiments involving preschoolers reflected the importance of early education. Students from low socioeconomic status who attended preschool were more likely to be promoted and not receive special education services. This success has continued into their adulthood in the form of higher incomes (Entwisle et al., 2005).

Socioeconomic status often has defined the variances in language and cognitive control including learning and memory (Future of Children, 2005). Achievement test scores, IQ, and functional literacy were all associated with socioeconomic status. Socioeconomic status in collaboration with gender and race has changed the success rates of individuals. For example, boys from disadvantaged environments were more likely to leave school without obtaining a diploma. The gap between boys and girls in terms of the number leaving school without a diploma or other qualification has widened as disadvantage levels have risen. The greater the disadvantages of surroundings, the larger the graduation rate gap between boys and girls. Although the proportion of students leaving the school system without a diploma or other

qualification was higher among students from disadvantaged environments (especially boys), the proportion for both boys and girls was twice as high in the most disadvantaged environments as it was in the most advantaged (Pelletier & Rheault, 2005).

According to the U. S. Department of Education (2005a), the Nation's Report Card reported that mathematics scores for fourth-grade students from 1996 to 2005 eligible for free- or reduced- price meals increased 18 points, whereas their non-eligible peers' scores increased by only 16 points. In 1996, eligible students had a scale score of 207 and non-eligible students scored 232 points. In 2005, eligible students had a scale score of 225 and non-eligible students scored 248 points. The reading scores for fourth-grade students from 1996 to 2005 eligible for free- or reduced-price meals increased 7 points, the same as their non-eligible peers' gain of 7 points. In 1996, eligible students had a scale score of 196 and non-eligible students scored 223 points. In 2005, eligible students had a scale score of 203 and non-eligible students scored 230 points (U. S. Department of Education, 2005a).

Ryan and Cooper (1998) stated that more than 15 million American children were living in poverty. According to Ryan and Cooper, schools were not envisioned to help the poor of America and creating more economically equitable citizens was not the focus of schools. Often schools have not helped poor students develop high self-esteem (Ryan & Cooper). From Goddard, Tschannen-Moran, and Hoy's (2001) perspective, children in poverty were not adequately prepared to benefit from educational offerings that were put in place to assist with understanding society's norms.

According to Rusk and Mosley (1994), although schools have not been perceived as institutions that were organized to provide equality of service to students of high poverty, because of the poverty level of families, there was often no other educational choice. As noted by Education Trust (2005), approximately \$900 less was spent each year on students in the poorest districts as compared to their wealthier counterparts. Funding has impacted the educational opportunities afforded to children through their public school experience. In 2003, in Kentucky, the funding gap between the highest poverty districts and the lowest was \$188 as

compared to \$0 in Hawaii and \$2,280 in New York (Education Trust). According to the Hawaii Department of Education (2006), Hawaii's expenditure per district is \$0 because the state has a "unitary statewide school system" (n. p.). The school system in Hawaii served 181,355 students as of 2005 and was "approximately the 10th largest school system in the nation" (n. p.).

Low socioeconomic status has remained one of the leading indicators of the high school dropout rate. In addition, socioeconomic status appeared to affect school attendance and the number of years of schooling completed (Bradley & Corwyn, 2002). Entwisle et al. (2005) noted that socioeconomic status was the one factor that has most often been associated with dropout rates.

Caldas and Bankston (1997) studied the association between students' peers and their academic achievement regardless of their own social status. Rusk and Mosley (1994) stated that a school's socioeconomic status has had an impact on the academic success of the students. When the student population was homogeneous with a high poverty background, the impact was negative. Their study showed as much as a 13-percentage point decline in test scores. The perceived relationship of the peer group has been studied since the 1960s when Coleman (Coleman & Kahlenberg, 2002) recognized that the main influence on students was not the school's facilities, teachers, or curriculum, but the peer group. This finding led to encouragement to integrate via socioeconomic status. This integration was supportive of the desegregation of American public schools because of the positive impact of the socially advantaged on underserved African American youth. A healthy economic mix of students has been vital for the progression of a culture (Coleman & Kahlenberg). The association of social capital was not to be overlooked (Caldas & Bankston). According to Bradley and Corwyn (2002), low socioeconomic status has remained one of the leading indicators of high school dropouts.

The perceived association of poverty's effects on young children has been found to be significant and long lasting, limiting chances of moving out of poverty (Bradley and Corwyn, 2002); however, Maggi et al. (2004) acknowledged there was a strong correlation between children who had been successful kindergarten students with positive socioeconomic factors and

their performance as fourth and seventh graders.

According to Entwisle et al. (2005), the Coleman report found a connection between socioeconomic and achievement status. Entwisle et al. also found that wealthier children tended to be more successful in their educational endeavors than were their poorer peers. Entwisle et al. noted that the type of school where children began their education was not much different from the school where they completed their education. According to Rusk and Mosley (1994), the positive impact of a child living in poverty and attending a school with students of a heterogeneous income group of students could likely be a 32-percentile improvement on academic success.

Even the enrollment size of the school has had an impact on students based on socioeconomic status of the individuals. Viadero (2001) cited that researchers in a report published by a nonprofit education and advocacy group based in Washington concluded that schools with smaller enrollment sizes consistently and significantly outdid larger ones when it came to the achievement of children from low-income families. As cited in Viadero, Craig Howley, an adjunct associate professor at Ohio University in Athens and co-director of the Appalachian Educational laboratory, stated, “The effect is such that the lower the students' socioeconomic status, the smaller the school should be” (p. 5). The same was true, according to Viadero, concerning school district size, “Students from poor families fared best of all in small schools located in small districts.” Large schools and large districts compounded the effects of poverty. As cited in Viadero, Herbert Walberg, a research professor of education at the University of Illinois at Chicago suggested that curriculum might make a difference, “If you had a good curriculum in a large school, you might easily overcome a small school with a bad curriculum” (p. 5).

Lyons (2004) also found that school size appeared to have an impact on students. This idea was echoed throughout the literature: As school size increased, school performance decreased for economically disadvantaged students. The average achievement of students as measured by standardized tests tended to be higher in small schools than in large schools; in

particular, minority students and students from low socioeconomic backgrounds performed significantly better in small schools than in large schools (Tung, Ouimette, & Feldman, 2004).

It has been discovered that the availability of resources such as technology began consistently in schools with either high or low poverty during students' early years but accessibility changed as they progressed through the grades. High poverty schools were likely to have fewer resources (Judge, Puckett, & Cabuk, 2004).

Over time, the frustrations connected with school failure and negative exchanges with teachers have been found to increase acting out behaviors or depression for some children. These frustrations also have been noted to increase the likelihood that children will affiliate with deviant peers (Bradley & Corwyn, 2002). The city of Baltimore has found that by mixing the socioeconomic makeup of a school by 1%, there was an 18% increase in test scores. With similar mixing of students, the test score increase in Albuquerque was 22% (Hill, 2006).

Bradley and Corwyn (2002) pointed out:

Teachers' attitudes and expectations may also be part of a complex set of mediators linking low socioeconomic status to school failure and behavior problems via learning materials and experiences. McLoyd (1998) has argued that teachers tend to perceive low-SES pupils less positively (both in terms of their academic and self-regulatory skills) than they did those students of higher socioeconomic standing. Teachers provide poor children with less positive attention and less reinforcement for good performances. If children, both prior to school entry and during their school years, had less experience with cognitively stimulating materials and experiences at home, they were more likely to fulfill teachers' negative stereotypes. This increases the likelihood of negative interactions with teachers, a problem that may have been exaggerated for minority children or recently immigrated children without good skills in English. (p. 11)

Kahlenberg (2001) stated that "cultural dominance" (n. p.) was the threshold for students. He argued that as long as there was a majority of low poverty students, there was a positive impact on students of high poverty.

Caldas and Bankston (1997) discussed Steele's use of the term "stereotype vulnerability" (p. 269). This phenomenon occurred when the teacher's lack of expectation influenced students to settle for less or to believe they could not achieve at high levels. Caldas and Bankston also affirmed the importance of a teacher on the students. If the teacher has perceived the student or

class as being academically weak, there might be a tendency to lower expectations, therefore negatively impacting students regardless of their socioeconomic status. Of course, the reverse could be possible: If a majority of students require the challenge, then the teacher might toughen or increase expectations (Schaeffer, 2004). Vasquez et al. (2003) stated that the social standing of a student was the most important factor determining academic success. However, according to Vasquez et al., it was obvious by the exceptional learners who broke the socioeconomic status barrier that poverty does not wholly determine success levels--what does determine success is the high expectations of educators and these should be demanded of all students regardless of social status.

McCoy (2005) stated that schools with populations of students living in poverty were unable to hire and tenure high quality teachers. Poor students tended to have less success in algebra for example. McCoy concluded it was apparent that the size of the school, the attitude of the teachers, the available educational resources, and the behavior of the students were all affected by the socioeconomic status of the individuals.

### *After-School Programs*

“Children don’t stop learning when the last bell rings. That’s why ongoing quality after-school programs are so important, and why school leaders need to consider how in-school and after-school learning are connected” (Ferrandino, 2003, p. 62). During the past 2 decades, many parents have found that the demands of society make it difficult to be home during after-school hours. After-school programs have continued to expand in the recent past because of a larger number of working mothers, the desire for greater academic achievement, and the concern for unsupervised students during nonschool times (U. S. Department of Education, 2003b).

Normally, areas of high poverty have been found in communities that have poor physical and social conditions (Nash, 2006). School could be a safe harbor for children in poverty. Nash noted that children who participated in after-school programs were likely to be happier than those who did not participate. Nash discussed the growing amount of research that documented

the positive relationships between quality after-school programs and students' success.

In 1999, Kentucky set aside \$37 million to provide quality after-school programs for students throughout the state (Gewertz, 2000). The revision of the *Elementary & Secondary Education Act* and *The No Child Left Behind Act* of 2001 authorized the creation of the 21<sup>st</sup> Century Community Learning Centers. Their purpose was to meet standards, enrich curriculum, and provide educational opportunities to students, especially to high poverty students. The grant was targeted to schools having a large population of poor students. The funds from this grant can be combined with Title I funds (U. S. Department of Education, 2003a). Additional funding was provided by others including The Charles Stewart Mott Foundation that pledged \$83 million to the 21<sup>st</sup> Century Community Learning Centers program (Gewertz).

The 21<sup>st</sup> Century Community Learning Centers program was designed to offer enrichment opportunities to students as well as educational opportunities to families. These enrichment opportunities have included tutorial services. The program also has offered services such as developmental activities, technology education, arts, physical education programs, character education, and practical living. In addition, the program has provided literacy and related educational opportunities (U. S. Department of Education, 2003b).

After-school programs have garnered media attention because of the recognized mandates of national testing. After-school programs evolved from the need to use time better (Miller, 2001). Miller noted that of students from ages 6 to 12, 16% have attended after-school programs regularly whereas 21% of the same age group has spent time in self-care.

Eight of the 10 programs that Grossman et al. (2002) studied were operating at maximum capacity within the first 2 years of the establishment. More than half of the populations of the eight schools participating in the study were attending the after-school program. Often, participation in after-school programs has depended on the families' financial status (Miller, 2001).

Programs that provide youth development have been needed especially for children living in poverty. It was suggested by Eccles, Barber, Stone, and Hunt (2003) that participation in

voluntary, school-based, extracurricular activities "increases school participation and achievement because it facilitates: (a) the acquisition of interpersonal skills and positive social norms, (b) membership in prosocial peer groups, and (c) stronger emotional and social connections to one's school" (p. 868). This benefit was echoed by Fletcher (2004) who stated that the worth of after-school programs was based on their provision of support and experience for students that would strengthen their skills, self-esteem, and competence.

Larken (2005) reported on the positive impact of *Virtual Y*, an after-school program provided by the YMCA of Greater New York. This program was associated with positive math scores, improved classroom behavior, and better school attendance rates. The program also eased anxiety with parents and improved home environments. Deiters (2006) observed that students attending this program had started completing their homework and were concentrating on areas of academic concern because of the educators' focus on these activities. The benefits of after-school programs were not limited to academics. According to Morgan (2006), students not participating in these programs were "three times more likely to skip classes" (p. 1) regularly than students who did take part in the programs. The United States Department of Justice praised after-school programs as being safe places for children, as well as for providing excellent ways for students to gain knowledge (U. S. Department of Education, 2005b). According to Gewertz (2000), after-school programs not only increased academic success, but they also prevented criminal acts and provided opportunities for students to build self-confidence.

After-school centers found in elementary schools have provided safe after-school harbors that offer academic support. According to the U. S. Department of Education (2005b), effective after-school programs have offered a variety of options and has specialize these options for the populations being served, created and funded activities, added breadth and depth to the existing daily curriculum, and established relationships between the students and their caregivers.

Most centers have been open 3 to 5 days per week. They often have included an hour for homework assistance with additional time provided for traditional curriculum support as well as enrichment activities to assist in the creation of well-rounded individuals (U. S. Department of



Education, 2005b).

After-school programs have had a perceived impact on students' school performance and their individual efforts in positive manners that included a sense of belonging, better attendance, abstinence from alcoholic beverages, and better anger-management skills. Grossman et al. (2002) reported that parents have said the program improved their children's social skills by helping them make friends and maintain better peer relations.

Table 6 shows attendance data as reported by the U. S. Department of Education (2005b, p. 11) for students participating in their second year of after-school programs.

Table 6

*Percentage of Students Attending Range of Days in an After-School Program*

Range of Days	% of Students Participating for Their Second Year in an After-School Program
151 to 175 days	2.8
76 to 150 days	50.9
51 to 75 days	14.0
26 to 50 days	12.2
fewer than 26 days	20.1

Note. From U. S. Department of Education, 2005b. *Center Attendance Records*

According to the U. S. Department of Education (2005b), 17% of middle schools nationwide were considered to be high poverty schools based on the number of students receiving in the free- and reduced-cost meals. Most centers were able to spend \$1,000 per year per enrolled student; this expenditure has been credited to the size of the 21<sup>st</sup> Century grant. Classroom teachers have filled many of the positions for after-school programs; consequently, many centers have had high staff turnovers owing to the demands of working after teaching for a

complete school day (U. S. Department of Education, 2005b).

The greatest improvement in those elementary schools with low-test scores has been in academic achievement after they had initiated after-school programs. This could lead to a conclusion that the program has had a positive impact on low-achieving students. Homework was the most common academic achievement during after-school programs. In addition, students who participated in after-school programs reported feeling safer than did students not participating in such programs. Parents with students in the after-school program had higher employment rates than parents without children in the program (U. S. Department of Education, 2005b).

Grossman et al. (2002) reported that the population served by the schools observed in their study was typical across the nation. Demographic findings reported by Grossman et al. were:

1. 37.5% of the after-school population had an annual household income of \$14,000 or less;
2. 73.9% of the after-school population had an annual household income of \$30,000 or less; and
3. 71.8% of the after-school population participated in the free- or reduced price meals program. (p. 13)

Grossman et al. (2002) reported the following information as it pertained to fourth- and fifth-grade students in a typical semester of Extended School Services:

1. average number of days the program was open per semester was 60.8,
2. average number of days scheduled by participants per semester was 32.6,
3. average number of days students were present per semester was 21.2, and
4. average number of days students were present per week was 1.9. (p. 12)

According to Grossman et al., the distribution of average days present by students per semester was "1 to 4 days: 7.4%; 3 to 19 days: 54.7%; 20 to 39 days: 23.8%; and 40 or more days: 23.8%" (p. 15).

Grossman et al. (2002) reported that the types and distribution of activities in the after-school programs included: "academics (26%); enrichment, including cultural and some academic achievement activities such as visual and performing arts, (21%); sports-recreation (21%); free time (11%); community service (9%); leadership (9%); and career preparation (3%)" (p. 20).

Positive youth development was found by Grossman et al. (2002) to have been a result of the after-school programs. Other results included positive adult-youth relationships, peer support, growth engagement, better decision-making skills, and leadership opportunities.

Grossman et al. (2002) reported that the youth surveyed in their study made the following remarks concerning after-school programs: "'helps me stay out of trouble' (65%); 'helps me learn how to say no to things that I know are wrong' (62%); and 'helps me deal calmly with people who are being mean or starting fights' (48%)" (p. 31). Grossman et al. also surveyed parents of students enrolled in the after-school program. Parents expressed the following regarding the extended-school program: "'[It] helps my child stay out of trouble' (84%) and '[It] helps my child settle arguments without fighting' (72%)" (p. 31).

After-school programs have benefited active participants by providing supporting experiences that enhanced the daily curriculum either directly or indirectly. These experiences allowed students the opportunity to learn, to develop a sense of success, and to gain social skills and self-esteem. Concerning attitudes and behaviors, Grossman et al. (2002) reported that the youth surveyed in their study shared opinions as to how the extended school services helped them in these areas. Their statements included: "'helps me do better in school' (65%); 'helps me like school more' (50%); and 'helps me learn that hard work pays off' (71%)" (p. 32). Grossman et al. surveyed parents to garner their responses as to how the after-school program had affected their children. Parents reported similar, yet more positive comments, such as: "'helps my child do better in school' (79%); 'helps my child like school more' (86%); 'helps my child try harder in school' (82%); and 'helps my child complete homework' (71%)" (p. 32).

Grossman et al. (2002) stated that the attitudes and behaviors of students participating in after-school programs were impacted positively, based on statistical analysis, as shown in Table 7.

Table 7

*Reported Behaviors of Students Participating in an After-School Program*

Survey Results	Days Per Week of After-School Program		
	0 Days	2 Days	Difference
Students reporting they started skipping school	20	11	-9
Students reporting they really paid attention	29	49	+20
Students reporting they felt proud to belong to their school	76	84	+8

Note. From Grossman et al., 2002. *Multiple Choices After School: Findings From the Extended Service Schools Initiative*.

According to Grossman et al. (2002), both students and their parents viewed the social benefits of after-school programs as positive. Students reported that some extended-school program social benefits were: "'helps me make friends' (73%); 'helps me be less shy around kids' (63%); and 'helps me learn about other cultures' (52%)" (p. 33).

The parents who participated in the survey (Grossman et al., 2002) reported that the extended-school program's social benefits for their children included: "'helps my child make new friends' (92%) and 'helps my child get along better with other children' (86%)" (p. 33).

While participating in an after-school program, all students and parents reported it had a positive impact on skills, possibilities, and self-confidence (Grossman et al., 2002). Students participating in the survey made the following remarks: "'I see that I have choices and

possibilities in life that I didn't know I had' (74%); 'The after-school program helped me do things I didn't think I could do' (72%); and 'It helps me feel good about myself' (69%)" (p. 33).

The parents who participated in the Grossman et al. (2002) study stated: "'The after-school program helps my child learn new skills or develop new interests' (91%); 'The after-school program helps my child feel more self confident' (88%); and 'After school, I am less worried about my child's safety' (80%)" (p. 33). Parents surveyed in the Grossman et al. (2002) study also reported that the after-school program helped them manage their own work schedules, allowed them to attend classes or job training more easily, and helped them to get or do a better job at work.

## CHAPTER 3

### RESEARCH METHODOLOGY

This chapter describes the methodology and procedures that were used in this study to compare the academic achievement of intermediate students based on socioeconomic status, gender, and participation in an after-school program. This chapter is organized into the following sections: research design, population, procedures, data analysis, research questions, hypotheses for two-way ANOVA models, and a summary.

#### *Research Design*

The researcher used multiple sources of data to answer the questions related to academic achievement: socioeconomic status, gender, and after-school program attendance. I used the scale scores of the Commonwealth Accountability Testing System-Kentucky Core Content Test Report as the measures of the criterion (dependent) variables, academic success. The predictor (independent) variables were socioeconomic status, measured in terms of whether or not students participated in the federal free- or reduced-price meals program, and participation in the after-school program, measured as participated or did not participate.

Data for the study came from three state-mandated sources and one grant-mandated source. One source was the 2005-2006 test results from the state assessment given during the spring of 2006. This assessment is given to all students attending Kentucky schools on the first day of the testing window. Another source of data was the information from the federal free- or reduced-price meals program. This information was gathered by the school system and then placed in the state student tracking system, STI. The final source of data came from the family resource center's report for the 21<sup>st</sup> Century Community Learning Center grant. This source of data contained the number of days a student attended the after-school program.

### *Commonwealth Accountability Testing System*

In the spring of 2006, the Commonwealth Accountability Testing System assessed every student in an accountable grade who was enrolled in a Kentucky school during the testing window. The students in the fourth grade were assessed in reading, science, math, and writing. The writing was in two distinct parts: writing on demand and portfolio. The fifth-grade students were assessed in the areas of arts and humanities, math, social studies, practical living-vocational studies, and reading. The Kentucky Core Content Test scores were analyzed. The Kentucky Core Content Test is an assessment system designed to measure skills, concepts, and processes. The Kentucky Core Content Test is scaled and calibrated.

### *Population*

The population in this project comprised students in grades four and five at Middlesboro Intermediate School for whom the Kentucky Core Content Test scores were obtainable for the 2005-2006 academic school year, with the exception of students who had Individualized Education Plans. The Kentucky Core Content Test is the portion of the Commonwealth Accountability Testing System appropriate for the population at each of these grade levels. The population consisted of 86 fourth-grade students and 103 fifth-grade students. This included the entire student body participating in the after-school program and completing the assessment, with the exception of individuals with testing modifications.

### *Procedures*

I contacted the Middlesboro, Kentucky, Independent School District's school superintendent, Mr. Daryl Wilder, for permission to use Kentucky Core Content Test data (see Appendix). I obtained test scores from the Middlesboro Intermediate School. The Kentucky Core Content Test scores were obtained for each fourth- and fifth-grade student who participated in the assessment. Students were coded only by their free- or reduced-cost meals status; thus, identities were kept confidential.

### *Data Analysis*

The two predictor variables used in this study were socioeconomic status and participation in the after-school program. Socioeconomic status was measured in terms of whether or not students participated in the free- and reduced-price meals program. Likewise, there were two levels of the after-school program: those who participated for fewer than 30 days and those who participated for 30 or more days in the after-school program.

The primary dependent variables were the scores reported for the students on the Kentucky Performance Report from the Kentucky Core Content Test administered during the spring of 2006.

### *Research Questions and Null Hypotheses*

The following research questions and corresponding null hypotheses were formulated to guide the study:

Research Question #1: To what extent, if any, are participation in the free- and reduced-cost meals program, participation in the after-school program, and gender associated with fourth-grade writing on demand and writing portfolio classifications?

Hypotheses 1<sub>1</sub> – 1<sub>6</sub>: There are no differences in the fourth-grade writing on demand and writing portfolio classifications based on participation in the lunch program, participation in the after-school program, and gender.

Research Question #2: To what extent, if any, are socioeconomic status and participation in an after-school program associated with fourth-grade test scores for reading, science, and math?

Hypotheses 2<sub>1</sub> - 2<sub>9</sub>: There are no significant differences in the fourth-grade reading, science, and math test scores based on (a) socioeconomic status, (b) participation in an after-school program, and (c) the interaction of socioeconomic status by participation in an after-school program.



Research Question #3: To what extent, if any, are gender and participation in an after-school program associated with fourth-grade test scores for reading, science, and math?

Hypotheses 3<sub>1</sub> - 3<sub>9</sub>: There are no significant differences in fourth-grade reading, science, and math test scores based on (a) gender, (b) participation in an after-school program, and (c) the interaction of gender by participation in an after-school program.

Research Question #4: To what extent, if any, are socioeconomic status and participation in an after-school program associated with fifth-grade test scores for arts and humanities, math, social studies, practical living-vocational studies, and reading?

Hypotheses 4<sub>1</sub> - 4<sub>15</sub>: There are no significant differences in fifth-grade arts and humanities, math, social studies, practical living-vocational studies, and reading test scores based on (a) socioeconomic status, (b) participation in an after-school program, and (c) interaction of socioeconomic status by participation in an after-school program.

Research Question #5: To what extent, if any, are gender and participation in an after-school program associated with fifth-grade arts and humanities, math, social studies, practical living-vocational studies, and reading test scores?

Hypotheses 5<sub>1</sub> - 5<sub>15</sub>: There are no significant differences in fifth-grade arts and humanities, math, social studies, practical living-vocational studies, and reading test scores based on (a) gender, (b) participation in an after-school program, and (c) interaction of gender by participation in an after-school program.

### *Summary*

The study's results were derived from quantitative data obtained from the Commonwealth Accountability Testing System, the status in the federal free- or reduced-price meals program, and participation in the 21<sup>st</sup> Century after-school program. Both descriptive statistics and inferential statistics were used to analyze the data. Results from the analysis are presented in Chapter 4.

## CHAPTER 4

### ANALYSIS OF DATA

The research questions presented in Chapter 1 and the hypotheses introduced in Chapter 3 are addressed in this chapter. The purpose of this study was to determine what, if any, associations exist between students' success on achievement tests and the predictor variables of students' socioeconomic status, participation in an after-school program, and gender. Student achievement results from the 2005-2006 Kentucky Core Content Test were used as well as the attendance reports from the after-school program for the 2005-2006 academic year. Test scores were collected for the students attending Middlesboro Intermediate School. This study was guided by five research questions and the corresponding null hypotheses.

#### *Analysis of Research Questions*

Following is an analysis of each research question. Both descriptive statistics and inferential statistics were used to analyze the data.

#### *Research Question #1*

To what extent, if any, are participation in the free- and reduced-cost meals program, participation in the after-school program, and gender associated with fourth-grade writing on demand and writing portfolio classifications? Six 2 by 2 crosstabulated tables and chi-square were used to answer this research question.

Hypotheses 1<sub>1</sub> – 1<sub>6</sub>: There are no differences in the fourth-grade writing on demand and writing portfolio classifications based on participation in the lunch program, participation in the after-school program, and gender.

The Kentucky Department of Education uses four categories for recording student performance for writing on demand and writing portfolio: novice (lowest classification),

apprentice, proficient, or distinguished (highest classification). The data in this study showed that for writing on demand, there were no students who were classified as distinguished and only three (3.5%) who were classified as proficient. For writing portfolio, there were no students who were classified as novice and only three (3.5%) who were classified as distinguished.

Preliminary analysis of the six 2 by 3 crosstabulated tables showed violations of the assumptions of chi-square. Because of the violations of the assumptions of chi-square, writing on demand was recoded into two categories: (a) novice and (b) apprentice or proficient. Writing portfolio scores were recoded into two categories: (a) apprentice and (b) proficient or distinguished. After recoding writing on demand and writing portfolio scores into two categories, none of the six 2 by 2 crosstabulated tables had violations of the assumptions of chi-square.

There was a significant difference in the writing-on-demand classifications between students receiving free-or reduced-price meals and students paying full price for meals,  $X^2 (1) = 4.07, p = .04$ . Of the students participating in the free- or reduced-price meals program, 27.9% were classified as novice compared to 8.0% of the students who paid full price for meals. Table 8 shows the crosstabulated table for writing on demand by participation in the meals program.

Table 8

*Crosstabulated Table for Writing on Demand by Participation in the Meals Program*

	Participation in Meals Program			
	Free or Reduced Price		Full Price	
	<i>N</i>	%	<i>N</i>	%
Writing on Demand				
Novice	17	27.9	2	8.0
Apprentice or Proficient	44	72.1	23	92.0
Total	61	100.0	25	100.0

There was a significant difference in the writing-on-demand classifications between students attending the after-school program fewer than 30 days and those attending the after-school program 30 days or more,  $X^2(1) = 4.03, p = .05$ . Of the students attending the after-school program fewer than 30 days, 14.3% were classified as novice compared to 32.4% of the students attending the after-school program 30 days or more. Table 9 shows the crosstabulated table for writing on demand by participation in the after-school program.

Table 9

*Crosstabulated Table for Writing on Demand by Participation in the After-School Program*

	Participation in After-School Program			
	Fewer Than 30 days		30 or More Days	
	<i>N</i>	%	<i>N</i>	%
Writing on Demand				
Novice	7	14.3	12	32.4
Apprentice or Proficient	42	85.7	25	67.6
Total	49	100.0	37	100.0

There was a significant difference between male and female students' writing-on-demand classifications,  $X^2 (1) = 7.54, p = .01$ . Among male students completing the on-demand writing prompt, 34.1% were classified as novice whereas 9.5% of the female students were classified as novice. Table 10 shows the crosstabulated table for writing on demand by gender.

Table 10

*Crosstabulated Table for Writing on Demand by Gender*

	Gender			
	Male		Female	
	<i>N</i>	%	<i>N</i>	%
Writing on Demand				
Novice	15	34.1	4	9.5
Apprentice or Proficient	29	65.9	38	90.5
Total	44	100.0	42	100.0

There was a significant difference in the writing portfolio classifications between students receiving free- or reduced-price meals and students paying full price for meals,  $X^2 (1) = 3.91, p = .05$ . Of the students participating in the free- or reduced-price meals program, 32.8% received the apprentice classification on the writing portfolio as compared to 12.0% of the students not participating in the free- or reduced-price meals program. Table 11 shows the crosstabulated table for writing portfolio by participation in the meals program.

Table 11

*Crosstabulated Table for Writing Portfolio by Participation in the Meals Program*

	Participation in Meals Program			
	Free or Reduced Price		Full Price	
	<i>N</i>	%	<i>N</i>	%
Writing Portfolio				
Apprentice	20	32.8	3	12.0
Proficient or Distinguished	41	67.2	22	88.0
Total	61	100.0	25	100.0

There was no difference in the writing portfolio classifications of students attending the after-school program fewer than 30 days and those attending the after-school program 30 days or more,  $X^2(1) = .03, p = .96$ . Of the students attending the after-school program fewer than 30 days, 26.5% received an apprentice classification on the writing portfolio compared to 27.0% of the students attending the after-school program 30 days or more. Table 12 shows the crosstabulated table for writing portfolio by participation in the after-school program.

Table 12

*Crosstabulated Table for Writing Portfolio by Participation in the After-School Program*

	Participation in After-School Program			
	Fewer Than 30 days		30 Days or More	
	<i>N</i>	%	<i>N</i>	%
Writing Portfolio				
Apprentice	13	26.5	10	27.0
Proficient or Distinguished	36	73.5	27	73.0
Total	49	100.0	37	100.0

There was no difference between male and female students and their classifications on writing portfolio,  $X^2(1) = .01, p = .91$ . Among male students, 27.3% were classified as apprentice on writing portfolio compared to 26.2% of the female students. Table 13 shows the crosstabulated table for writing portfolio by gender.

Table 13

*Crosstabulated Table for Writing Portfolio by Gender*

	Gender			
	<i>N</i>	Male %	<i>N</i>	Female %
Writing Portfolio				
Apprentice	12	27.3	11	26.2
Proficient or Distinguished	32	72.7	31	73.8
Total	44	100.0	42	100.0

*Research Question #2*

To what extent, if any, are socioeconomic status and participation in an after-school program associated with fourth-grade test scores for reading, science, and math? Two-way ANOVAs were used to evaluate the hypotheses.

Hypotheses 2<sub>1</sub> - 2<sub>9</sub>: There are no significant differences in the fourth-grade reading, science, and math test scores based on (a) socioeconomic status, (b) participation in an after-school program, and (c) the interaction of socioeconomic status by participation in an after-school program.

The two-way ANOVA for fourth-grade reading by participation in the free- and reduced-price meals program and participation in the after-school program showed the two-way interaction term for the meals program by after-school program was not significant,  $F(1, 82) =$

2.23,  $p = .14$ . In addition, there was no difference between students who participated in the after-school program and those who did not participate,  $F(1, 82) < .01, p = .98$ . Therefore, the null hypothesis for participation in the after-school program was retained. The effect size for participation in the after-school program as measured by  $\eta^2$  was small ( $<.01$ ). There was a significant difference between students who participated in the free- or reduced-price meals program and those who paid full price for meals,  $F(1, 82) = 8.47, p = .01$ . Therefore, the null hypothesis for participation in the meals program was rejected. The effect size for participation in the meals program as measured by  $\eta^2$  was medium (.09). The reading mean score for students who participated in the free- or reduced-price meals program ( $M = 552.31, SD = 41.43$ ) was almost 26 points lower than the reading mean score for students who paid full price for meals ( $M = 578.24, SD = 37.40$ ). Table 14 shows the descriptive statistics for fourth-grade reading by participation in the meals program and participation in the after-school program.

Table 14

*Means and Standard Deviations for Fourth-Grade Reading Scores by Meals Program and Attendance in the After-School Program*

Meals Program	After-School Program	<i>N</i>	<i>M</i>	<i>SD</i>
Free- or Reduced-Price Meals	fewer than 30 days	34	558.59	43.26
	30 or more days	27	544.41	38.34
	Total	61	552.31	41.43
Full-Price Meals	fewer than 30 days	15	572.33	36.64
	30 or more days	10	587.10	38.69
	Total	25	578.24	37.40
After-School Program	fewer than 30 days	49	562.80	41.46
	30 or more days	37	555.95	42.49
	Total	86	559.85	41.80



Figure 1 shows the boxplot for fourth-grade reading scores by participation in the meals program and after-school program.

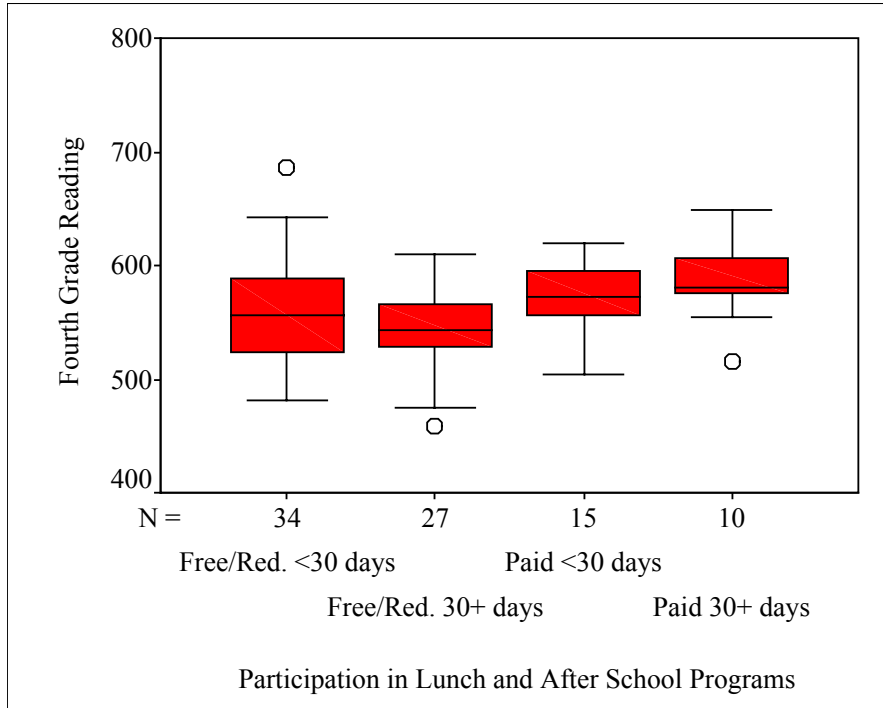


Figure 1. Boxplot for Fourth-Grade Reading Scores by Participation in the Meals and After-School Programs

The two-way interaction for the meals program by the after-school program was not significant,  $F(1, 82) = .06, p = .80$ . In addition, there was no significant difference in fourth-grade science scores between students who participated in the after-school program and those who did not participate,  $F(1, 82) = 1.48, p = .23$ . Therefore, the null hypothesis for participation in the after-school program was retained. The effect size for participation in the after-school program as measured by  $\eta^2$  was small (.02). There was no significant difference between students who participated in the free- or reduced-price meals program and those who paid full price for meals  $F(1, 82) = 2.79, p = .10$ . Therefore, the null hypothesis was retained. The

effect size for participation in the meals program as measured by  $\eta^2$  was small (.03). Table 15 shows the means and standard deviations for fourth-grade science scores by participation in the free- and reduced-price meals program and participation in the after-school program.

Table 15

*Means and Standard Deviations for Fourth-Grade Science Scores by Meals Program and Attendance in the After-School Program*

Meals Program	Attendance After-School Program	<i>N</i>	<i>M</i>	<i>SD</i>
Free- or Reduced-Price Meals	fewer than 30 days	34	566.12	28.11
	30 or more days	27	556.48	30.99
	Total	61	561.85	29.56
Full-Price Meals	fewer than 30 days	15	575.47	17.27
	30 or more days	10	569.10	24.98
	Total	25	572.92	20.45
After-School Program	fewer than 30 days	49	568.98	25.48
	30 or more days	37	559.89	29.69
	Total	86	565.07	27.58

Figure 2 shows the boxplot for fourth-grade science by participation in the meals program and the after-school program.

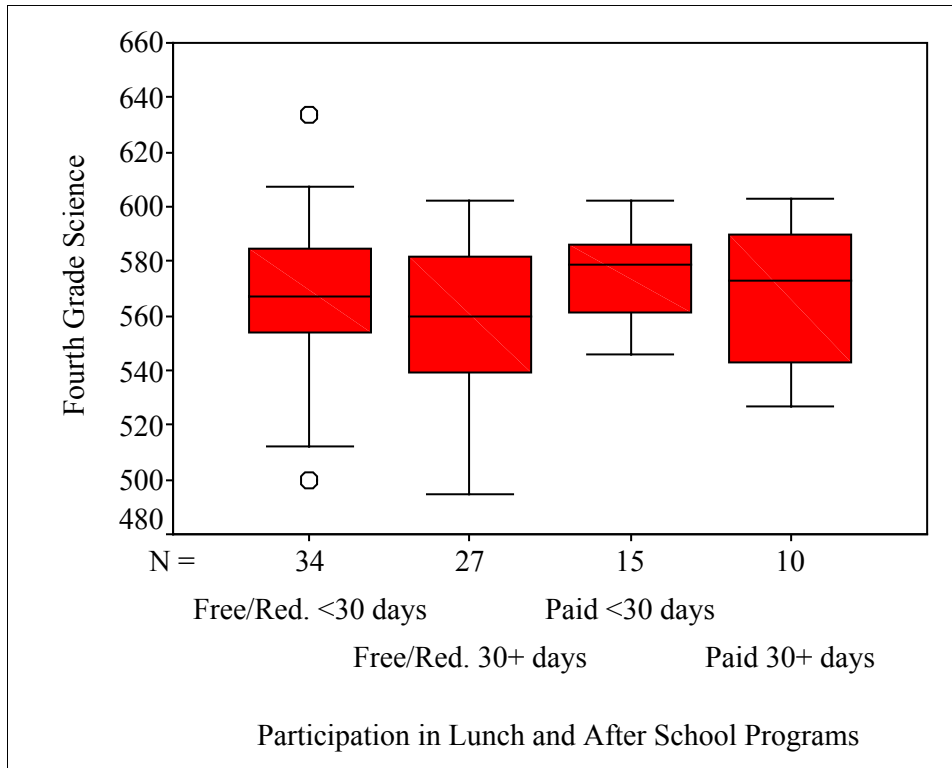


Figure 2. Boxplot for Fourth-Grade Science Scores by Participation in the Meals and After-School Program

The two-way ANOVA for fourth-grade math scores showed that the two-way interaction for free- and reduced-price meals program by after-school program was not significant,  $F(1, 82) = .23, p = .63$ . In addition, there was no difference between students who participated in the after-school program and those who did not participate,  $F(1, 82) = 1.39, p = .24$ . Therefore, the null hypothesis for participation in the after-school program was retained. The effect size for participation in the after-school program as measured by  $\eta^2$  was small (.02). There was a significant difference between students who participated in the free- or reduced-price meals program and those who paid full price for meals,  $F(1, 82) = 6.10, p = .02$ . Therefore, the null hypothesis was rejected. The effect size as measured by  $\eta^2$  was medium (.07). The math mean for students who participated in the free- or reduced-price meals program ( $M = 486.41, SD =$

57.64) was almost 31 points lower than the math mean for students who paid full price for meals ( $M = 517.20$ ,  $SD = 35.78$ ). The means and standard deviations for fourth-grade math scores by participation in the free- and reduced-price meals program and participation in the after-school program are shown in Table 16.

Table 16

*Means and Standard Deviations for Fourth-Grade Math Scores by Meals Program and Attendance in the After-School Program*

Meals Program	Attendance After-School Program	<i>N</i>	<i>M</i>	<i>SD</i>
Free- or Reduced-Price Meals	fewer than 30 days	34	495.65	65.48
	30 or more days	27	474.78	44.41
	Total	61	486.41	57.64
Full-Price Meals	fewer than 30 days	15	520.73	33.84
	30 or more days	10	511.90	39.74
	Total	25	517.20	35.78
After-School Program	fewer than 30 days	49	503.33	58.46
	30 or more days	37	484.81	45.81
	Total	86	495.36	53.89

The boxplot for fourth-grade math scores by participation in the free- and reduced-cost meals program and after-school program is shown in Figure 3.

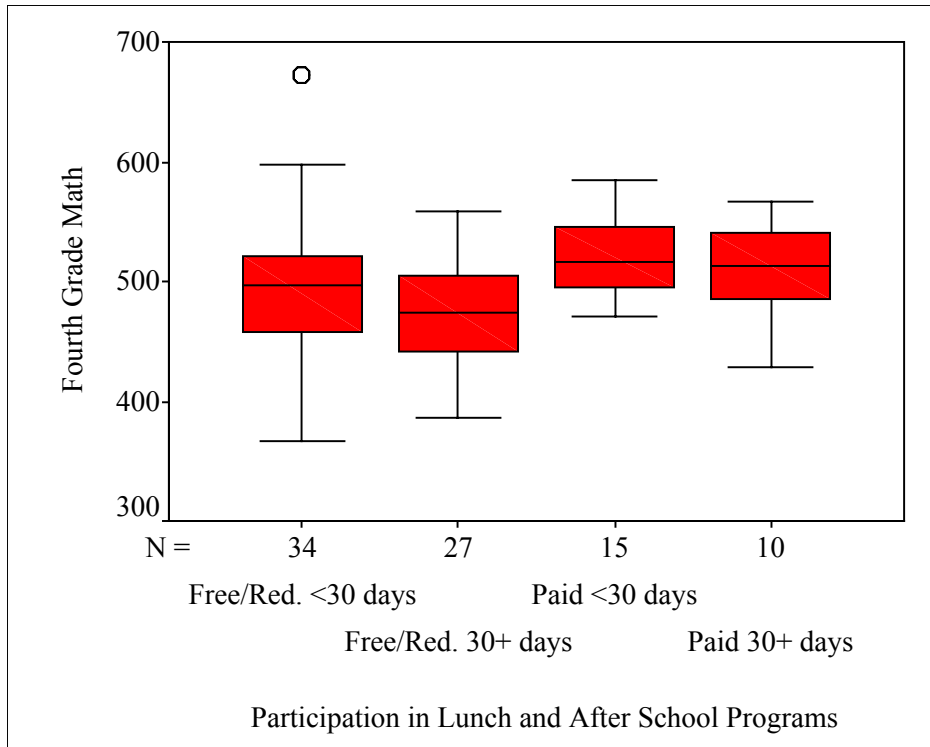


Figure 3. Boxplot for Fourth-Grade Math by Participation in the Meals and After-School Program

Research Question #3

To what extent, if any, are gender and participation in an after-school program associated with fourth-grade test scores for reading, science, and math? Two-way ANOVAs were used to evaluate the hypotheses.

Hypotheses 3<sub>1</sub> - 3<sub>9</sub>: There are no significant differences in fourth-grade reading, science, and math test scores based on (a) gender, (b) participation in an after-school program, and (c) the interaction of gender by participation in an after-school program.

The two-way interaction for gender by after-school program was not significant,  $F(1, 82) = .34, p = .56$ . In addition, there was no difference between students who participated in the after-school program and those who did not participate,  $F(1, 82) = .34, p = .56$ . Therefore, the null hypothesis was retained. The effect size for participation in the after-school program as

measured by  $\eta^2$  was small ( $<.01$ ). There was no significant difference in the fourth-grade reading scores of male and female students,  $F(1, 82) = 1.98, p = .16$ . Therefore, the null hypothesis was retained. The effect size for gender as measured by  $\eta^2$  was small ( $.02$ ). The means and standard deviations for fourth-grade reading scores by gender and participation in the after-school program are shown in Table 17.

Table 17

*Fourth-Grade Reading by Gender and Participation in After-School Program*

Gender	Attendance After-School Program	<i>N</i>	<i>M</i>	<i>SD</i>
Male	Fewer than 30 days	23	558.78	46.68
	30 or more days	21	548.05	50.32
	Total	44	553.66	48.19
Female	Fewer than 30 days	26	566.35	36.81
	30 or more days	16	566.31	27.47
	Total	42	566.33	33.20
After-School Program	Fewer than 30 days	49	562.80	41.46
	30 or more days	37	555.95	42.49
	Total	86	559.85	41.80

Figure 4 shows the boxplot for fourth-grade reading by gender and participation in the after-school program.

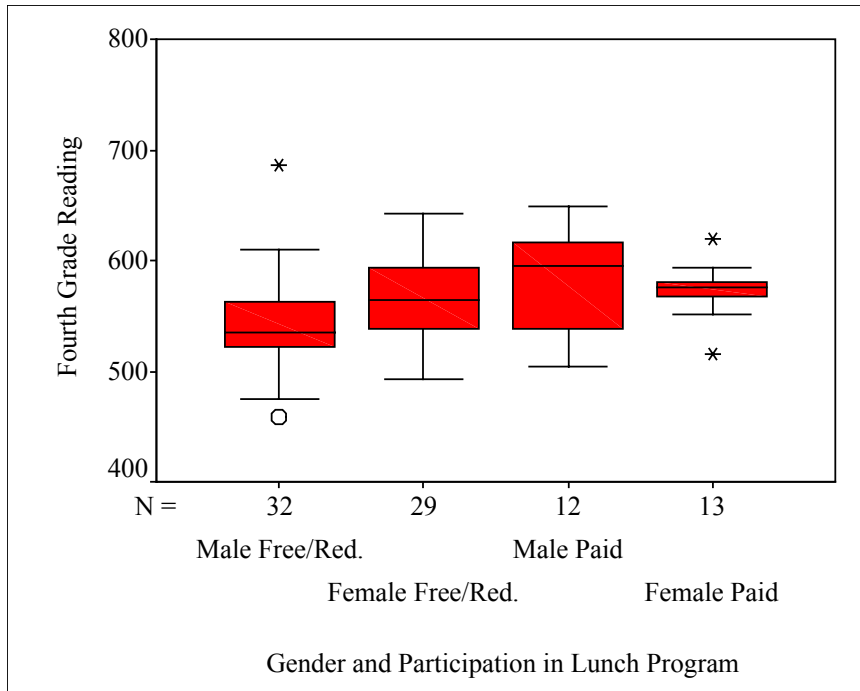


Figure 4. Boxplot for Fourth-Grade Reading by Gender and Participation in the Meals Program

The two-way interaction for gender by after-school program was not significant,  $F(1, 82) = .03, p = .87$ . In addition, there was no difference between students who participated in the after-school program and those who did not participate,  $F(1, 82) = 2.26, p = .14$ . Therefore, the null hypothesis for participation in the after-school program was retained. The effect size for participation in the after-school program as measured by  $\eta^2$  was small (.03). Likewise, there was no significant difference between male and female fourth-grade science scores,  $F(1, 82) = .01, p = .91$ . Therefore, the null hypothesis for gender was retained. The effect size for gender as measured by  $\eta^2$  was small (<.01). The means and standard deviations for fourth-grade science by gender and participation in the after-school program are shown in Table 18.

Table 18

*Means and Standard Deviations for Fourth-Grade Science Scores by Gender and Participation in the After-School Program*

Gender	Attendance After-School Program	<i>N</i>	<i>M</i>	<i>SD</i>
Male	fewer than 30 days	23	569.87	26.54
	30 or more days	21	559.76	30.94
	Total	44	565.05	28.84
Female	fewer than 30 days	26	568.19	25.01
	30 or more days	16	560.06	28.98
	Total	42	565.10	26.54
After-School Program	fewer than 30 days	49	568.98	25.48
	30 or more days	37	559.89	29.69
	Total	86	565.07	27.58

The boxplot for fourth-grade science by gender and participation in the after-school program is shown in Figure 5.



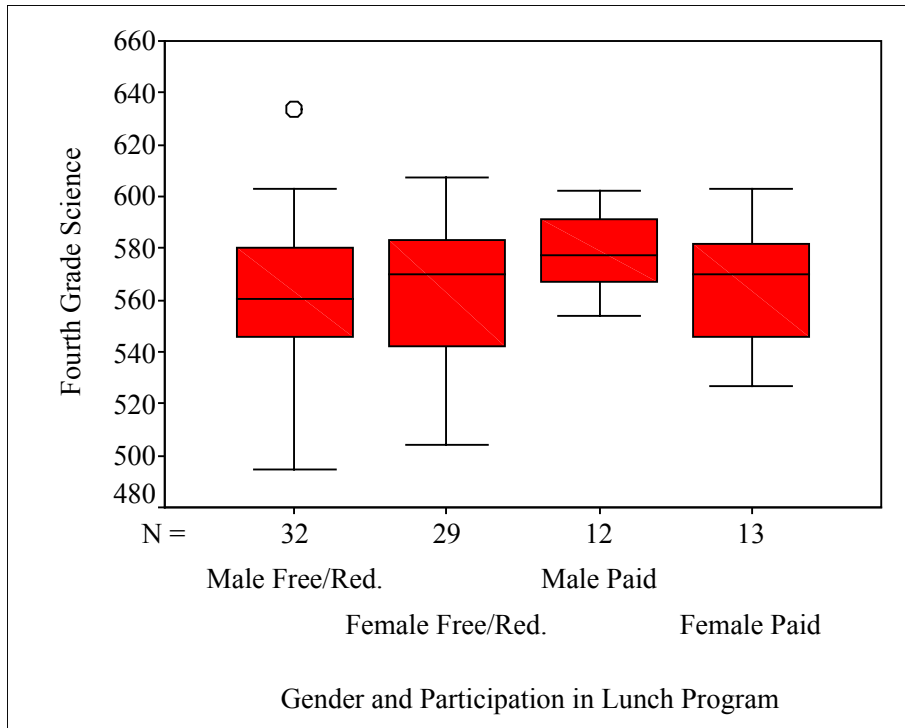


Figure 5. Boxplot for Fourth-Grade Science by Gender and Participation in the Meals Program

The two-way interaction for gender by after-school program was not significant,  $F(1, 82) = .18, p = .67$ , nor was there a difference between students who participated in the after-school program and those who did not participate,  $F(1, 82) 2.45, p = .12$ . Therefore, the null hypothesis for participation in the after-school program was retained. The effect size for participation in the after-school program as measured by  $\eta^2$  was small (.03). There was no significant difference in the fourth-grade math scores between male and female students,  $F(1, 82) = .03, p = .88$ . Therefore, the null hypothesis was retained. The effect size for gender as measured by  $\eta^2$  was small (<.01). Table 19 shows the descriptive statistics for fourth-grade math by gender and participation in the after-school program and the corresponding boxplot is shown in Figure 6.

Table 19

*Means and Standard Deviations for Fourth-Grade Math Scores by Gender and Participation in After-School Program*

Gender	Attendance After-School Program	<i>N</i>	<i>M</i>	<i>SD</i>
Male	fewer than 30 days	23	507.00	72.82
	30 or more days	21	483.43	49.88
	Total	44	495.75	63.34
Female	fewer than 30 days	26	500.08	43.27
	30 or more days	16	486.63	41.39
	Total	42	494.95	42.57
After-School Program	fewer than 30 days	49	503.33	58.46
	30 or more days	37	484.81	45.81
	Total	86	495.36	53.89

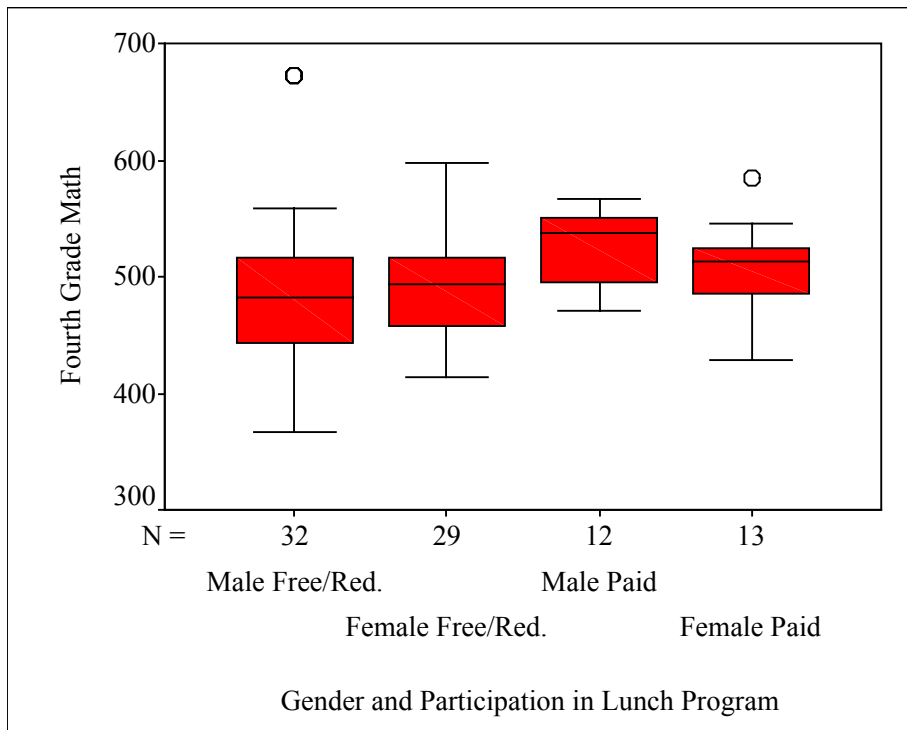


Figure 6. Boxplot for Fourth-Grade Math by Gender and Participation in the Meals Program

#### *Research Question #4*

To what extent, if any, are socioeconomic status and participation in an after-school program associated with fifth-grade test scores for arts and humanities, math, social studies, practical living-vocational studies, and reading? Two-way ANOVAs were used to evaluate the null hypotheses for fifth-grade test scores.

Hypotheses 4<sub>1</sub> - 4<sub>15</sub>: There are no significant differences in fifth-grade arts and humanities, math, social studies, practical living-vocational studies, and reading test scores based on (a) socioeconomic status, (b) participation in an after-school program, and (c) interaction of socioeconomic status by participation in an after-school program.

The two-way ANOVA for fifth-grade arts and humanities by participation in the free- and reduced-price meals program and participation in the after-school program showed the two-way interaction term for meals program by after-school program was not significant,  $F(1, 99) < .01, p = .97$ . In addition, there was no difference between students who participated in the after-school program and those who did not participate,  $F(1, 99) = .59, p = .45$ . Therefore, the null hypothesis for participation in the after-school program was retained. The effect size for participation in the after-school program as measured by  $\eta^2$  was small ( $< .01$ ). There was no difference between students who participated in the free- and reduced-price meals program and those who paid full price for meals,  $F(1, 99) = 1.38, p = .24$ . Therefore, the null hypothesis for participation in the meals program was retained. The effect size for participation in the meals program as measured by  $\eta^2$  was small ( $.01$ ). The arts and humanities mean for students who participated in the free- and reduced-price meals program ( $M = 580.97, SD = 81.46$ ) was almost 20 points lower than the arts and humanities mean for students who paid full price for meals ( $M = 600.74, SD = 82.61$ ). Table 20 shows the descriptive statistics for fifth-grade arts and humanities by participation in the meals program and participation in the after-school program.

Table 20

*Fifth-Grade Arts and Humanities by Participation in Meals Program and Participation in After-School Program*

Meals Program	Attendance After-School Program	<i>N</i>	<i>M</i>	<i>SD</i>
Free- or Reduced-Price Meals	fewer than 30 days	37	573.46	77.44
	30 or more days	35	588.91	85.91
	Total	72	580.97	81.46
Full Price Meals	fewer than 30 days	25	597.48	62.93
	30 or more days	6	614.33	147.19
	Total	31	600.74	82.61
After-School Program	fewer than 30 days	62	583.15	72.38
	30 or more days	41	592.63	95.20
	Total	103	586.92	81.91

Figure 7 shows the boxplots for fifth-grade arts and humanities by meals program and attendance in the after-school program.

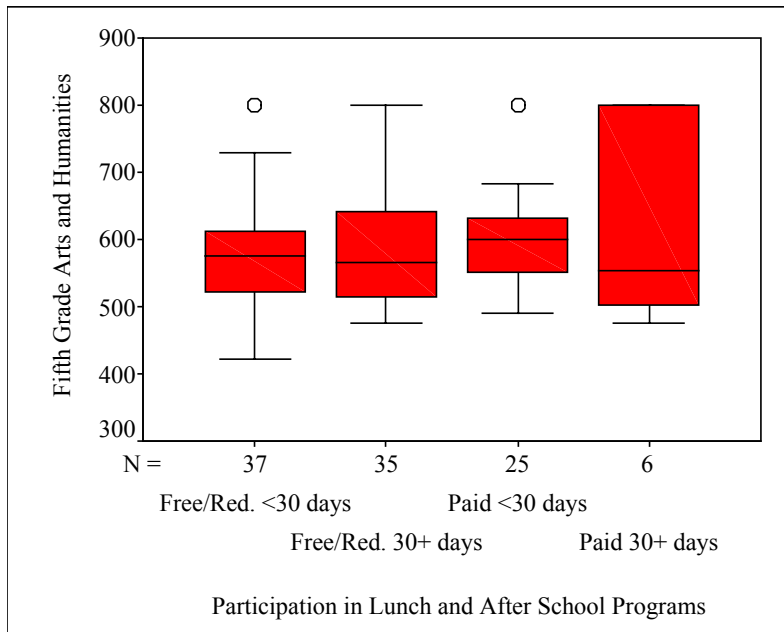


Figure 7. Boxplot for Fifth-Grade Arts and Humanities Scores by Participation in the Meals and After-School Programs

The two-way ANOVA for fifth-grade math by participation in the free- and reduced-price meals program and participation in the after-school program showed the two-way interaction term for the meals program by the after-school program was not significant,  $F(1, 99) = 1.29, p = .26$ . In addition, there was no significant difference between students who participated in the after-school program and those who did not participate,  $F(1, 99) < .01, p = .95$ . Therefore, the null hypothesis for participation in the after-school program was retained. The effect size for participation in the after-school program as measured by  $\eta^2$  was very small ( $< .01$ ). There was no difference between students who participated in the free- and reduced-price meals program and those who paid full price for meals,  $F(1, 99) = 2.49, p = .12$ . Therefore, the null hypothesis for participation in the meals program was retained. The effect size for participation in the meals program as measured by  $\eta^2$  was small (.03). The math mean for students who participated in the free- and reduced-price meals program ( $M = 588.21, SD = 51.79$ ) was almost 28 points lower than the math mean for students who paid full price for meals ( $M = 616.06, SD = 63.19$ ). Table

21 shows the descriptive statistics for fifth-grade math by participation in the free- and reduced-price meals program and participation in the after-school program.

Table 21

*Fifth-Grade Math by Participation in Meals Program and Participation in After-School Program*

Meals Program	Attendance After-School Program	<i>N</i>	<i>M</i>	<i>SD</i>
Free- or Reduced-Price Meals	fewer than 30 days	37	580.81	44.45
	30 or more days	35	596.03	58.19
	Total	72	588.21	51.79
Full-Price Meals	fewer than 30 days	25	619.36	68.28
	30 or more days	6	602.33	36.14
	Total	31	616.06	63.19
After-School Program	fewer than 30 days	62	596.35	58.00
	30 or more days	41	596.95	55.19
	Total	103	596.59	56.62

Figure 8 shows the boxplot for fifth-grade math scores by participation in the meals program and after-school program.

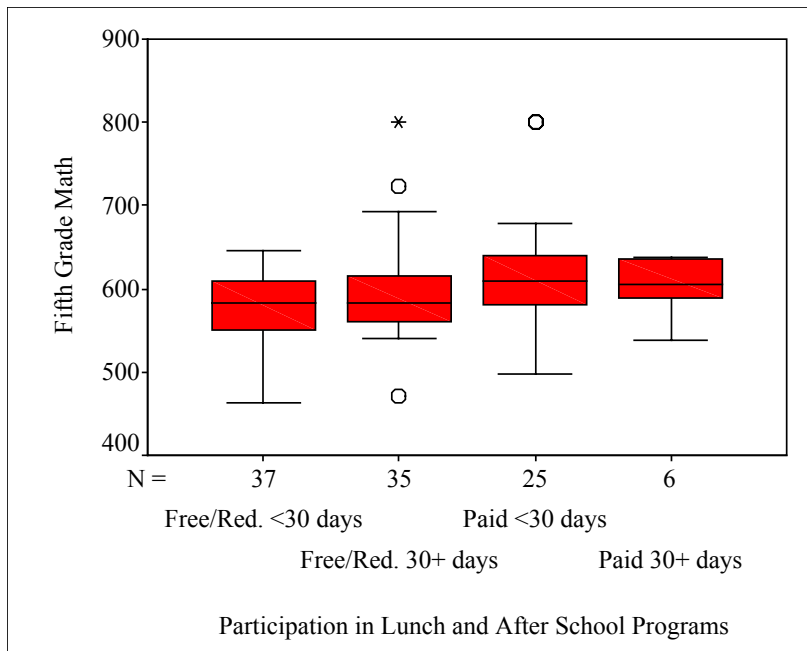


Figure 8. Boxplot for Fifth-Grade Math Scores by Participation in the Meals and After-School Programs

The two-way ANOVA for fifth-grade social studies by participation in the free- and reduced-price meals program and participation in the after-school program showed the two-way interaction term for meals program by after-school program was not significant,  $F(1, 99) < .01$ ,  $p = .98$ . In addition, there was no difference between students who participated in the after-school program and those who did not participate,  $F(1, 99) = .04$ ,  $p = .85$ . Therefore, the null hypothesis for participation in the after-school program was retained. The effect size for participation in the after-school program as measured by  $\eta^2$  was small ( $< .01$ ). There was a significant difference between students who participated in the free- and reduced-price meals program and those who paid full price for meals,  $F(1, 99) = 3.96$ ,  $p = .05$ . Therefore, the null hypothesis for participation in the meals program was rejected. The effect size for participation in the meals program as measured by  $\eta^2$  was medium ( $.04$ ). The social studies mean for students who participated in the free- and reduced-price meals program ( $M = 578.83$ ,  $SD = 45.21$ ) was 24 points lower than the social studies mean for students who paid full price for meals ( $M = 603.26$ ,

$SD = 49.03$ ). Table 22 shows the descriptive statistics for fifth-grade social studies by participation in the meals program and participation in the after-school program.

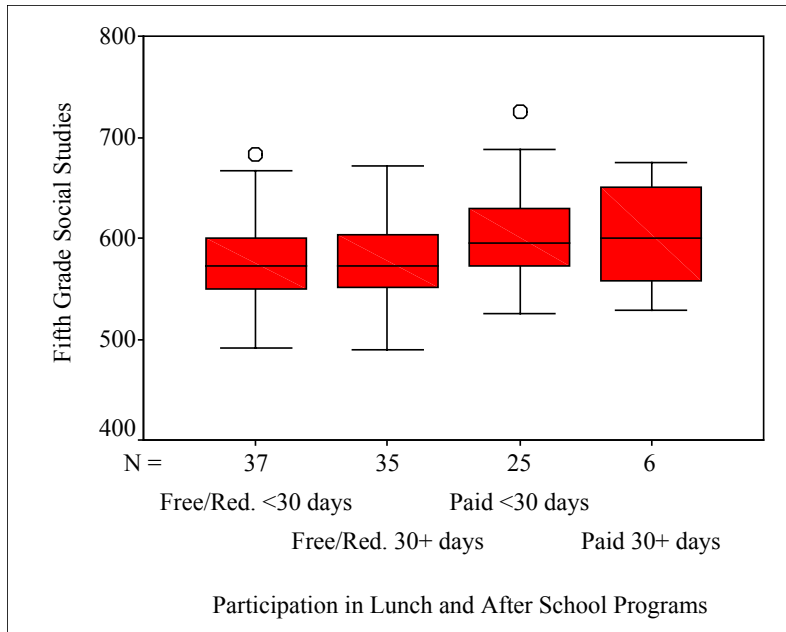
Table 22

*Fifth-Grade Social Studies by Participation in Meals Program and Participation in After-School Program*

Meals Program	Attendance After-School Program	<i>N</i>	<i>M</i>	<i>SD</i>
Free- or Reduced-Price Meals	fewer than 30 days	37	580.05	47.20
	30 or more days	35	577.54	43.66
	Total	72	578.83	45.21
Full-Price Meals	fewer than 30 days	25	603.64	48.73
	30 or more days	6	601.67	54.95
	Total	31	603.26	49.03
After-School Program	fewer than 30 days	62	589.56	48.84
	30 or more days	41	581.07	45.52
	Total	103	586.18	47.50

Figure 9 shows the boxplot for fifth-grade social studies scores by participation in the meals and after-school programs.





*Figure 9.* Boxplot for Fifth-Grade Social Studies Scores by Participation in the Meals and After-School Programs

The two-way ANOVA for fifth-grade practical living-vocational studies scores by participation in the free- and reduced-price meals program and participation in the after-school program showed the two-way interaction term for meals program by after-school program was not significant,  $F(1, 99) = .30, p = .59$ . In addition, there was no difference between students who participated in the after-school program and those who did not participate,  $F(1, 99) = .02, p = .89$ . Therefore, the null hypothesis for participation in the after-school program was retained. The effect size for participation in the after-school program as measured by  $\eta^2$  was very small ( $<.01$ ). There was no difference between students who participated in the free- and reduced-price meals program and those who paid full price for meals,  $F(1, 99) = .47, p = .49$ . Therefore, the null hypothesis for participation in the meals program was retained. The effect size for participation in the meals program as measured by  $\eta^2$  was small ( $.01$ ). The practical living-vocational studies mean for students who participated in the free- and reduced-price meals program ( $M = 577.86, SD = 88.39$ ) was 19 points lower than the practical living-vocational

studies mean for students who paid full price for meals ( $M = 597.29$ ,  $SD = 68.82$ ). Table 23 shows the descriptive statistics for fifth-grade practical living-vocational studies scores by participation in the meals program and participation in the after-school program.

Table 23

*Fifth-Grade Practical Living-Vocational Studies by Participation in Meals Program and Participation in After-School Program*

Meals Program	Attendance After-School Program	<i>N</i>	<i>M</i>	<i>SD</i>
Free- or Reduced-Price Meals	fewer than 30 days	37	573.68	80.00
	30 or more days	35	582.29	97.47
	Total	72	577.86	88.39
Full-Price Meals	fewer than 30 days	25	600.16	68.64
	30 or more days	6	585.33	74.77
	Total	31	597.29	68.82
After-School Program	fewer than 30 days	62	584.35	76.17
	30 or more days	41	582.73	93.67
	Total	103	583.71	83.14

Figure 10 shows the boxplot for fifth-grade practical living-vocational studies scores by participation in the meals and after-school programs.

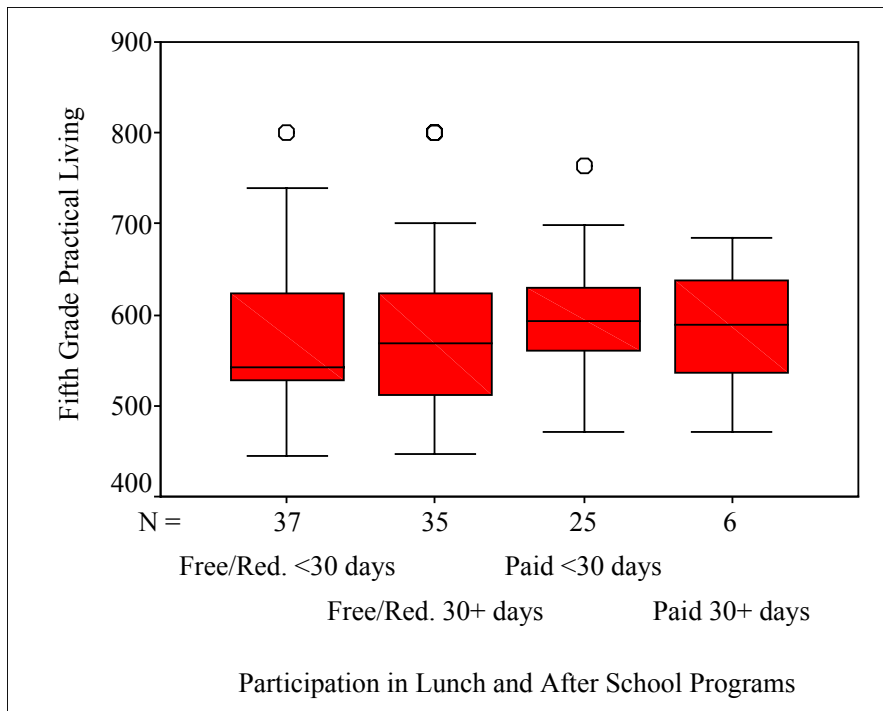


Figure 10. Boxplot for Fifth-Grade Practical Living-Vocational Studies Scores by Participation in the Meals and After-School Programs

The two-way ANOVA for fifth-grade reading by participation in the free- and reduced-price meals program and participation in the after-school program showed the two-way interaction term for meals program by after-school program was not significant,  $F(1, 99) = .11$ ,  $p = .74$ . In addition, there was no difference between students who participated in the after-school program and those who did not participate,  $F(1, 99) = 1.17$ ,  $p = .28$ . Therefore, the null hypothesis for participation in the after-school program was retained. The effect size for participation in the after-school program as measured by  $\eta^2$  was small (.01). There was not a significant difference between students who participated in the free- and reduced-price meals program and those who paid full price for meals,  $F(1, 99) = 1.99$ ,  $p = .16$ . Therefore, the null hypothesis for participation in the meals program was retained. The effect size for participation in the meals program as measured by  $\eta^2$  was small (.02). The reading mean for students who

participated in the free- and reduced-price meals program ( $M = 532.99$ ,  $SD = 74.91$ ) was 30 points lower than the reading mean for students who paid full price for meals ( $M = 563.42$ ,  $SD = 69.89$ ). Table 24 shows the descriptive statistics for fifth-grade reading by participation in the free- and reduced-price meals program and participation in the after-school program.

Table 24

*Fifth-Grade Reading by Participation in Meals Program and Participation in After-School Program*

Meals Program	Attendance After-School Program	<i>N</i>	<i>M</i>	<i>SD</i>
Free- or Reduced-Price Meals	fewer than 30 days	37	545.87	84.31
	30 or more days	35	519.37	61.80
	Total	72	532.99	74.91
Full-Price Meals	fewer than 30 days	25	566.16	71.24
	30 or more days	6	552.00	68.98
	Total	31	563.42	69.89
After-School Program	fewer than 30 days	62	554.05	79.35
	30 or more days	41	524.15	63.07
	Total	103	542.15	74.43

Figure 11 shows the boxplot for fifth-grade reading scores by participation in the meals and after-school programs.

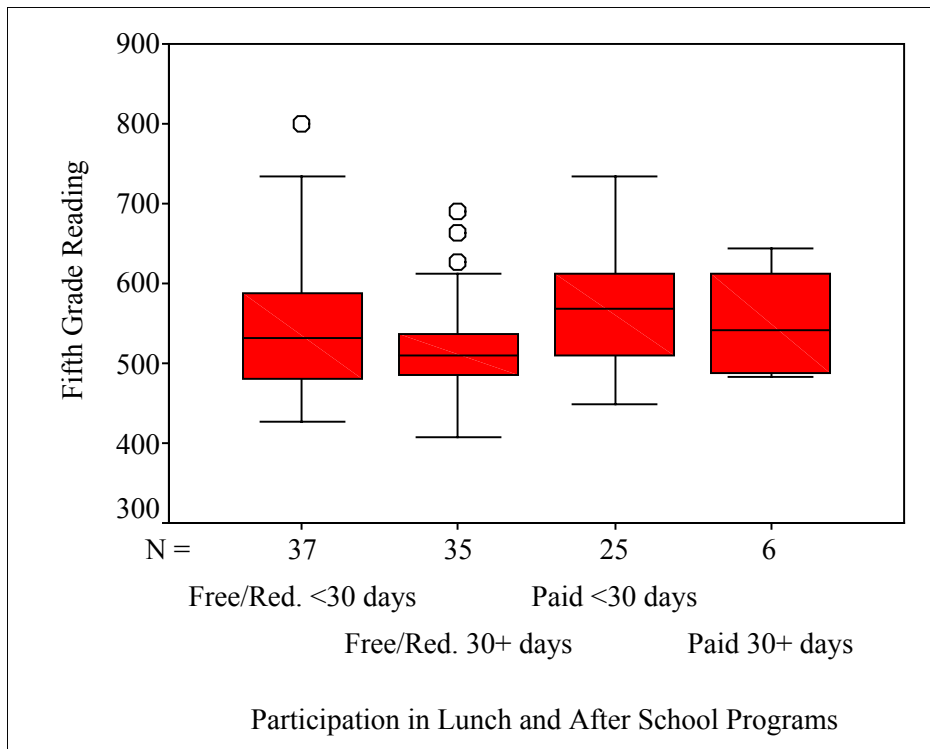


Figure 11. Boxplot for Fifth-Grade Reading Scores by Participation in the Meals and After-School Programs

Research Question #5

To what extent, if any, are gender and participation in an after-school program associated with fifth-grade arts and humanities, math, social studies, practical living-vocational studies, and reading test scores? Two-way ANOVA were used to evaluate the null hypotheses for fifth-grade test scores.

Hypotheses 5<sub>1</sub> - 5<sub>15</sub>: There are no significant differences in fifth-grade arts and humanities, math, social studies practical living-vocational studies, and reading test scores based on (a) gender, (b) participation in an after-school program, and (c) interaction of gender by participation in an after-school program.

The two-way interaction for gender by after-school program was significant,  $F(1, 99) = .01, p = .91$ . In addition, there was no difference between students who participated in the after-

school program and those who did not participate,  $F(1, 99) = .08, p = .77$ . Therefore, the null hypothesis was retained. The effect size for participation in the after-school program as measured by  $\eta^2$  was small ( $<.01$ ). There was no significant difference in the fifth-grade arts and humanities scores of male and female students,  $F(1, 99) = .48, p = .49$ . Therefore, the null hypothesis was retained. The effect size for gender as measured by  $\eta^2$  was small ( $.01$ ). The means and standard deviations for fifth-grade arts and humanities scores by gender and participation in the after-school program are shown in Table 25.

Table 25

*Fifth-Grade Arts and Humanities by Gender and Participation in After-School Program*

Gender	Attendance After-School Program	<i>N</i>	<i>M</i>	<i>SD</i>
Male	fewer than 30 days	35	576.54	57.20
	30 or more days	9	584.11	127.74
	Total	44	578.09	75.05
Female	fewer than 30 days	27	591.70	88.75
	30 or more days	32	595.03	86.36
	Total	59	593.51	86.71
After-School Program	fewer than 30 days	62	583.15	72.38
	30 or more days	41	592.63	95.20
	Total	103	586.92	81.91

Figure 12 shows the boxplot for fifth-grade arts and humanities by gender and participation in the after-school program.

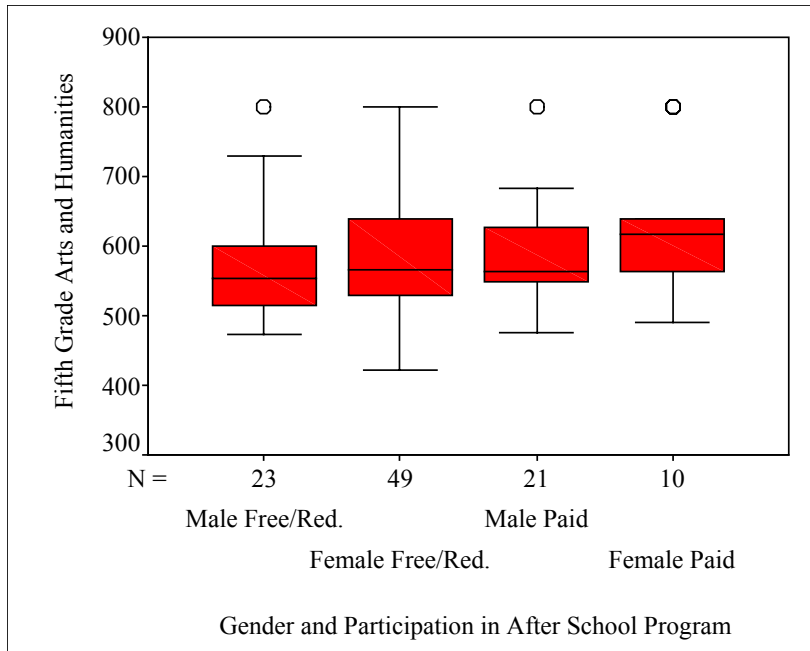


Figure 12. Boxplot for Fifth-Grade Arts and Humanities Scores by Gender and Participation in the After-School Program

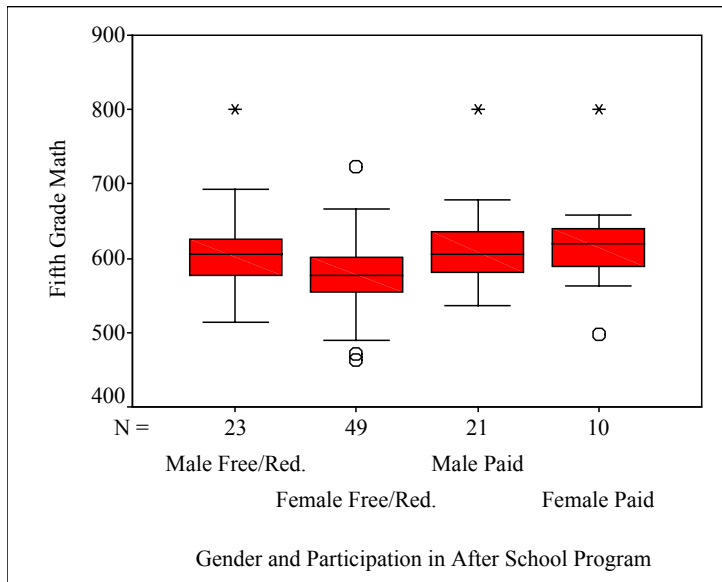
The two-way interaction for gender by after-school program was not significant,  $F(1, 99) = .78, p = .38$ . In addition, there was no difference between students who participated in the after-school program and those who did not participate,  $F(1, 99) = 1.09, p = .30$ . Therefore, the null hypothesis was retained. The effect size for participation in the after-school program as measured by  $\eta^2$  was small (.01). There was significant difference in the fifth-grade math scores of male and female students,  $F(1, 99) = 5.47, p = .02$ . Therefore, the null hypothesis was rejected. The effect size for gender as measured by  $\eta^2$  was small (.05). The math mean for males ( $M = 609.48, SD = 57.44$ ) was almost 23 points higher than the math mean for females ( $M = 586.98, SD = 54.52$ ). The means and standard deviations for fifth-grade math scores by gender and participation in the after-school program are shown in Table 26.

Table 26

*Fifth-Grade Math by Gender and Participation in After-School Program*

Gender	Attendance After-School Program	<i>N</i>	<i>M</i>	<i>SD</i>
Male	fewer than 30 days	35	604.46	51.61
	30 or more days	9	629.00	76.63
	Total	44	609.48	57.44
Female	fewer than 30 days	27	585.85	64.85
	30 or more days	32	587.94	45.09
	Total	59	586.98	54.52
After-School Program	fewer than 30 days	62	596.35	58.00
	30 or more days	41	596.95	55.19
	Total	103	596.59	56.62

Figure 13 shows the boxplot for fifth-grade math by gender and participation in the after-school program.



*Figure 13. Boxplot for Fifth-Grade Math Scores by Gender and Participation in the After-School Program*



The two-way interaction for gender by after-school program was not significant,  $F(1, 99) = .06, p = .80$ . In addition, there was no difference between students who participated in the after-school program and those who did not participate,  $F(1, 99) = .14, p = .71$ . Therefore, the null hypothesis was retained. The effect size for participation in the after-school program as measured by  $\eta^2$  was small ( $<.01$ ). There was no significant difference in the fifth-grade social studies scores of male and female students,  $F(1, 99) = 1.04, p = .31$ . Therefore, the null hypothesis was retained. The effect size for gender as measured by  $\eta^2$  was small ( $.01$ ). The means and standard deviations for fifth-grade social studies scores by gender and participation in the after-school program are shown in Table 27.

Table 27

*Fifth-Grade Social Studies by Gender and Participation in After-School Program*

Gender	Attendance After-School Program	<i>N</i>	<i>M</i>	<i>SD</i>
Male	fewer than 30 days	35	593.20	50.12
	30 or more days	9	591.89	44.41
	Total	44	592.93	48.51
Female	fewer than 30 days	27	584.85	47.65
	30 or more days	32	578.03	46.06
	Total	59	581.15	46.51
After-School Program	fewer than 30 days	62	589.56	48.84
	30 or more days	41	581.07	45.52
	Total	103	586.18	47.50

Figure 14 shows the boxplot for fifth-grade social studies by gender and participation in the after-school program.

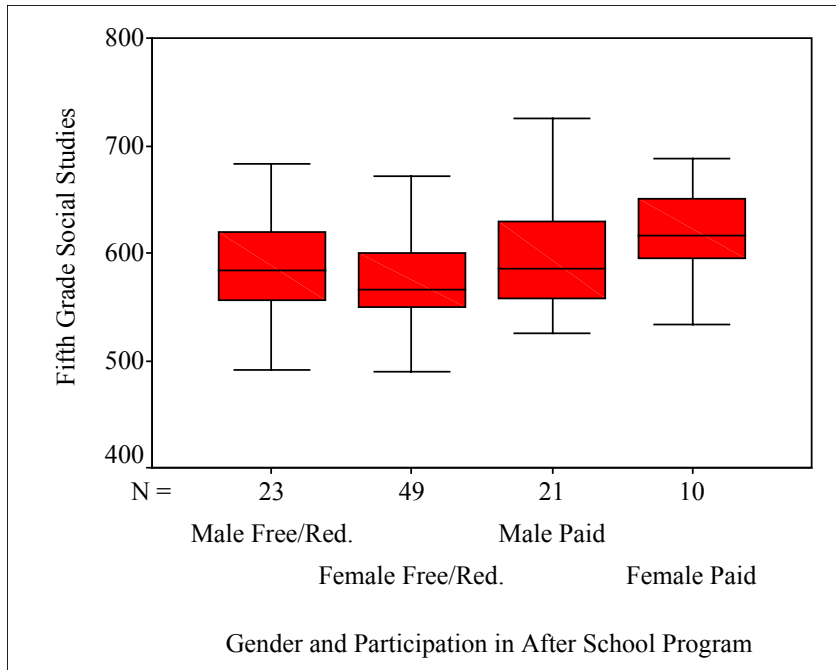


Figure 14. Boxplot for Fifth-Grade Social Studies Scores by Gender and Participation in the After-School Program

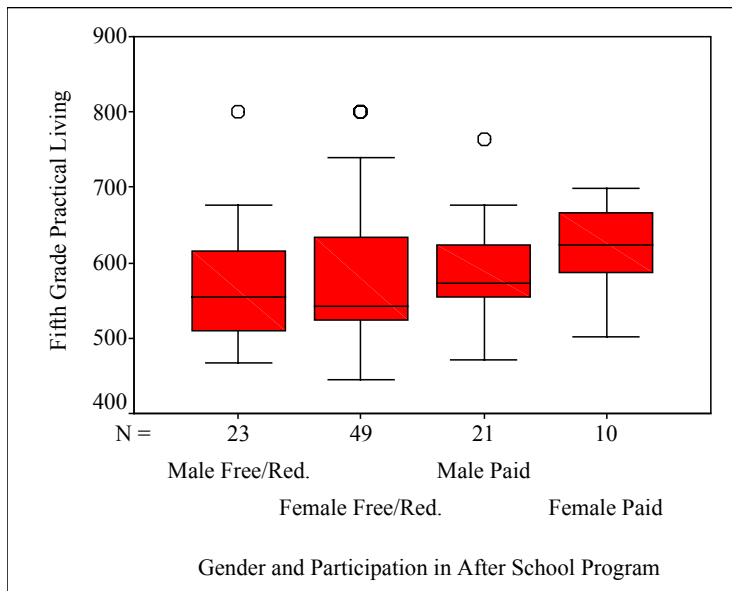
The two-way interaction for gender by after-school program was not significant,  $F(1, 99) = .43, p = .52$ . In addition, there was no difference between students who participated in the after-school program and those who did not participate,  $F(1, 99) = .02, p = .90$ . Therefore, the null hypothesis was retained. The effect size for participation in the after-school program as measured by  $\eta^2$  was small ( $<.01$ ). There was no significant difference in the fifth-grade practical living-vocational studies scores of male and female students,  $F(1, 99) = .28, p = .60$ . Therefore, the null hypothesis was retained. The effect size for gender as measured by  $\eta^2$  was small ( $<.01$ ). The means and standard deviations for fifth-grade practical living-vocational studies scores by gender and participation in the after-school program are shown in Table 28.

Table 28

*Fifth-Grade Practical Living-Vocational Studies by Gender and Participation in After-School Program*

Gender	Attendance After-School Program	<i>N</i>	<i>M</i>	<i>SD</i>
Male	fewer than 30 days	35	574.54	67.02
	30 or more days	9	584.67	103.12
	Total	44	576.61	74.48
Female	fewer than 30 days	27	597.07	86.26
	30 or more days	32	582.19	92.61
	Total	59	589.00	89.31
After-School Program	fewer than 30 days	62	584.35	76.17
	30 or more days	41	582.73	93.67
	Total	103	583.71	83.14

Figure 15 shows the boxplot for fifth-grade practical living-vocational studies scores by gender and participation in the after-school program.



*Figure 15. Boxplot for Fifth-Grade Practical Living-Vocational Studies Scores by Gender and Participation in the After-School Program*

The two-way interaction for gender by after-school program was not significant,  $F(1, 99) = 1.74, p = .19$ . In addition, there was no difference between students who participated in the after-school program and those who did not participate,  $F(1, 99) = 1.49, p = .23$ . Therefore, the null hypothesis was retained. The effect size for participation in the after-school program as measured by  $\eta^2$  was small (.02). There was no significant difference in the fifth-grade reading scores of male and female students,  $F(1, 99) = .68, p = .41$ . Therefore, the null hypothesis was retained. The effect size for gender as measured by  $\eta^2$  was small (.01). The means and standard deviations for fifth-grade reading scores by gender and participation in the after-school program are shown in Table 29.

Table 29

*Fifth-Grade Reading by Gender and Participation in After-School Program*

Gender	Attendance After-School Program	<i>N</i>	<i>M</i>	<i>SD</i>
Male	fewer than 30 days	35	550.46	61.26
	30 or more days	9	552.11	87.48
	Total	44	550.80	66.27
Female	fewer than 30 days	27	558.70	99.07
	30 or more days	32	516.28	53.54
	Total	59	535.70	79.92
After-School Program fewer than 30 days		62	554.05	79.33
30 or more days		41	524.15	63.07
Total		103	542.15	74.43

Figure 16 shows the boxplot for fifth-grade reading by gender and participation in the after-school program.

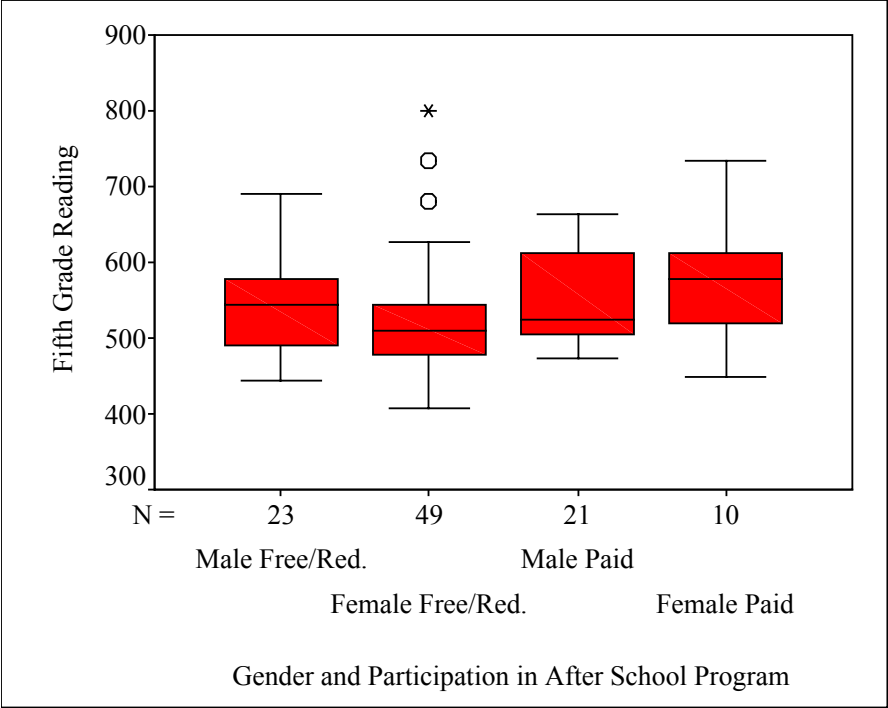


Figure 16. Boxplot for Fifth-Grade Reading Scores by Gender and Participation in the After-School Program

## CHAPTER 5

### SUMMARY OF FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this study was to determine what, if any, association exists between students' academic success on achievement tests and the predictor variables of students' socioeconomic status, participation in an after-school program, and gender. The focus of the analysis was on the content areas included in the Kentucky Core Content Test that is administered at the fourth- and fifth-grade level and is part of the Commonwealth Accountability Testing System in Kentucky. The content areas for the fourth grade are reading, science, math, writing on demand, and the writing portfolio. The fifth-grade content areas are arts and humanities, math, social studies, practical living-vocational studies, and reading. Test scores from the 2005-2006 academic school year were used as reported in the Kentucky Performance Report. Using analytical procedures, comparisons were made between those students participating in the free- or reduced-price meals program and those students not participating in the free- and reduced-price meals program as well as students who attended fewer than 30 days of the after-school program and students who attended 30 days or more of the after-school program.

#### *Summary of Findings*

The analysis was based on five research questions. Independent variables involved in this study were participation and nonparticipation in the federal free- or reduced-cost school meals program and attendance in the after-school program. The primary dependent variables were the scores reported for the students on the Kentucky Performance Report from the Kentucky Core Content Test administered during the spring of 2006. The population consisted of 86 fourth-grade students and 103 fifth-grade students. This included the entire student body

participating in the after-school program and completing the assessment, with the exception of individuals with testing modifications.

### *Research Question #1*

To what extent, if any, are participation in the free- or reduced-price meals program, participation in the after-school program, and gender associated with fourth-grade writing on demand and writing portfolio classifications? Six 2 by 2 crosstabulated tables and chi-square were used to answer this research question.

There was a significant difference in the performance results regarding writing on demand for fourth-grade students participating in the free- or reduced-price meals program and the students not participating in the program. The analyzed data revealed that of the students participating in the free- or reduced-price meals program, 27.9% performed at a novice level on the writing-on-demand portion of the assessment as compared to 8.0% performing at a novice level who did not participate. This 20-percentage point gap was also true for those students who scored apprentice or proficient for writing on demand when based on the free- or reduced-price meals program participation. Of the students participating in the free- or reduced-price meals program, 72.1% performed at the apprentice or proficient levels on the writing-on-demand portion of the assessment as compared to 92% of nonparticipants performing at the apprentice or proficient levels.

There was a significant difference between performance results of students attending the after-school program and those students not attending the after-school program for writing on demand. Findings based on students' participation in the after-school program for fewer than 30 days show that 14.3% performed at a novice level on the writing-on-demand portion of the assessment as compared to 32.4% of those students participating in the after-school program for 30 days or more. Of the students participating in the after-school program for fewer than 30 days, 85.7% performed at the apprentice or proficient levels on the writing-on-demand portion of

the assessment as compared to 67.6% of those students participating in the after-school program for 30 days or more.

There was also a significant difference in the performance of male and female students on the writing-on-demand assessment. When data were analyzed based on gender, 34.1% of the male students performed at the novice level for writing on demand compared to 9.5% of the female students. The percentage for the male students performing at the apprentice or proficient levels was 65.9% as compared to 90.5% of the female students.

There was a significant difference found in the performance results for writing portfolio of students participating in the free- or reduced-price meals program and those students not participating in the program. The analyzed data revealed that of the students participating in the free- or reduced-price meals program, 32.8% performed at a novice level on the writing portfolio portion of the assessment as compared to 12.0% of the students who did not participate in the meals program. This 20-percentage point gap was also true for the students scoring apprentice or proficient based on participation in the free- or reduced-price meals program. Of the students participating in the free- or reduced- price meals program, 67.2% performed at apprentice or proficient levels on the writing portfolio portion of the assessment as compared to 88% of the students who did not participate in the meals program.

There was no significant difference found in the performance of students attending the after-school program and the students not attending the after-school program when the data for writing portfolio were analyzed. The findings revealed that of the students participating in the after-school program for fewer than 30 days, 26.5% performed at a novice level on the writing portfolio portion of the assessment as compared to 27.0% of the students participating for 30 days or more. Of the students participating in the after-school program for fewer than 30 days, 73.5% performed at an apprentice or proficient level on the writing portfolio portion of the assessment as compared to 73% of the students participating in the after-school program for 30 days or more.



There was no significant difference in the performance of male and female students on the writing portfolio scores. When the writing portfolio performance data were analyzed based on gender, the male students' performance at the novice level was 27.3% compared to 26.2% of the female students who performed at the novice level. The findings for the male students performing at the apprentice or proficient level were 72.7% as compared to 73.8% of the female students performing at the apprentice or proficient level.

The findings for the fourth-grade on-demand writing agreed with the literature regarding students from higher socioeconomic status performing better than their peers from lower socioeconomic backgrounds as well as female students achieving higher results than their male counterparts. However, the findings disagreed with most of the literature concerning participation in an after-school program; students attending fewer than 30 days of the after-school program scored higher than their classmates who attended 30 or more days of the program.

The findings for the fourth-grade writing portfolio agreed with the literature regarding students participating in the free- or reduced-cost meals program performing at lower levels than their peers. However, all students performed consistently regardless of their gender or the number of days they participated in the after-school program.

### *Research Question #2*

To what extent, if any, are socioeconomic status and participation in an after-school program associated with fourth-grade test scores for reading, science, and math? Two-way ANOVAs were used to evaluate the hypotheses.

The findings for fourth-grade reading scores by participation in the free- or reduced-price meals program and attendance in the after-school program were not significant. The students receiving free- or reduced-price meals and who attended fewer than 30 days in the after-school program had a higher mean ( $M = 558.59$ ) than did those students attending 30 days or more of the after-school program ( $M = 544.41$ ). Students not participating in the free- or reduced-price

meals program and attending fewer than 30 days in the after-school program had a higher mean ( $M = 572.33$ ) than did those students who attended 30 days or more of the after-school program ( $M = 587.10$ ).

The findings for fourth-grade science scores by participation in the free- or reduced-price meals program and attendance in the after-school program were not significant. The students receiving free- or reduced-cost meals and attending fewer than 30 days in the after-school program had a higher mean ( $M = 566.12$ ) than did those students attending 30 days or more of the after-school program ( $M = 556.48$ ). Students not participating in the free- or reduced-price meals program and attending fewer than 30 days in the after-school program had a higher mean ( $M = 575.47$ ) than did those students who attended 30 days or more of the after-school program ( $M = 569.10$ ).

The findings for fourth-grade math scores by participation in the free- or reduced-price meals program and attendance in the after-school program were not significant. The students receiving free- or reduced-cost meals and who attended fewer than 30 days in the after-school program had a higher mean ( $M = 495.65$ ) than did those students attending 30 days or more of the after-school program ( $M = 474.78$ ). Students not participating in the free- or reduced-cost meals program and who attended fewer than 30 days in the after-school program had a higher mean ( $M = 520.73$ ) than those students did who attended 30 days or more of the after-school program ( $M = 511.90$ ).

The literature reviewed concerning the findings for socioeconomic status and participation in an after-school program concerning an association with fourth-grade reading, math, and science assessment supported the findings pertaining to socioeconomic status. All students participating in the free- or reduced-cost meals program scored lower than their peers who paid full price for meals. However, the literature regarding the number of days a student participated in an after-school program was not supported in this study. Students who attended fewer than 30 days of the after-school program scored higher than did their peers who participated in the program for 30 or more days.

### *Research Question #3*

To what extent, if any, are gender and participation in an after-school program associated with fourth-grade test scores for reading, science, and math? Two-way ANOVAs were used to evaluate the hypotheses.

The findings for fourth-grade reading scores by gender and attendance in the after-school program were not significant. The male students who attended fewer than 30 days in the after-school program had a higher mean ( $M = 558.78$ ) than did male students attending 30 days or more of the after-school program ( $M = 548.05$ ). Female students who attended fewer than 30 days in the after-school program had a higher mean ( $M = 562.80$ ) than those female students did who attended 30 days or more of the after-school program ( $M = 555.95$ ).

The findings for fourth-grade science scores by gender and attendance in the after-school program were not significant. The male students attending fewer than 30 days in the after-school program had a higher mean ( $M = 569.87$ ) than did those male students attending 30 days or more of the after-school program ( $M = 559.76$ ). Female students attending fewer than 30 days in the after-school program had a higher mean ( $M = 568.19$ ) than did female students who attended 30 days or more of the after-school program ( $M = 560.06$ ).

The findings for fourth-grade math scores by gender and attendance in the after-school program were not significant. The male students attending fewer than 30 days in the after-school program had a higher mean ( $M = 507.00$ ) than did male students attending 30 days or more of the after-school program ( $M = 483.05$ ). Female students attending fewer than 30 days in the after-school program had a higher mean ( $M = 500.08$ ) than did female students attending 30 days or more of the after-school program ( $M = 486.63$ ).

The findings for gender and participation in an after-school program and the association with the fourth-grade assessment of reading, math, and science supported some of the findings of other researchers. Female students out performed their male peers in reading regardless of the number of days they participated in the after-school program. This was supported by the literature noting that female students often performed higher than male students in reading.

However, the findings of this study for math and science were not as clearly supported by the literature. Male students attending fewer than 30 days of the after-school program outperformed their female peers attending fewer than 30 days in science and math; however, females who attended 30 or more days outperformed their male peers in math and science.

#### *Research Question #4*

To what extent, if any, are socioeconomic status and participation in an after-school program associated with fifth-grade test scores for arts and humanities, math, social studies, practical living-vocational studies, and reading? Two-way ANOVAs were used to evaluate the null hypotheses for fifth-grade test scores.

The findings for fifth-grade arts and humanities scores by participation in the free- or reduced-price meals program and attendance in the after-school program were not significant. The students receiving free- or reduced-cost meals and attending fewer than 30 days in the after-school program had a higher mean ( $M = 573.46$ ) than did students attending 30 days or more of the after-school program ( $M = 588.91$ ). Students not participating in the free- or reduced-cost meals program and attending fewer than 30 days in the after-school program had a lower mean ( $M = 597.48$ ) than did those students attending 30 days or more of the after-school program ( $M = 614.33$ ).

The findings for fifth-grade math scores by participation in the free- or reduced-price meals program and attendance in the after-school program were not significant. The students receiving free- or reduced-cost meals and attending fewer than 30 days in the after-school program had a lower mean ( $M = 580.81$ ) than did students who attended 30 days or more of the after-school program ( $M = 596.03$ ). Students not participating in the free- or reduced-cost meals program and who attended fewer than 30 days in the after-school program had a higher mean ( $M = 619.36$ ) than did students who attended 30 days or more of the after-school program ( $M = 602.33$ ).

The findings for fifth-grade social studies scores by participation in the free- or reduced-price meals program and attendance in the after-school program were not significant. The students receiving free- or reduced-cost meals and attending fewer than 30 days in the after-school program had a higher mean ( $M = 580.05$ ) than did students attending 30 days or more of the after-school program ( $M = 577.54$ ). Students not participating in the free- or reduced-price meals program and who attended fewer than 30 days in the after-school program had a higher mean ( $M = 603.64$ ) than did students attending 30 days or more of the after-school program ( $M = 601.67$ ).

The findings for fifth-grade practical living-vocational studies scores by participation in the free- or reduced-price meals program and attendance in the after-school program were not significant. The students receiving free- or reduced-cost meals and attending fewer than 30 days in the after-school program had a lower mean ( $M = 573.68$ ) than did students attending 30 days or more of the after-school program ( $M = 582.29$ ). Students who did not participate in the free- or reduced-cost meals program and who attended fewer than 30 days in the after-school program had a higher mean ( $M = 600.16$ ) than did students who attended 30 days or more of the after-school program ( $M = 585.33$ ).

The findings for fifth-grade reading scores by participation in the free- or reduced-price meals program and attendance in the after-school program were not significant. The students receiving free- or reduced-cost meals and who attended fewer than 30 days in the after-school program had a higher mean ( $M = 545.87$ ) than did students attending 30 days or more of the after-school program ( $M = 519.37$ ). Students not participating in the free- or reduced-cost meals program and attending fewer than 30 days in the after-school program had a higher mean ( $M = 566.16$ ) than did students attending 30 days or more of the after-school program ( $M = 552.00$ ).

The literature concerning the findings for socioeconomic status and participation in an after-school program regarding an association with fifth-grade arts and humanities, math, social studies, practical living-vocational studies, and reading assessment supported the findings pertaining to socioeconomic status. All students participating in the free- or reduced-cost meals

program scored lower than their peers who paid full price for meals. However, the literature regarding the number of days a student participated in an after-school program was not always supported in this study. Students attending fewer than 30 days of the after-school program scored higher than did their peers who participated in the program for 30 or more days in the assessed areas of social studies and reading. Students participating in the after school program for 30 or more days out performed their peers in arts and humanities, mathematics, and reading; this was supported by the literature.

#### *Research Question #5*

To what extent, if any, are gender and participation in an after-school program associated with fifth-grade arts and humanities, math, social studies, practical living-vocational studies, and reading test scores? Two-way ANOVA were used to evaluate the null hypotheses for fifth-grade test scores.

The findings for fifth-grade arts and humanities scores by gender and attendance in the after-school program were not significant. The male students attending fewer than 30 days in the after-school program had a lower mean ( $M = 576.54$ ) than did male students attending 30 days or more of the after-school program ( $M = 584.11$ ). Female students attending fewer than 30 days in the after-school program had a lower mean ( $M = 591.70$ ) than did female students attending 30 days or more of the after-school program ( $M = 595.03$ ).

The findings for fifth-grade math scores by gender and attendance in the after-school program were not significant. The male students attending fewer than 30 days in the after-school program had a lower mean ( $M = 604.46$ ) than male did students attending 30 days or more of the after-school program ( $M = 629.00$ ). Female students attending fewer than 30 days in the after-school program had a lower mean ( $M = 585.85$ ) than did female students attending 30 days or more of the after-school program ( $M = 587.94$ ).

The findings for fifth-grade social studies scores by gender and attendance in the after-school program were not significant. The male students attending fewer than 30 days in the after-

school program had a higher mean ( $M = 593.20$ ) than did male students attending 30 days or more of the after-school program ( $M = 591.89$ ). Female students attending fewer than 30 days in the after-school program had a higher mean ( $M = 584.85$ ) than did female students attending 30 days or more of the after-school program ( $M = 578.03$ ).

The findings for fifth-grade practical living-vocational studies scores by gender and attendance in the after-school program were not significant. The male students attending fewer than 30 days in the after-school program had a lower mean ( $M = 574.54$ ) than did male students attending 30 days or more of the after-school program ( $M = 584.67$ ). Female students attending fewer than 30 days in the after-school program had a lower mean ( $M = 597.07$ ) than did female students attending 30 days or more of the after-school program ( $M = 582.19$ ).

The findings for fifth-grade reading scores by gender and attendance in the after-school program were not significant. The male students attending fewer than 30 days in the after-school program had a lower mean ( $M = 550.46$ ) than did male students attending 30 days or more of the after-school program ( $M = 552.11$ ). Female students attending fewer than 30 days in the after-school program had a lower mean ( $M = 558.70$ ) than did female students attending 30 days or more of the after-school program ( $M = 516.28$ ).

The results for gender and participation in an after-school program and the association with the fifth-grade assessment of arts and humanities, math, social studies, practical living-vocational studies, and reading supported some of the findings of other researchers. Female students out performed their male peers in arts and humanities and reading regardless of the number of days they participated in the after-school program. This was supported by the literature noting that female students often perform higher than male students in reading. Male students out performed their female peers in the assessed areas of math and social studies. This math achievement was supported by the literature. However, in the area of practical living-vocational studies, the results were divided. Female students who attended the after-school program fewer than 30 days out performed their male peers attending for fewer than 30 days whereas the male students who attended 30 days or more out performed their female classmates.

### *Conclusions*

Based on the analysis of the data and findings of this study, the implementation of an after-school program appears to have benefits for all students regardless of socioeconomic status; however, student success differs by content areas and the number of days of attendance in the after-school program. According to Chase (2004), student achievement should not be determined by socioeconomic status and gender. The following conclusions emerged from this study:

1. Based on the findings from the study, there appears to be a relationship between participation in the free- or reduced-cost meals program and achieving apprentice or proficient status on the writing-on-demand assessment component of the Kentucky Core Content Test. A higher percentage of students who received free- or reduced-priced meals (lower socioeconomic status) was classified as novice than was students who paid full price for meals (higher socioeconomic status). This finding reflects the findings of Entwisle et al. (2005) who maintained that wealthier students perform better than do their economically challenged peers in their educational endeavors.
2. Based on the findings from the study, there appears to be a relationship between participation in the after-school program and achieving apprentice or proficient status on the writing-on-demand assessment component of the Kentucky Core Content Test. A higher percentage of students who attended the after school program for fewer than 30 days was classified as apprentice or proficient compared to students who attended more than 30 days.
3. Based on the findings from the study, there appears to be a relationship between gender and achieving apprentice or proficient status on the writing-on-demand assessment component of the Kentucky Core Content Test. A higher percentage of female students was classified as apprentice or proficient than male students.
4. Based on the findings from the study, there appears to be a relationship between participation in the free- or reduced-cost meals program and achieving proficient or



- distinguished status on the writing portfolio component of the Kentucky Core Content Test. A higher percentage of students who paid full price for meals was classified as achieving proficient or distinguished status compared to students who received free- or reduced- price meals.
5. Based on the findings from the study, there appears to be no relationship between participation in the after-school program for fewer than 30 days and participation in the after-school program for 30 days or more and achieving proficient or distinguished status on the on-demand writing assessment component of the Kentucky Core Content Test.
  6. Based on the findings from the study, there appears to be no relationship between the gender of the student and achieving proficient or distinguished status on the writing portfolio for the Kentucky Core Content Test.
  7. In none of the two-way ANOVAs for fourth-grade students' scores on reading, science, and math was there a difference between students who attended the after-school program less than 30 days and those who attended for 30 days or more.
  8. There was a significant difference in the reading scores of fourth graders who participated in the free- or reduced-price meals program and those who participated in the full-price meals program. Fourth graders participating in the free- or reduced-price meals program (low socioeconomic status) had a lower mean on their fourth-grade reading assessment than did their classmates paying full price (higher socioeconomic status) for their meals. Bradley and Corwyn (2002) pointed out that students from homes with low socioeconomic status were less likely to have reading and learning materials purchased for them by parents--therefore creating poorer readers.
  9. There was no significant difference between the science scores of fourth-grade students participating in the free- or reduced-price meals program and those students paying full price for their meals.

10. There was a significant difference in the math scores of fourth graders who participated in the free- or reduced-price meals program and those who participated in the full-price meals program. Fourth graders participating in the free- or reduced-price meals program (low socioeconomic status) had a lower mean on their fourth grade math assessment than did their classmates paying full price (higher socioeconomic status) for their meals. The math scores reflected the findings from the U.S. Department of Education (2005a) with students participating in the free- or reduced-cost meals program scoring lower than students not participating in the free- or reduced-cost meals program.
11. There was no significant difference between fourth-grade male students and fourth-grade female students on their reading assessment.
12. There was no significant difference between the science scores of fourth-grade male students and fourth-grade female students on their science assessment.
13. There was no significant difference between the math scores of fourth-grade male students and fourth-grade female students on their math assessment.
14. In none of the two-way ANOVAs for fifth graders was there a difference in the math, arts and humanities, social studies, practical living, and reading scores between students who attended the after-school program less than 30 days and those who attended more than 30 days.
15. There was no significant difference between the arts and humanities scores of fifth-grade students participating in the free- or reduced-price meals program and those students paying full price for their meals.
16. There was no significant difference between the math scores of fifth-grade students participating in the free- or reduced-price meals program and those students paying full price for their meals.
17. There was a significant difference in the social studies scores between the fifth graders who participated in the free- or reduced-price meals program and those who

- participated in the full-price meals program. Fifth graders participating in the free- or reduced-price meals program (low socioeconomic status) had a lower mean on their fifth-grade social studies assessment than did their classmates paying full price (higher socioeconomic status) for their meals.
18. There was no significant difference between the practical living-vocational studies scores of fifth-grade students participating in the free- or reduced-price meals program and those students paying full price for their meals.
  19. There was no significant difference between the reading scores of fifth-grade students participating in the free- or reduced-price meals program and those students paying full price for their meals.
  20. There was no significant difference between the arts and humanities scores of fifth-grade male students and fifth-grade female students on their arts and humanities assessment.
  21. There was a significant difference in math scores between the fifth-grade male students and fifth-grade female students. Fifth-grade female students had a lower mean on their fifth-grade math assessment than did their male classmates.
  22. There was no significant difference between the social studies scores of fifth-grade male students and fifth-grade female students on their social studies assessment.
  23. There was no significant difference between the practical living-vocational studies scores of fifth-grade male students and fifth-grade female students on their practical living-vocational studies assessment.
  24. There was no significant difference between the reading scores of fifth-grade male students and fifth-grade female students on their reading assessment.

### *Recommendations for Practice*

This study provided an insight into the association between socioeconomic status and participation in an after-school program. The goal of the after-school program is to provide assistance to all students regardless of socioeconomic status in order to increase their academic achievement. The following are recommendations for practice:

1. the after-school program should be continued in the school system that participated in this study;
2. the after-school program's staff and participating faculty and staff should discuss this study and ascertain possible reasons for the results;
3. all school systems should consider the implementation of an after-school program that provides additional learning opportunities for students;
4. the after-school program's director, faculty, and staff should develop a mission statement; and
5. all school systems should consider employing school faculty and staff who have not already completed an 8-hour work day

### *Recommendations for Further Research*

It is the charge of educators to provide the most appropriate learning opportunities for all students regardless of diversities such as socioeconomic status. In order to accomplish this overwhelming task, it is crucial that further research be conducted to evaluate programs that will provide for students from diverse socioeconomic backgrounds. The following are recommendations for further research:

1. This study should be replicated in a different school system.
2. Replication of this study should be conducted using an outcome criterion other than the Kentucky Core Content Test-Commonwealth Accountability Testing System.
3. This study should be replicated at other grade levels.
4. This study should be replicated using a larger population.

5. This study should be replicated using data from multiple years.
6. Implementation of a longitudinal study is needed to evaluate the same students who participated in this study in order to determine their performance in upper grades, their graduation rates, and their paths in life after 12<sup>th</sup> grade.
7. An after-school program with a fully developed curriculum is needed in order to conduct further studies.
8. A study should be implemented regarding professional development of the after-school program and students' success and performance.
9. A study using a qualitative research approach should be conducted to evaluate teachers', parents', administrators', and students' perceptions of the after-school program.
10. A study should be implemented regarding a comparison of data for students participating in the after school program over a 2-year period.
11. An investigation should be implemented to understand the reasons for the results shown in this study pertaining to students attending 30 days or less in the after-school program.
12. A study should be conducted to investigate the impact of an after-school program on daily school attendance
13. A training program should be established for faculty and staff participating in the after-school program to improve instructional practices.

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## APPENDIX

### Letter to School Superintendent

Mr. Darryl Wilder  
Superintendent of Schools  
Middlesboro Independent School District  
Middlesboro, KY 40965

Dear Mr. Wilder:

I am a doctoral student at East Tennessee State University. I am interested in conducting a study within your school system to determine if participation in the after-school program and the socioeconomic status of students impacts academic achievement. The study will take place at Middlesboro Intermediate School.

This study will involve using the test data for the Kentucky Core Content Test, the free/reduced lunch price status, and attendance in the after-school program. The names of all individuals involved in the study will be removed to ensure confidentiality of participants.

I am requesting your permission to conduct this study within the Middlesboro Independent School District and will provide your office and the participating school with copies of the finished report. This should be helpful in providing information that could benefit the district and assist others.

Please feel free to contact my doctoral advisor or me if you have any further questions about my study.

Sincerely,

Anthony Maxwell  
Doctoral Student  
East Tennessee State University

VITA

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