

7-2014

# Effects of Poverty Funding on Literacy Achievement Over Time in Arkansas Schools

Rick Gales

Follow this and additional works at: <https://scholarworks.harding.edu/hu-etd>

 Part of the [Educational Leadership Commons](#), and the [Language and Literacy Education Commons](#)

---

## Recommended Citation

Gales, Rick, "Effects of Poverty Funding on Literacy Achievement Over Time in Arkansas Schools" (2014). *Dissertations*. 20.  
<https://scholarworks.harding.edu/hu-etd/20>

This Dissertation is brought to you for free and open access by Scholar Works at Harding. It has been accepted for inclusion in Dissertations by an authorized administrator of Scholar Works at Harding. For more information, please contact [scholarworks@harding.edu](mailto:scholarworks@harding.edu).



EFFECTS OF POVERTY FUNDING ON LITERACY ACHIEVEMENT  
OVER TIME IN ARKANSAS SCHOOLS

by

Rick L. Gales

Dissertation

Submitted to the Faculty of

Harding University

Cannon-Clary College of Education

in Partial Fulfillment of the Requirements for

the Degree of

Doctor of Education

in

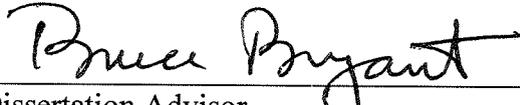
Educational Leadership P-20

July 2014

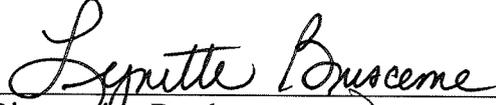
EFFECTS OF POVERTY FUNDING ON LITERACY ACHIEVEMENT  
OVER TIME IN ARKANSAS SCHOOLS

by  
Rick L. Gales

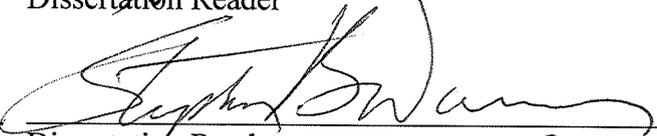
Dissertation

  
\_\_\_\_\_  
Dissertation Advisor

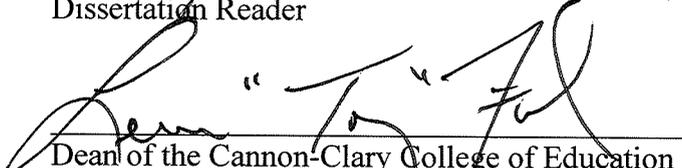
5/6/14  
Date

  
\_\_\_\_\_  
Dissertation Reader

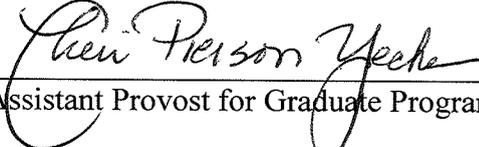
5/6/14  
Date

  
\_\_\_\_\_  
Dissertation Reader

5/6/14  
Date

  
\_\_\_\_\_  
Dean of the Cannon-Clary College of Education

5/6/14  
Date

  
\_\_\_\_\_  
Assistant Provost for Graduate Programs

5-6-14  
Date

©2014

Rick L. Gales

All Rights Reserved

## **ACKNOWLEDGEMENTS**

I thank God for answering my prayers to keep me focused, give me understanding, grant me endurance, and use my time wisely throughout the dissertation process. None of this would have been possible without God.

I want to thank my advisor, Dr. Bruce Bryant, who was supportive and helpful in guiding me through the entire process. The lunch and coffee shop meetings were very helpful and added bonuses in keeping me on a timeline. I am grateful to my dissertation readers, Dr. Lynette Busceme and Dr. Steve Warren for their insight and suggestions. Many thanks to Dr. Usenime Akpanudo who helped me setup the data analysis portion of my dissertation.

Ultimately, I could not have completed this monumental task without the encouragement, understanding, and support of my family. To my father-in-law, Russell Kelly, thank you for knowing I could achieve this degree from the beginning. To my nieces, Skylar and Trinity Gosney, and my nephew, Kenner Gosney, thank you for trying to understand why I came to your house frequently, but only had a short time to visit because I was staying the night to attend class the following day. To my sister and brother-in-law, Kat and James Gosney, thank you for providing me a place to stay during the weekends I had classes, and your words of reassurance as I worked on this degree. To my grandsons, Tyler and Corey Hooper, thank you for being around our home while I worked on my classes; you gave me a chance to help you with your classes. To my

granddaughters, Megan Trail and Sara Gallup, thank you for letting me know how proud you were of me for continuing my education. To my brother and sister-in-law, Calvin and Margarita Gales, for light heartiness and sense of humor. To my late parents, Virgil and Evelyn Gales, thank you for demonstrating to me the importance of hard work.

To my wife, Carol, thank you for believing in me and supporting my efforts from the beginning. Without your willingness to forgo vacation time, home projects, and many evenings we could have spent together, none of this would have been possible. Thank you for your encouragement and support in my quest for education. Your love inspires me daily.

## **ABSTRACT**

by  
Rick L. Gales  
Harding University  
July 2014

Title: Effects of Poverty Funding on Literacy Achievement over Time in Arkansas Schools (Under the direction of Dr. Bruce Bryant)

This dissertation provides additional background to the limited research regarding the effectiveness of the use of state categorical money on literacy achievement measured by the Arkansas Literacy Benchmark Exam for a cohort of third through sixth grade students and a cohort of fifth through eighth grade students in Arkansas school districts. Using a non-experimental design, the researcher tested two hypotheses using a mixed factorial analysis of variance (ANOVA). The independent variables for the two hypotheses were change over time with two levels measured in school years (2008 versus 2009 versus 2010 versus 2011) and the two NSLA funding levels. The dependent variables were literacy achievement measured by the scaled scores from the 2009-2012 Arkansas Benchmark Examination for the students in the sample.

Using descriptive statistics, the researcher also asked two research questions to determine how program expenditures were allocated among six researcher-defined categories by districts assigned to two categories, and the researcher sought to determine how the additional moneys were expended.

The researcher established four cohorts and used a stratified random sampling selection process to choose 320 participants for the study from six school districts. Two cohorts of students in each group who were consecutively enrolled for all years during Grades 3 through 6 (Hypothesis 1) and Grades 5 through 8 (Hypothesis 2) were selected. The selected districts were stratified into two groups: (a) changed NSLA funding level and (b) unchanged NSLA funding level. Stratifying the participants was needed since the main purpose of the study was to observe differences between changed and unchanged NSLA funding level groups.

The results of this study showed no significant interaction between the independent variable of NSLA funding and the dependent variable literacy achievement scores. However, there was a significant interaction between the independent variable of change over time and the dependent variable literacy achievement scores. For the main effect of time, a significant difference on literacy achievement was observed over time. More NSLA funding was spent on non-literacy categories than literacy categories. This observation was true for both the changed and unchanged NSLA funding level groups.

## TABLE OF CONTENTS

LIST OF TABLES .....	x
CHAPTER I—INTRODUCTION .....	1
Statement of the Problem .....	2
Background .....	3
Hypotheses and Research Questions .....	7
Description of Terms .....	8
Significance .....	11
Process to Accomplish .....	14
CHAPTER II—REVIEW OF RELATED LITERATURE .....	19
Overview of Students Who Live in Poverty .....	20
Funding for Students Who Live in Poverty .....	24
How Funding Influences Student Achievement .....	28
Appropriate Spending for Improving Student Achievement .....	30
Conclusions .....	36
CHAPTER III—METHODOLOGY .....	38
Research Design .....	39
Sample .....	40
Instrumentation .....	45
Data Collection Procedures .....	46

Analytical Methods .....	47
Limitations .....	47
CHAPTER IV—RESULTS.....	49
Hypothesis 1.....	49
Hypothesis 2.....	54
Research Question 1 .....	59
Research Question 2.....	63
CHAPTER V—DISCUSSION.....	65
Conclusions.....	66
Implications .....	70
Recommendations .....	72
REFERENCES.....	75
APPENDIX.....	84
Appendix A: Status of Request for Exemption from IRB Review .....	85

## LIST OF TABLES

1. Student Demographics by NSLA Funding with Students from Both Cohorts .....	42
2. Student Information by NSLA Funding: Grades 3-6 Cohort.....	43
3. Student Information by NSLA Funding: Grades 5-8 Cohort.....	44
4. Student Demographics by NSLA Funding and Free or Reduced Lunch.....	45
5. NSLA Funding Change and Literacy Score Relationship in Grades 3-6 Cohort .....	50
6. Tests of Within-Subjects Effects: Sphericity Assumed.....	51
7. Tests of Within-Subjects Contrasts: Grades 3-6 Cohort.....	52
8. Tests of Between-Subjects Effects: Grades 3-6 Cohort .....	54
9. NSLA Funding Change and Literacy Score Relationship in Grades 5-8 Cohort .....	55
10. Tests of Within-Subjects Effects: Greenhouse-Geisser.....	56
11. Tests of Within-Subjects Contrasts: Grades 5-8 Cohort .....	57
12. Tests of Between-Subjects Effects: Grades 5-8 Cohort .....	59
13. Average Amount of NSLA Funds Received by All Districts in the Study .....	60
14. Percentage of NSLA Funds Allocated to the Categories by Each Group .....	61
15. Yearly Average NSLA Funds Spent per Category for Each Group.....	64

## CHAPTER I

### INTRODUCTION

Educational funding in the state of Arkansas represents a significant portion of the state budget. In the fiscal year 2011 alone, 64% of the state's budget was for general and higher education (Arkansas Department of Finance and Administration, 2012). Not surprisingly, opinions differ on how the money for education should be distributed. The state legislative body debates over the methods used to decide how money would be distributed in a way that maximizes the benefits for the students in Arkansas.

Over 45 years ago, the Elementary and Secondary Education Act, the single largest source of federal support for K-12 education, was passed (NCLB Timeline 1965-2014, 2006). The Elementary and Secondary Education Act was passed in 1965 as a part of the *War on Poverty* to provide money to help students from low-income families. The Elementary and Secondary Education Act emphasized equal access to education and established high standards and accountability. The law authorized federally funded education programs that are administrated by the states. About 20 years after the Elementary and Secondary Education Act was passed, the state of Arkansas began litigation revolving around public school funding formulas. Beginning in 1983 with the *Dupree v. Alma School District* case and continuing to *Lakeview School District v. Huckabee* (2002), each court case resulted in vast changes regarding how school districts are funded.

The money appropriated for students receiving a free or reduced-cost lunch is known as the National School Lunch Act (NSLA) (Bureau of Legislative Research, 2010a). NSLA is the Arkansas categorical funding program for schools with high percentages of students in poverty. This state poverty funding program should not be confused with the National School Lunch Program which is a federal school lunch program. The federal National School Lunch Program is used as the measure of poverty for the Arkansas categorical funding program. NSLA funds are a categorical fund outside the state funding formula known as foundation funding. The intent of creating these funds was to help increase achievement for students determined to be of low socioeconomic status (SES). This decision was informed by the large body of evidence that indicated increased funding may be necessary for students of poverty to be successful relative to academic achievement measures (Odden & Picus, 2003).

### **Statement of the Problem**

The purpose of the study was to determine by change over time the effects of change in NSLA funding status on literacy achievement for a cohort of third through sixth grade students and for a cohort of fifth through eighth grade school students in Arkansas. The study also sought to determine how program expenditures were allocated among six researcher-defined expenditure categories identified in the study by the changed and unchanged NSLA funding level groups to determine if spending patterns existed. In addition, the purpose was to determine how the additional moneys were expended in Year 3 and Year 4 in the group whose NSLA funding changed from Level 2 to Level 3.

## Background

The state of Arkansas has faced many legal challenges regarding how school districts receive public funding. Decisions handed down in the courtroom have shaped many aspects of educators' daily lives. What was legal yesterday could be illegal tomorrow if the courts make that decision. This concept is the same when referring to the public school funding formula of today versus how formulas were written 30 years ago. In *Dupree v. Alma School District* (1983), the members of the Arkansas Supreme Court found the state's school funding system unconstitutional under the Equal Protection Clause of the Arkansas Constitution. The court found no real purpose and no relationship to educational needs in the state's method of financing public schools. The court determined that "a constitutional finance system must be based on the amount of money needed to provide an adequate educational system" (p. 1). This equity ruling rejected "local control" as a possible justification for the disparities of funding and educational opportunities in state school districts. The school funding system was deemed inequitable and inadequate under the Arkansas constitution (National Access Network, 2012).

The *Dupree v. Alma* (1983) decision was only the beginning of decades of litigation revolving around school funding in Arkansas. The Arkansas Legislature passed the School Finance Act (1984) during the following year. The passage of this Act was an attempt to require a uniform tax rate throughout the state. However, the Act had several inadequacies (Dickinson, 2009). First, part of the Act required all school districts to have a minimum tax rate; however, the consequences were minimal for failure to levy the required tax rate. Second, the Act did not assess taxes under a uniform system across the state's 75 counties. In addition, personal property was taxed disproportionately when

compared to taxation rates on real property (Dickinson, 2009). These actions did not satisfy the judges, and 12 years later, in the *Tucker v. Lakeview School District* (1996) decision, the court ruled that the state's educational funding system was unconstitutional. In Opinion 95-319 (1995), the Arkansas Attorney General concluded that the state not only had to provide equity for resources available for each student, but also equality of education for every student in all school districts. The Arkansas legislative response was the passage of Act 1173 of 1997. This Act amended both Act 917 of 1995 and Act 916 of 1995. Act 1173 revised the funding system and provided the penalty provisions for noncompliance with Act 917. Act 917 provided a uniform (effective) 25-mill tax rate for maintenance and operation for all school districts in the state. Act 916 provided a surcharge on the state income tax liability of individuals residing in districts not voting the minimum millage (Bryant, 1995; National Center for Education Statistics, 2012).

### **NSLA Funds**

After *Lakeview School District v. Huckabee* (2002), the Arkansas Department of Education (ADE) established a new funding formula for state funds that included four categorical Student Special Needs funds. The four funds are: (a) NSLA, (b) Alternative Learning Environments, (c) English Language Learners, and (d) Professional Development. NSLA involved additional funds for high-poverty environments and/or students from low SES backgrounds. School districts received NSLA funds based on the number of students that qualified for free or reduced-cost lunches in the district (ADE, 2005).

Over the past 7 years, legislators have voiced concerns regarding how the NSLA funds are distributed and spent by the school districts. Three areas of concern were: (a)

NSLA funds did not appear to be positively impacting student achievement, (b) there were issues with how school district administrators were spending NSLA funds, and (c) district administrators were carrying over too much of the NSLA funding each year (BLR, 2010b, 2012a).

### **Relationship between School Funding and Student Achievement**

Not only have there been disputes over school funding at the state level, but disparities over the relationship between equitable school funding and student achievement at the national level have also been discussed for many years. Although some researchers have concluded that expenditures are not systematically related to student achievement (Hanushek, 1989), a greater number of researchers have found school resources are systematically related to student achievement, and those relations are strong and educationally important (Greenwald, Hedges, & Laine, 1996a).

Land and Legsters (2002) stated poverty is the most consistent predictor of academic failure with the concentration of poverty at the school level intensifying the problem. Researchers have also shown that providing additional resources for students coming from low socioeconomic backgrounds increases student achievement, especially in math and literacy. In one study, researchers determined a need for increased funding to districts with higher numbers of students of low socioeconomic backgrounds (Berne, Stiefel, & Moser, 1999).

The ADE (BLR, 2010a) supported the use of NSLA funds to pay for numerous resources that may support or enhance student achievement. The hiring of a literacy coach as additional school personnel is one of those allowable NSLA expenditures. A literacy coach collaborates with classroom teachers to provide individualized staff

development aimed at improving the reading and writing skills of students. Cassidy, Garrett, Maxfield, and Patchett (2009) believed the Reading First Initiative of the No Child Left Behind legislation in 2001(2002) had much to do with the popularity of this position. This legislation provided funding for the hiring of a full-time reading coach to provide mentoring, coaching, training, and demonstration lessons for the classroom teacher (Cassidy et al., 2009).

Biancarosa, Bryk, and Dexter (2010) conducted a 4-year longitudinal study on how literacy coaches contribute to increased student achievement. Results from the study demonstrated significant gains in student literacy learning beginning in the first year of implementation and that the effect's magnitude grew larger during each subsequent year of implementation. All of the literacy coaches in this study received comprehensive literacy instructional training before becoming a literacy coach, and were required to receive additional training each year. Biancarosa et al. believed that proper training was the key element to a successful literacy coach.

Three studies conducted in the state of Arkansas examined the use of NSLA funding (BLR, 2010a, 2012a; Cushman, 2011). The BLR (2010a) showed how NSLA funds were spent in six categories: (a) student academic support, (b) additional personnel, (c) general programs – professional development and parent education, (d) miscellaneous, (e) pre-kindergarten, and (f) salaries above minimum requirements. In this investigation, the BLR also examined student achievement levels for tutoring programs, extended day programs, and summer programs, which were all under the student academic support category. They found a higher percentage of students are participating in the programs in districts that are high poverty and have low achievement levels.

Another study conducted by the BLR (2012a) examined how NSLA funds were spent in seven categories. The categories were the same as the 2010 (BLR, 2010a) study with the addition of one more category for special education programs. According to the BLR study of 2012 (BLR, 2012a), a smaller percentage of economically disadvantaged students scored proficient or advanced on all five of the following tests: 4th grade literacy, 4th grade math, 8th grade literacy, 8th grade math, and 11th grade literacy. In the study conducted by Cushman (2011), math and literacy achievement scores were examined in relation to the different levels NSLA funding granted to the school districts. The results of the study conducted by Cushman were mixed. Three of the six analyses did not coincide with research indicating more funds provided to students of low SES helped the students perform higher on achievement exams.

### **Hypotheses and Research Questions**

For the present study, the researcher generated the following two hypotheses (H) and two research questions (RQ):

H1.No significant difference will exist by change over time for a cohort of third through sixth grade students in Arkansas exposed to schools whose NSLA funding level changed from Level 2 funding to Level 3 funding versus those whose NSLA funding level remained at Level 2 funding on literacy achievement as measured on the Arkansas Literacy Benchmark Exam.

H2.No significant difference will exist by change over time for a cohort of fifth through eighth grade students in Arkansas exposed to schools whose NSLA funding level changed from Level 2 funding to Level 3 funding versus those

whose NSLA funding level remained at Level 2 funding on literacy achievement as measured on the Arkansas Literacy Benchmark Exam.

RQ1. What percentage of NSLA program funds were allocated in each of the six researcher-defined expenditure categories identified in the study by the changed and unchanged NSLA funding level groups to determine if spending patterns existed?

RQ2. In the group where NSLA funding changed from Level 2 to Level 3, how were the additional moneys expended in Year 3 and Year 4 and to what extent were expenditures related to literacy?

### **Description of Terms**

**Allowable expenditure.** Allowable expenditure is a term used to describe ways in which NSLA funds may be spent within the guidelines of the state law (ADE, 2012c).

**Benchmark Exams.** The Benchmark Exams include six criterion-referenced tests given to students within the state of Arkansas. In Arkansas, the test items are based on the academic standards in the Arkansas Curriculum Frameworks and are developed by committees of Arkansas teachers with support from the ADE and the testing contractor. Criterion-referenced tests are administered in Grades 3-8, End-of-Course Exams in Algebra I and Geometry, and a Literacy Exam in Grade 11 (ADE, 2012a).

**Elementary school group.** For the purpose of this study, an elementary school group included third through sixth grade students.

**Frameworks.** The frameworks documents include the broad goals and standards of an entire system of education, and give local school district administrators the freedom to develop a specific program to address the frameworks (ADE, 2012c).

**Literacy coach.** A literacy coach is a professional educator who collaborates with classroom teachers to provide individualized staff development. Ultimately, this collaboration aims to improve the reading and writing skills of students (Cassidy et al., 2009)

**Middle school group.** For the purpose of this study, a middle school group included fifth through eighth grade students.

**National School Lunch Act (NSLA) funding.** NSLA funding is designed to help school districts with high percentages of poor students. This state funding should not be confused with the federal National School Lunch Act. The state money is called NSLA funding only because it uses the federal Act's eligibility criteria for free and reduced-cost lunches. Arkansas NSLA funding includes an amount determined by the district's total students identified as eligible to participate in the NSLA Program divided by the district's total enrolled students. All student numbers are determined on October 1 of each school year and used to calculate the funding amount for the following school year (ADE, 2012c; BLR, 2012a).

**Professional development.** Professional development is a coordinated set of professional activities that are used to improve the knowledge of teachers, administrators, and paraprofessionals regarding effective instructional strategies, methods, and skills for improving teaching practices and student academic achievement. Training activities for school bus drivers may also be included. Professional development shall result in individual, school-wide and district-wide improvement designed to ensure that all students demonstrate proficiency in state academic standards. Professional development

must meet the standards for professional learning (learning communities, leadership, resources, data, learning designs, implementation, and outcomes) (ADE, 2012c).

**Provision Two school district.** A Provision Two school district is a school district that serves reimbursable school meals at no charge to all students when the school district participates in the NSLA program. The school district must serve high-poverty populations (80% or more of the students receive free or reduced-cost lunches) (ADE, 2011b).

**School district.** A school district is a geographic area with an elected board of directors that qualifies as a taxing unit for purposes of ad valorem property taxes under Ark. Code. Ann. § 26-1-101 et seq. and whose board conducts the daily affairs of public schools pursuant to the supervisory authority vested in it by the General Assembly via Title 6 of the Arkansas Code (ADE, 2012c).

**School year.** A school year begins on July 1 and ends on June 30 of the following calendar year. If 1 calendar year is used to refer to a school year, then the school year in reference is the one that begins on July 1. For example: The 2008-2009 school year will be referred to as the 2008 school year.

**Socioeconomic status (SES).** SES refers to an individual's or group's position within a hierarchical social structure. SES depends on a combination of variables, including occupation, education, income, wealth, and place of residence (Socioeconomic status, 2012). In K-12 education, the SES label refers to low SES.

## Significance

### Research Gaps

BLR (2010a, 2012a) studies on educational adequacy examined the data of NSLA expenditures for all school districts in the state of Arkansas regarding programs funded with NSLA funds. In the 2010 study (BLR, 2010a), the BLR considered the areas of expenditures within the student academic support category. The primary goal was to determine if NSLA funds spent in these areas helped students to score better on achievement exams. This category amounted to only 9.2% of the total NSLA expenditures. The category for additional personnel amounted to 57.4% of the total NSLA expenditures for the 2008 school year. No part of the study considered the impact of additional personnel on student achievement. In 2012, the BLR conducted another study (BLR, 2012a) using school expenditures and achievement exam data from the 2010 school year. Only a small part of the study (BLR, 2012a) was dedicated to examining NSLA expenditures and how economically disadvantaged students scored on the achievement exams. In this study, the student academic support category had decreased since the last study (BLR, 2010a) to 7.2% of the total NSLA expenditures, and the additional personnel category was now at 55.9% of the total NSLA expenditures. The BLR (2012a) study compared the math and literacy achievement scores of economically disadvantaged students with achievement scores of all students. The economically disadvantaged students scored lower than the all-students group on every achievement exam. However, this study (BLR, 2012a) did not provide additional data to compare student achievement with NSLA categorical spending. Cushman (2011) examined the relationship of student achievement score and NSLA funding for several school districts

in Arkansas. Cushman divided districts into four groups based on the level of NSLA funding received from the state. The study provided data showing how the NSLA funds were spent in 11 categories. However, each of these categories contained several allowable expenditure types; such as the category which included math, literacy, and science coaches. Cushman examined the amount of NSLA funding and achievement scores for 1 school year.

This study examined the relationship of student achievement and NSLA funding for six school districts over multiple years. Data were compared from three school districts that had used NSLA funds to hire literacy coaches during a 4-year period. Throughout this time, they converted from Level 2 to Level 3 NSLA funded school districts. Three additional school districts, one from each of the same geographical areas as the initial three school districts, were used as comparison school districts that remained at Level 2 NSLA funding during the 4-year period. The data provide an opportunity to observe the funding of school programs in relation to student achievement over time.

### **Possible Implications for Practice**

Lawmakers and educators might use data from this study to make informed decisions relative to expending NSLA funds to maximize impacts on academic achievement. This study provides information categorical expenditures in relation to benefits or disadvantages associated with student achievement. The effectiveness of how these funds are spent could prove beneficial to Arkansas legislators in making decisions about whether to continue to appropriate NSLA funds the way it is done currently or to amend legislation concerning how NSLA funds may be spent. Research from the study could show that the amount of NSLA funds a school district receives impacts student

achievement for students coming from homes of low SES. In addition to the amount of NSLA funds received by the districts, examining ways funds are spent could provide additional insight for the best way to use these resources. For instance, if certain expenditures are shown to have minimal benefits relative to improving academic achievement, school district leaders should reduce or eliminate that expenditure in the future and re-appropriate the money to another area that has been shown to be more beneficial in raising student achievement.

With increasing emphasis on student achievement from the federal and state levels, it is critical that all stakeholders be aware of what methods help students achieve academically. Districts may need additional NSLA funds to make a positive impact on student achievement. There may need to be changes in the programs being offered to students via NSLA funds to make a positive impact on student achievement. The focus of public education should be for students to be successful learners. This study could be used in helping achieve that focus.

Lawmakers and educators throughout the nation can benefit from this study. Providing assistance to students living in poverty so that they reach the achievement level of non-SES students who are not the casualties of educational disadvantage is simply a form of equalization. Providing students with tools needed for academic success must be done. Conclusions from this study could be used to provide educators in all states with information about how NSLA funds might be optimally expended.

## **Process to Accomplish**

### **Design**

A mixed factorial analysis of variance (ANOVA), non-experimental design was used in this study. The independent variables for the two hypotheses were the two changes in NSLA funding levels and change over time with two levels measured in school years (2008 versus 2009 versus 2010 versus 2011).. The dependent variables for the two hypotheses were literacy achievement measured by scaled scores from 2009-2012 Arkansas Benchmark Examination for the students in the sample. For Research Question 1, descriptive statistics were used to determine what percentage of expenditures were allocated in each of the six researcher-defined expenditure categories by changed and unchanged NSLA funding level groups to determine if spending patterns existed. For Research Question 2, descriptive statistics were also used to determine how additional moneys were expended in Year 3 and Year 4 in relation to literacy.

### **Sample**

A stratified random sampling selection process was used to choose participants for the study. All 239 public school districts in the state of Arkansas were divided into their current NSLA funding categories. The first group (Level 1) included all districts with less than 70% of students receiving free or reduced-cost lunches. The second group (Level 2) included districts with 70% to 89.99% of students receiving free or reduced-cost lunches. The third group (Level 3) included districts with greater than 89.99% of students receiving free or reduced-cost lunches. Then, districts were divided into additional groups based on the time spent in one level of funding before moving to a different level of funding. The additional groups were composed of districts that had been

in Level 2 funding for two years before moving to Level 3 funding for two years and districts that had been in Level 2 funding for 4 consecutive years. Only three districts spent 2 years in Level 2 funding before moving to Level 3 funding. Data of students from those districts were used for changed NSLA funding level. Three districts of similar size and geographical area as the first group of school districts that had remained in Level 2 funding during the 4 years of data collection were selected for the unchanged NSLA funding level group. This selection provided two groups.

A cohort of students in each group who were consecutively enrolled for all years Grades 3 through 6 (Hypothesis 1) and Grades 5 through 8 (Hypothesis 2) were selected and stratified by gender and then randomly sampled. Students' scaled scores in literacy for each grade from the 2009-2012 Benchmark exams were collected for analysis. The same groups of students were used throughout the study. Identities of school districts and individual students were completely confidential; no identifying information was used.

### **Instrumentation**

The Arkansas Comprehensive Testing, Assessment, and Accountability Program is a comprehensive system encompassing high academic standards, professional development, student assessment, and accountability for schools (ADE, 2012c). The portion of the Arkansas Comprehensive Testing, Assessment, and Accountability Program used to measure literacy achievement in this study was the Arkansas Augmented Benchmark Examination. The Arkansas Augmented Benchmark Examination is composed of six criterion-referenced tests administered to Arkansas students in Grades 3-8. The criterion-referenced test assessment instrument is customized to the Arkansas Curriculum Frameworks (ADE, 2012c). The literacy performance levels, determined by

the 2012 Arkansas Augmented Benchmark Examination, were used to identify students who were proficient or above, which is considered to be at grade level.

The performance levels of the students are based on four levels of achievement on the state's criterion-referenced tests. The four levels are advanced, proficient (grade level), basic, and below basic. The ADE (2012c) defines each level as follows:

- **Advanced:** Advanced students demonstrate superior performance well beyond proficient grade-level performance. They can apply established reading, writing and mathematics skills to solve complex problems and complete demanding tasks on their own. They can make insightful connections between abstract and concrete ideas and provide well-supported explanations and arguments. (p. 5)
- **Proficient:** Proficient students demonstrate solid academic performance for the grade tested and are well prepared for the next level of schooling. They can use established reading, writing and mathematics skills and knowledge to solve problems and complete tasks on their own. Students can tie ideas together and explain the ways their ideas are connected. (p. 5)
- **Basic:** Basic students show substantial skills in reading, writing and mathematics; however, they only partially demonstrate the abilities to apply these skills. (p. 5)
- **Below Basic:** Below basic students fail to show sufficient mastering of skills in reading, writing and mathematics to attain the basic level. (p. 5)

Each performance category has a scaled score range by grade level in literacy that corresponds to a particular performance level (ADE, 2012c).

One may ask why it is not appropriate to use raw or percent-correct scores for comparing test takers across different test editions. Why do standardized testing programs go through complicated statistical processes to come up with scaled scores? Scaled literacy scores were used instead of raw literacy scores in this study. When multiple forms of a test are used, or when results are compared from year to year, scaled scores are needed to adjust for possible differences in test form length or difficulty. Scaled scores are intended to make scores more meaningful by defining a scale of measurement that is not tied to a particular form of test. However, to be meaningful, the scale must be tied to a benchmark that is meaningful to the user. The Arkansas Augmented Benchmark Examinations were constructed so that a specific score for literacy corresponds to the Advanced, Proficient, Basic, and Below Basic performance levels. When comparing scores from different years, the values of the scaled scores may correspond to different raw scores, but they have the same meaning in terms of student performance (ADE, 2010).

The data in six researcher-defined expenditure categories for NSLA were compared and examined. Each category was examined for school years 2008-2011. Within each school year, a category contained both the dollar amount budgeted and percent of the total NSLA budget that the category received.

### **Data Analysis**

Data were collected on NSLA expenditures from the Arkansas Comprehensive School Improvement Plan (ACSIP) of each district involved in the study. The ACSIP is an annual planning and fund distribution design that must be used by all Arkansas public and charter schools. Using the ACSIP model, each school in Arkansas develops a

comprehensive school improvement plan. The plan is also used as the school's application for all federal and state programs administered by the ADE, under the Elementary and Secondary Education Act (ADE, 2011a). Expenditure patterns for NSLA funds were examined for the 2008-2011 school years. A mixed factorial ANOVA with one between-groups and one within-subjects of independent variables was conducted to analyze each of the hypotheses. The mixed factorial ANOVA was conducted to test for effects of the independent variables, the two NSLA levels and change over time with two NSLA funding levels measured in school years (2008 versus 2009 versus 2010 versus 2011), on literacy achievement for students in the elementary school group and the middle school group over a 4-year period. Assumptions for conducting mixed factorial ANOVAs that include sphericity were checked. A two-tailed test with a .05 level of significance was used.

The researcher collected and sorted data according to six researcher-defined expenditure categories identified in the study by the changed and unchanged NSLA funding level groups. The six categories were: (a) Literacy Coaches' Salaries and Benefits, (b) Literacy Materials and Supplies, (c) Literacy Professional Development, (d) Non-literacy Faculty Salaries and Benefits, (e) Non-literacy Professional Development, and (f) Other Non-literacy Approved ADE expenditures. Descriptive statistics were used to examine the amount of money spent in each category and the percent this amount equaled in relation to the total NSLA budget.

## **CHAPTER II**

### **REVIEW OF RELATED LITERATURE**

Poverty influences student achievement. According to Tienken (2012), "...poverty has a negative influence on student achievement, especially when achievement is measured by state-mandated standardized tests" (p. 105). Unfortunately, Tienken noted, some bureaucrats, educational leaders, and state governors continue to downplay the influence of poverty on student achievement. Tienken also stated, "In no state does the group of students categorized as economically disadvantaged ever score higher than its middle class or wealthy peers on any state test, at any grade level" (p. 106). Poverty is no excuse for not learning, but it influences the learning process, and it influences state-mandated standardized test results (Sirin, 2005). When Sirin (2005) conducted a meta-analysis of SES and academic achievement in journal articles published between 1990 and 2000, he found that poverty accounts for up to 60% of the variance in standardized test scores. Students who live in poverty are more likely to underachieve, to be retained, to be suspended, and to be expelled from school compared to their peers from middle- and high-income households. Likewise, Noguera (2011) asserted that poverty is an obstacle to student achievement. Children from homes of low SES encounter obstacles that often adversely affect their development and learning outcomes. Therefore, high academic achievement is a much greater challenge (Noguera, 2011). Schools need their students to perform well on standardized tests because student

achievement continues to be the method by which schools are judged for effectiveness (Wood, 2003).

In an effort to close the achievement gap between students from low SES environments and other students, schools often receive additional funds based on the population of students classified as coming from low SES households. However, as demonstrated during the regular session of the Arkansas General Assembly of 2013, questions remain regarding the necessity and amount of funds needed for students from low SES backgrounds (Derlikowski, 2013). Do the additional funds have a positive impact on student achievement? How should those funds be spent?

This chapter is dedicated to reviewing the literature related to poverty, categorical funding for students determined to be from homes of low SES, and literacy coaches. Each of the three areas was examined to determine how student achievement was impacted. The first section of the review provided an overview of poverty and the impact on students who live in poverty. The second section offered an examination of special funding established for students coming from low-income homes using state and regional information. The final section included a history of literacy coaches and how student achievement increased when literacy coaches were properly trained.

### **Overview of Students Who Live in Poverty**

Students who live in poverty view the world from a different perspective than students from middle- and high-income families. It is important to gain insight into the culture of individuals living in poverty before passing judgment on them for their outlook on life. This insight can be very beneficial when deciding how financial support for their educational needs can best be used (Gorski, 2008; Payne, 2005).

Providing a definition of poverty is an essential step toward gaining insight into the poverty culture. In the United States and other countries, poverty is defined based on the household income under a predefined amount. However, Payne (2005) defined poverty as the varying degrees to which a person lacks any one of the following nine resources: (a) financial, (b) language, (c) emotional, (d) mental, (e) spiritual, (f) physical, (g) support systems, (h) relationships/role models, and (i) knowledge of middle class hidden rules. Langille-Hoppe, Maxey, Gonzalez, and Terrell (2010) asserted that poverty is defined by those who are privileged and in power. Languille-Hoppe et al. (2010) agreed with Payne that poverty encompasses more than material goods. They also agreed that the defining process does not take away the ability for an individual to define self and reality just because they have been labeled as poor. Subjective definitions of poverty include subjugated knowledge and are considered to be from an insider perspective (Langille-Hoppe et al., 2010).

Payne (2005) provides answers for how poverty affects learning, work habits, and decision-making. According to Payne, two things help move students out of poverty: education and relationships. Educators must teach and provide assistance, expectations, and support to meet the needs of the students. Payne continued that the support can take different forms, including emotional, physical, and financial. Beegle (2003) discovered that, due to the perpetuated effects of generational poverty, having a mentor helped students overcome significant barriers and complete a college degree. Beegle also learned that having a trusting relationship with an adult opened the door to sharing feelings and experiences. As a result of sharing, needs were identified. Educators may learn how to provide emotional and physical support for students, but financial support may come in

many different forms. For the purpose of this study, financial support is defined as the additional funds provided to schools to aid in the educational process of students coming from low SES households.

Public schools in the United States have always been viewed as institutions that served their local communities (Biddle & Berliner, 2002). In many cases, those schools were supported financially by local contributions. Many families in small communities had similar standards of living. However, as more people moved to major cities and suburbs, living standards varied greatly among families attending the same school. Odden and Picus (2008) argued resistance against providing equitable funding is a result of “block grants” spent unwisely by school districts. On the other hand, Biddle and Berliner (2002) stated that part of the resistance against equitable funding for schools is due to three beliefs about poverty.

The first belief cited by Biddle and Berliner (2002) was the belief of *individualism* that leads to the conclusion that success and failure, mainly result from individual effort rather than social circumstance. If this belief were correct, no additional funding would be needed for schools since all responsibility lies with the effort individuals put into their education. Unfortunately, this belief can lead to blaming people in poverty for their lack of success. Not everyone shares the belief of individualism as defined by Biddle and Berliner (2002). Other studies have shown that students from low income home environments can achieve academic success through focused efforts of the schools (Peabody, 2012; Watt, Powell, Mendiola, & Cossio, 2006). Peabody (2012) and Watt et al. (2006) demonstrated how important it is for schools to have a system in place that can support students of low SES groups through their secondary education. With the

proper educational support, all students can experience academic success despite their social circumstances (Wilt, 2006).

The second belief Biddle and Berliner (2002) cited about poverty was *essentialism*: the belief that groups of less privilege inherit genetic characteristics that cause their lack of successes; thus, a person is born with the ability to be successful or not. Therefore, providing additional funds for these students would be a waste of money. However, according to Lindsey, Robins, and Terrell (2009), educators must be aware that students may have more in common based on SES rather than ethnicity or genetics. Not all students learn in the same manner; learning diversity exists in the student population of all schools. To educate students successfully from financially impoverished environments, non-traditional teaching methods may have to be used (Peabody, 2012).

The final belief Biddle and Berliner (2002) mentioned was the *culture of poverty* belief, which states that impoverished people and minorities fail because of inappropriate traditions in the cultures of their homes. This belief, held by some, would explain the resistance against additional funding for these students, since it is believed culture has predestined them to a life of poverty. The research presented by Biddle and Berliner was supported by further research dating back as early as 1969 (Herrstein & Murray, 1994; Kluegel & Smith, 1986; Moynihan, 1969; Slavin, 1999). This information helps to explain why many people do not believe that additional funding for students from low SES homes will be effective in moving them out of poverty. More recent studies than Biddle and Berliner's 2002 study contradict the culture of poverty belief. Payne (2005, 2008, 2009) and Beegle (2003) have shown how the negative effects of culture can be overcome via proper education and dedication to the students. At another extreme Gorski

(2008) argued there is no such thing as a culture of poverty. Differences in values and behaviors among poor people are just as great as behaviors between poor and wealthy people (Gorski, 2008). Peabody (2012) said, “It is up to the schools to bridge the education gap and thereby alter the culture of our students so that they will embrace the idea of going to college” (p. 23). If Peabody is correct, schools have the responsibility of making a positive impact on the culture of all students.

### **Funding for Students Who Live in Poverty**

The responsibility for K-12 education rests with the states according to the United States Constitution. However, there is a national interest in the quality of education in public schools. Therefore, the federal government provides assistance to the states and schools in an effort to supplement state support. With the enactment of the Elementary and Secondary Education Act, the primary source of federal K-12 monetary support began in 1965 (United States Department of Education, 2005). The overall purpose of the Elementary and Secondary Education Act was to improve educational opportunities for poor children. The allocation formulas directed assistance to the local education agencies with the greatest proportions of poor children. The funds were purposely distributed through state education agencies to avoid the perception that the federal government was intervening in the rights and obligations of states to provide public education (Association for Educational Communications and Technology, 2001).

### **How States Distribute Funding for Students from Low Income Households**

With increased focus on academic achievement for all students, most states have instigated funding policies that provide additional funds to school districts based on poverty. The policies that each state follows were different in terms of the level of

funding provided, definition of poverty, formulas used to distribute funds, degree to which funds are targeted to high-poverty school districts, restrictions on the use of funds, and integration of poverty data with other measures defining at-risk children (Carey & Center on Budget and Policy Priorities, 2002).

According to Carey and the Center on Budget and Policy Priorities (2002), there are several sources of information used by states to determine the amount of poverty-based funding to distribute to schools. Some poverty-based programs, like the one used in Arkansas, were created because of decisions by state courts over education finance lawsuits (*Dupree v. Alma School District*, 1983; *Lakeview School District v. Huckabee*, 2002). Others were likely created by state legislators who were aware of the changing standards of the education funding policies needed to satisfy the state constitutional mandates to provide public education services to all children.

Each state must have accurate student poverty data for each school district in order to distribute poverty-based education funding efficiently. States do not independently collect poverty information for this purpose. Information provided by Carey and the Center on Budget and Policy Priorities (2002) revealed that states rely on poverty measures derived from various federal programs that provide benefits to low-income households. Using poverty information collected by other agencies allows states to circumvent the time, the expense, and the administrative encumbrance of independently calculating poverty rates for schools and school districts. By trusting poverty measures created for other programs, states include some limitations of those measures into their education funding systems.

There are three main poverty measures that states use when determining the amount of funds to be distributed to schools for students from low income households. Those measures are census data, free and reduced lunch participation, and enrollment in the Temporary Assistance for Needy Families (TANF) program. A survey of state education finance officials conducted by Carey and the Center on Budget and Policy Priorities (2002) found 38 states used 75 different funding programs to distribute funds.

Three states, California, Connecticut, and Ohio, use the number of children enrolled in the TANF program to distribute poverty-based education funds. TANF is a government grant program to help move recipients to work and turn welfare into a program of temporary assistance eligibility. TANF eligibility is based on monthly household earnings, and eligibility varies from state to state (United States Department of Health & Human Services, 2013). The limitation in some states of using TANF data to determine school poverty is that TANF benefits are limited to families who have incomes well below the poverty line. This means children from low-income families that need additional educational services will not be revealed in the TANF counts.

Six states depend on child poverty estimates calculated by the United States Bureau of Census. The Census Bureau estimates the number of children between the ages of 5 and 17 that are living below the poverty line in each school district. The Department of Education for each state then makes modifications based on the process established by the state to provide poverty funding for each district. Census estimates of poverty tend to lag behind current data by several years. In addition, census data is only available for school districts, not for individual schools (Carey & Center on Budget and Policy Priorities, 2002).

The remaining states, with Vermont being the exception, use poverty data from the free and reduced lunch program to calculate poverty-based education funding. (Vermont uses the number of students living in households that receive food stamps.) The state of Arkansas is one of the states using the free and reduced-cost lunch program to calculate funding. The number of students receiving free or reduced-cost lunch is collected at the school level. However, the specificity of how the information is used varies from state to state (National Center for Education Statistics, 2004).

There are many differences amongst the states when it comes to the level of commitment to poverty-based funding. Poverty-based funding per low-income student ranges from 100s to 1,000s of dollars depending on the state (National Center for Education Statistics, 2004). The landscape for funding K-12 education continues to change as courts have found K-12 school finance systems to be unconstitutional in several states over the past decades. According to Drennon (2006), there were more than 140 court cases filed in the United States between 1970 and 2003 claiming that unacceptable and unconstitutional funding disparities existed among school districts in most states.

State officials looking for ways to improve poverty-based education funding programs consider a variety of options. Four options that have been considered are: (a) provide funding that reflects the cost of educating children from low-income families, (b) provide additional funding to high-poverty school districts, (c) increase the accuracy of poverty-based distributions by using multiple data sources, and (d) modify other education funding policies that diminish the effectiveness of poverty-based education funding (Carey & Center on Budget and Policy Priorities, 2002).

## **Separate Categorical Grants**

All state aid formulas provide school districts with funding on a per-student basis in some form. The process begins by assigning to each student an equal appropriation of funds based on enrollment numbers. However, some students determined to have special needs carry an additional funding weight that is added to the base value. For example, Arkansas provides three levels of additional funding for students who qualify for the federal free and reduced-cost lunch program (ADE, 2012b).

Twenty-five states provided poverty-based education funding through separate *categorical* grants to school districts during the 2002-2003 school year (National Center for Education Statistics, 2004). Categorical grants are funded from state revenues through separate budget line items, supplementing the state's basic aid program. Categorical grants are provided for specific purposes, such as class-size reduction, early childhood education, English language learners, alternative learning environments, and students from low SES households. Carey and the Center on Budget and Policy Priorities (2002) say that many states that provide poverty-based education funding through separate categorical grants tend to have policies and rules dictating both the amount of money school districts receive to serve students in low SES groups and the method in which that funding may be spent.

## **How Funding Influences Student Achievement**

There are two main views regarding the impact on student achievement brought about by additional funds for schools: (a) there is no relationship between funding and student achievement and (b) there is a relationship between funding and student achievement. Some of the most cited research in the field of school funding are from

Hanushek, Peterson, and Woessmann (Hanushek, 1989, 1994, 1997; Hanushek, Peterson, & Woessmann, 2012). Hanushek has maintained that there is minimal, if any, relationship between funding and student achievement. Hanushek (1989) analyzed 90 different studies relating to this topic that spanned over a 20-year period and argued that these results have a simple interpretation: there is no strong or consistent relationship between school resources and student performance. In other words, "...there is little reason to be confident that simply adding more resources to schools as currently constituted will yield performance gains among students" (pp.148-149). Funding could make a positive difference in student achievement if used in a different manner.

Hanushek et al. (2012) plotted test-score gains against increments in spending between 1990 and 2009. The data showed that spending and achievement gains had a slight positive relationship, but according to Hanushek et al., the .12 correlation between new expenditure and test-score gain is of no statistical or practical significance.

Other researchers who reached different conclusions examined the same studies that Hanushek analyzed. After conducting a meta-analysis, which included data from Hanushek's (1986, 1989, 1991) studies, Hedges, Laine, and Greenwald (1994), and Greenwald, Hedges, and Laine (1996a, 1996b) concluded that funding does make a difference. The reason for the difference in the conclusions may be attributed to the difference in the statistical analyses performed by different researchers (Odden & Picus, 2008). Hedges et al. (1994) calculated the effect size of the same studies in which Hanushek (1986, 1989, 1991) observed positive and negative relationships between funding and achievement. Odden and Picus (2008) agreed with Hedges et al. (1994) that effect size was the best way to summarize across the studies.

In 2003, the Arkansas General Assembly hired Lawrence O. Picus and Associates as consultants to help devise a new funding formula for the state's education system. The consultants made recommendations in 2003 (Odden & Picus, 2003) and again in 2006 (Odden, Picus, & Goetz, 2006), when the state rehired them to recalibrate the funding formula. Odden et al. (2006) argued that districts with high concentrations of poverty need additional resources. They recommended additional funding for only two purposes: (a) teacher tutors and (b) pupil support personnel.

Biddle and Berliner (2002) also support the belief that a relationship between the level of funding and student achievement does exist. The claims that the level of funding for schools does not affect student achievement tend to come from sources that are antagonistic to public education (Biddle & Berliner, 2002). Rothstein (1993) contended that those who believe there is not a relationship between funding and achievement are not examining the true use of all the funds provided to education. Rothstein pointed out that the additional money, which has been added to public education, is used to take care of students with handicaps, children of immigrants, nutrition programs, and transportation. Rothstein stated that it was unfair to say that schools have failed because test scores have not always reflected this increase in spending, when much of spending has not been on academic programs.

### **Appropriate Spending for Improving Student Achievement**

Several authors have recognized that the amount of money spent on public education has more than doubled in the last 20 years (Biddle & Berliner, 2002; Carey & Center on Budget and Policy Priorities, 2002; Hanushek, 1991; Rothstein, 1993). The

disagreement among these authors is whether the money spent has made a positive impact on student achievement and what programs received the increase of funds.

In three separate studies of school funding and its relationship to student achievement, Archibald (2006), Elliot (1998), and Ferguson (1991) took different approaches but arrived at similar conclusions. All three studies concluded that increased financial resources had a positive effect on student achievement. Each study sought to discover what type of resources purchased with school funds actually made an impact on student achievement.

The common thread among the three studies was that giving students access to well-trained teachers increased students' achievement. Ferguson (1991) said, "hiring teachers with stronger literacy skills, hiring more teachers, retaining experienced teachers, and attracting more teachers with advanced training are all measures that produce higher test scores in exchange for more money" (p. 485). Elliot (1998) not only agreed that money matters, but that the specifics of how money was used mattered more. Elliot reported that per-pupil expenditures indirectly increased students' achievement by giving students access to educated teachers who used effective pedagogies in the classroom.

According to Archibald (2006), teachers produce one of the largest sources of variation in student learning. Archibald also found that school-level poverty had negative, statistically significant impacts on both math and reading achievement.

### **Arkansas Funding for Students from Low Income Households**

The federal government began to provide equity for students from low-income households with the passage of the Elementary and Secondary Education Act of 1965 in

the form of a new federal program called Title I. The purpose of these federal funds was to ensure students from low-income families obtained a high quality education and to help students who were behind academically (NCLB Timeline 1965-2014, 2006).

In Arkansas, changes have been made to the school funding formula mostly due to the result of court cases from 1983 to 2002 (*Dupree v. Alma*, 1983; *Lakeview School District v. Huckabee*, 2002). The Arkansas Supreme Court had to address the issue of adequacy in the Arkansas public school funding formulas. The *Lakeview* (2002) court decision based its definition of the “general, suitable and efficient system of free public schools” required by the Arkansas constitution on Kentucky’s *Rose v. Council for Better Education* (1989) decision, and adopted the *Rose* factors as the requirement for an adequate education (p. 1). The court also relied on Arkansas’ standards for student achievement and accountability to charge the state with providing adequate funding to allow the system’s students to achieve the expected outcomes (*Lakeview School District v. Huckabee*, 2002). After *Lakeview School District v. Huckabee*, the ADE established a new funding formula for state funds that included the categorical fund called National School Lunch Act (NSLA). In Arkansas, NSLA is not federal funding despite having *national* in the name. School districts received NSLA funds from the state based on the number of students that qualified for free or reduced-cost lunches in the district (ADE, 2005). One of the many approved expenditures for NSLA funds is the hiring of literacy coaches to help students become proficient in literacy.

### **The Benefits of Literacy Coaches**

According to Cassidy, Garrett, Maxfield, and Patchett (2009), *the term literacy coach* is a relatively new addition to the educational vocabulary. The term refers to a

professional educator who collaborates with classroom teachers to provide individualized training focused on improving the reading and writing skills of students. Cassidy et al. (2009) believed that the Reading First Initiative of the No Child Left Behind (2002) legislation was the main reason for the popularity of this position. This legislation provided funding for the hiring of a full-time reading coach to provide mentoring, coaching, training, and demonstration lessons for the classroom teacher.

Cassidy et al. (2009) observed that regardless of the seemingly recent appearance and ensuing popularity of the term literacy coach, the position has roots dating as far back as the 1930s. Previous forms of the position's title include learning specialist, literacy facilitator, language arts specialist, language arts coach, curriculum specialist, instructional specialist, instructional coach, and academic facilitator. Cassidy et al. noted that all of these expressions have described a position with the same goal: improving the academic success of students, particularly in the areas of reading and writing via on-going, job-embedded professional development.

The implementation of literacy coaches can be a challenging process as discovered by Gross (2010). Gross (2010) explored the results of a study that examined the first 2 years of a program introducing literacy coaching in the secondary level through content-area teachers' perspectives. Of the literacy coaches hired, some were veteran math teachers, while others were reading specialists. The new literacy coaches received 1 full day of training per month throughout the school year. The idea of changing current teaching strategies for many teachers was difficult to accept. After 2 years, the effectiveness the literacy coaches were mixed depending on the number of years a classroom teacher had been teaching. More experienced teachers resisted the change.

Having literacy coaches available on a daily basis over a 2-year period allowed teachers to grasp and employ new approaches to teaching. According to Gross, “teachers saw how literacy strategies inspired students to think more critically and creatively about every subject, becoming more active investigators of knowledge” (p. 137). In addition, educators hired from within the school district as literacy coaches met with different levels of success. Gross believed that additional training and preparation for the literacy coaches might have provided more positive acceptance from all the teachers.

In an effort to understand literacy coaches' impact on teachers, Vanderburg and Stephens (2010) conducted a 3-year study. During the 3 years, literacy coaches facilitated bi-monthly study groups for teachers and spent 4 days a week in classrooms, helping teachers implement practices learned in study groups. The authors wanted to understand what coaches did that teachers found helpful and ascertain ways in which teachers' beliefs and practices changed because of the coach. Vanderburg and Stephens found that teachers valued how the coaches created a “space for collaboration, provided ongoing support, and taught about research-based instructional strategies” (p. 141). They concluded that teachers attributed their coach with helping them try new teaching practices, incorporate more authentic assessments, ground their decisions in the professional literature, and create a curriculum that was more student-centered. Although this study examined how teachers benefited from well-trained and regular interactions with literacy coaches, there were no data collected to support any student benefits.

Biancarosa, Bryk, and Dexter (2010) conducted a 4-year longitudinal study of the value-added effects of literacy coaching on kindergarten through second-grade students' literacy learning. The literacy coaches were trained using the Literacy Collaborative

program, which relies heavily on one-to-one literacy coaching as a means of improving student literacy learning. Through the Literacy Collaborative program, literacy coaches attended intensive, graduate-level training for 1 year while still teaching children. After the training year was complete, the literacy coaches reduced their teaching time and spent about half of their time providing professional development and coaching to their colleagues. The teachers participated in a 40-hour course taught by the literacy coaches during the second year, with an additional 10 to 12 hours of professional development each following year. In their study, the Literacy Collaborative program targeted all components of reading, writing, and language development.

Biancarosa et al. (2010) used an accelerated multi-cohort, longitudinal, quasi-experimental design. The data collected on student learning during the baseline, or no-treatment, period allowed Biancarosa et al. to estimate the value-added effects on a subsequent intervention of student learning. They proposed the following:

Value-added modeling is rooted in the idea that each child has an individual latent growth trajectory. This trajectory describes the expected achievement growth in Grades K-2 for each child if exposed to the average instructional conditions prevalent in the school during the baseline period. (p. 12)

Biancarosa et al. (2010) collected student achievement data during the fall and spring from multiple student cohorts at three grade levels (kindergarten through second grade) over a 4-year period. They compared the observed student growth trajectories in the 3 years of Literacy Collaborative program implementation to the expected (latent) growth trajectories under baseline conditions. The value-added effects represent the difference between the observed and expected outcomes. The final study sample included

4 years of data amounting to 27,427 observations of 8,576 students in 17 schools located in eight states across the eastern United States. The results revealed significant gains in student literacy learning. During the 3 years following the baseline year, students made learning gains of 16%, 28%, and 32% respectively compared to the baseline year.

Biancarosa et al. believed the positive impact of literacy coaching they found compared to other studies (Marsh et al., 2008; Garet et al., 2008) may have been due to the extensive training of the literacy coaches in the Literacy Collaborative program. In the Garet et al. (2008) study, coaching was like additional Professional Development curriculum, and in the Marsh et al. (2008) study, the coaching framework contained variations in content and implementation.

L’Allier, Elish-Piper, and Bean (2010) agreed with Biancarosa et al. (2010) concerning literacy coaches require specialized knowledge and training. L’Allier et al. established seven guiding principles for literacy coaching: (a) coaching requires specialized knowledge, (b) time working with teachers is the focus of coaching, (c) collaborative relationships between the coach and teacher are essential, (d) coaching that supports student reading achievement focuses on a set of core activities, (e) coaching must be both intentional and flexible, (f) coaches must be literacy leaders in the school, and (g) coaches are continuous learners. Besides possessing specialized knowledge, literacy coaches must understand how to work effectively with adults.

### **Conclusions**

Although researchers, educators, and policy makers have varied on their opinions and reached different conclusions regarding the effects of additional funding for students of poverty and the use of literacy coaches, the majority of current researchers support the

argument that additional sources of funding and staffing are positively related to student achievement. In the state of Arkansas, the ADE gives NSLA funds to school districts to increase student achievement. The goal in this study was to determine if additional NSLA money and the use of literacy coaches had an effect on student achievement.

## **CHAPTER III**

### **METHODOLOGY**

Federal funding for students from low socioeconomic environments began in 1965 with the passage of the Elementary and Secondary Education Act (NCLB Timeline 1965-2014, 2006). However, the Arkansas categorical funding program for students from low-income homes has only been around since 2003 when Arkansas Act 59 provided a new funding model for Arkansas school districts. The Arkansas General Assembly used the results and recommendations of the adequacy study done by Odden and Picus (2003), education finance consultants to the Arkansas General Assembly. Odden and Picus acknowledged the need for supplemental funds to assist school administrators with the needs of students of poverty as a means to provide adequacy in education.

Research has shown a link between poverty and lower student achievement (Payne, 2005). To address this issue, most states provide additional funding to school districts with higher concentrations of poverty. During the Second Extraordinary Session of 2003, the Arkansas General Assembly introduced NSLA state categorical funding, with the first appropriation for the 2004-2005 school year (BLR, 2012b).

Based on Arkansas benchmark and end of course exams, student achievement among students receiving free or reduced-cost lunch has increased since the NSLA funding began. The data also suggests the achievement gap is narrowing between students from low income homes and students not receiving a free or reduced-cost lunch

(BLR, 2012c). However, there is still much debate concerning the method of calculating the distribution of NSLA funds to Arkansas school districts. During the spring of 2013, the Arkansas Senate tried to pass Senate Bill 811 (2013) to amend state categorical funding for the NSLA program. Senate Bill 811 (2013) would have changed the calculation process for distributing NSLA funding. The bill died in committee.

This chapter includes a description of how the study was designed. The chapter is divided into six sections: research design, sample, instrumentation, data collection procedures, analytical methods, and limitations.

### **Research Design**

In this study, the two hypotheses were tested using a mixed factorial analysis of variance (ANOVA). A non-experimental design was used in this quantitative study. According to Leech, Barrett, and Morgan (2011), a mixed factorial ANOVA is used because there are two independent variables and one dependent variable, which is continuous. One independent variable was a between groups variable, and one was a repeated measures variable. Because the hypotheses required examination of the interaction effects of the independent variables on the dependent variable, and then the main effects, the mixed factorial ANOVA was the proper method to use.

The independent variables for the two hypotheses were the two funding levels and change over time with two levels measured in school years (2008 versus 2009 and 2010 versus 2011). The dependent variable for both of the hypotheses was literacy achievement measured by scaled scores from the 2009-2012 Arkansas Benchmark Examination for the students in the sample. For Research Question 1, descriptive statistics were used to determine what percentage of NSLA funds were allocated in each

of the six researcher-defined expenditure categories identified in the study by the changed and unchanged NSLA funding level groups to determine if spending patterns existed. For Research Question 2, descriptive statistics were also used to determine how additional moneys were expended in Year 3 and Year 4 in relation to literacy for the changed NSLA funding level group.

### **Sample**

A stratified random sampling selection process was used to choose participants for the study. The selected districts were stratified into two groups: (a) changed NSLA funding level, and (b) unchanged NSLA funding level. Stratifying the participants was needed because the main purpose of the study was to observe differences between changed and unchanged NSLA funding level groups. Participants were randomly chosen from each of the two groups. Stratified sampling was used to divide the sample into important categories relevant to the research interest (Gliner, Morgan, & Leech, 2000). All 239 public school districts in the state of Arkansas were divided into their NSLA funding level categories as of the 2011-2012 school year. The first group (Level 1) included all districts with less than 70% of students receiving free or reduced-cost lunches. The second group (Level 2) included districts with 70% to 89.99% of students receiving free or reduced-cost lunches. The third group (Level 3) included districts with greater than 89.99% of students receiving free or reduced-cost lunches.

School districts classified as Level 2 based on NSLA funding criteria received twice as much money per student as districts classified as Level 1. Districts classified as Level 3 received 1.5 times as much money per student as districts classified as Level 2. Then, districts were divided into additional groups based on the time spent in one level

before moving to a different level. The two groups used for this study were composed of districts that had been in Level 2 for two years before moving to Level 3 for two years and districts that had remained in Level 2 for 4 consecutive years. A Level 3 designation resulted in more money per student than a Level 2 designation, and therefore, more money being distributed to the districts. There were only three districts that spent two years in Level 2 before moving to Level 3. Student data from the districts that changed NSLA funding level were used for the changed NSLA funding level group. For the unchanged NSLA funding level group, three districts that remained in Level 2 NSLA funding during the 4 years of data collection were chosen. These districts were of similar size and from the same geographical area as the changed NSLA funding group. This selection process provided two groups of school districts.

A total of four cohorts were established. Two cohorts of students in each group who were consecutively enrolled for all years during Grades 3 through 6 (Hypothesis 1) and Grades 5 through 8 (Hypothesis 2) were selected. The process created two cohorts of students for the changed NSLA funding level group, and two cohorts of students for the unchanged NSLA funding level group. By using Microsoft Excel 2013, 80 students were randomly selected from each of the four cohorts. Students' scaled scores in literacy for each grade from the 2009-2012 benchmark exams were collected for analysis. The total number of students analyzed was 320. Before any student data were provided for the research, the Arkansas Research Center (ARC) assigned a unique identification number for each student from each district. In Table 1, the student demographic information for all students in this study is presented.

Table 1

*Student Demographics by NSLA Funding with Students from Both Cohorts*

	Unchanged NSLA Funding Level		Changed NSLA Funding Level	
	<i>n</i>	%	<i>n</i>	%
Total Gender				
Male	84	52.50	86	53.75
Female	76	47.50	74	46.25
Lunch Status				
Free/Reduced	132	82.50	158	98.75
Regular	28	17.50	2	1.25
Total Ethnicity				
White	101	63.13	123	76.88
Non-white	59	36.87	37	23.12

The unchanged NSLA funding level group and the changed NSLA funding level group were proportionally very similar demographically to the combined group in the study as observed in Table 2 and Table 3. Descriptive statistics for the first cohort of students in Grades 3 through 6 are provided in Table 2.

Table 2

*Student Information by NSLA Funding: Grades 3-6 Cohort*

	Unchanged NSLA Funding Level		Changed NSLA Funding Level	
	<i>n</i>	%	<i>n</i>	%
Total Gender				
Male	42	52.50	41	51.25
Female	38	47.50	39	48.75
Lunch Status				
Free/Reduced	64	80.00	78	97.50
Regular	16	20.00	2	2.50
Total Ethnicity				
White	50	62.50	64	80.00
Non-White	30	37.50	16	20.00

The results of the descriptive statistics associated with the statistical analysis on the second cohort of students from Grades 5 through 8 are summarized in Table 3.

Table 3

*Student Information by NSLA Funding: Grades 5-8 Cohort*

	Unchanged NSLA Funding Level		Changed NSLA Funding Level	
	<i>n</i>	%	<i>n</i>	%
Total Gender				
Male	42	52.50	45	56.25
Female	38	47.50	35	43.75
Lunch Status				
Free/Reduced	68	85.00	80	100.00
Regular	12	15.00	0	0.00
Total Ethnicity				
White	51	63.75	59	73.75
Non-White	29	36.25	21	26.25

The same group of students were used throughout the study. Identities of school districts and individual students were completely confidential; no identifying information was used. Demographic information regarding the percentage of students receiving free or reduced-cost lunch is summarized in Table 4.

Table 4

*Student Demographics by NSLA Funding and Free or Reduced Lunch*

Groups	2008-2009 Average Free or Reduced Lunch (%)	2009-2010 Average Free or Reduced Lunch (%)	2010-2011 Average Free or Reduced Lunch (%)	2011-2012 Average Free or Reduced Lunch (%)
Changed NSLA Funding Level	79.16	81.10	96.80	96.93
Unchanged NSLA Funding Level	74.93	74.98	78.77	78.59

**Instrumentation**

The Arkansas Comprehensive Testing, Assessment, and Accountability Program is a comprehensive system encompassing high academic standards, professional development, student assessment, and accountability for schools (ADE, 2012c). The portion of the Arkansas Comprehensive Testing, Assessment, and Accountability Program used to measure literacy achievement in this study was the Arkansas Augmented Benchmark Examination. The Arkansas Augmented Benchmark Examination is composed of six criterion-referenced tests administered to Arkansas students in Grades 3-8. The criterion-referenced test assessment instrument is customized to the Arkansas Curriculum Frameworks (ADE, 2012c). The literacy performance levels, determined by the 2012 Arkansas Augmented Benchmark Examination, were used to identify students who were proficient or above, which is considered to be at or above grade level.

The performance levels of the students are based on four levels of achievement on the state's criterion-referenced tests. The four levels are advanced, proficient (grade

level), basic, and below basic. Each performance category has a scaled score range by grade level in literacy that corresponds to a particular performance level (ADE, 2012c).

Arkansas School Funding Code (2012) requires the Arkansas State Board of Education to establish by rule a list of approved uses of NSLA funds. The statute also provides a list of eligible uses for which districts may expend funding, but approved uses are not limited to those included in the code. During the time of this study, 30 approved categories existed within which NSLA funds could be expended. One category of expenditures included instructional facilitators or literacy, math, or science coaches that met specified requirements.

The data for answering the research questions were compared and examined using six researcher-defined expenditure categories developed from the 30 approved categories for NSLA fund expenditures (Arkansas School Funding Code, 2012). The six categories were: (a) Literacy Coaches' Salaries and Benefits, (b) Literacy Materials and Supplies, (c) Literacy Professional Development, (d) Non-literacy Faculty Salaries and Benefits, (e) Non-literacy Professional Development, and (f) Other Non-literacy Approved ADE expenditures. Each category was examined for school years 2008-2011. Within each school year, a category contained both the dollar amount budgeted and percent of the total NSLA budget that the category received.

### **Data Collection Procedures**

After approval was obtained from the Institutional Review Board (see Appendix A), permission was acquired from the superintendents of each of the six school districts to use their students' data. The superintendents were called to explain the research project and to request permission before sending a letter via email that explained the research in

more detail. Signed permission letters from each of the superintendents were used as documentation of permission granted. All student data were received from ARC. The names of the students were never disclosed to the researcher. A unique identification number for each student served to associate the data and student.

The NSLA expenditure data was collected from the ACSIP for each school district. ACSIP plans are public documents which are updated each school year. All copies of the plans were provided by the ADE. Each school district has an ACSIP for the district, as well as each school. The ACSIPs for the six school districts, for all 4 years included within the study, were collected.

### **Analytical Methods**

Data were entered into the Statistical Package for Social Science (SPSS) software, version 21. Before running statistical tests, data were examined and checked to ensure accuracy and to verify that the assumptions were met for the test of significance (Leech et al., 2011). To test the hypotheses, a mixed factorial analyses of variance (ANOVA) was conducted to test for effects of the independent variable, NSLA funding level, on literacy achievement for students in Grades 3 through 6 and Grades 5 through 8 over a 4-year period. Assumptions for conducting mixed factorial ANOVAs that included normality and sphericity were checked.

### **Limitations**

Almost all non-experimental research projects involve challenges that are out of the control of the researcher (Leech et al., 2011). A major limitation for this project was the inability to hold other variables constant that might have an effect on student achievement. The ability to isolate exactly what effect new programs, changing

instructional strategies, changes in personnel, and other factors may have on student achievement is almost impossible in non-experimental studies. New strategies and programs may have been implemented to target achievement in areas measurable by the dependent variable, but the cost may have been paid from other funding sources than NSLA funds.

Another limitation to the study was the data used were only obtained from 6 school districts out of 239. Data from a larger percentage of districts throughout Arkansas would possibly suggest different outcomes. Sample size may also constitute a limitation in addressing the research questions, since 6 out of 239 districts is a relatively limited sampling. This limitation was created since there were few districts meeting the criteria of changed and unchanged NSLA funding levels during a 4-year period.

Finally, this study may not be generalized to other states in regards to student achievement and poverty, because Arkansas NSLA categorical funds are unique to the school districts in Arkansas. The Arkansas State Legislature provides the guidelines to the ADE that each school district must follow when expending NSLA money.

## **CHAPTER IV**

### **RESULTS**

The purpose of this quantitative study was to determine the effect of NSLA funding level over time on literacy achievement measured by the Arkansas Literacy Benchmark Exam for a cohort of third through sixth grade students and a cohort of fifth through eighth grade students in Arkansas school districts. This study was conducted based upon two different NSLA funding levels. The independent variables were NSLA funding level and change over time. The dependent variable was literacy achievement measured by the state's Augmented Benchmark Examinations. The researcher conducted a mixed factorial ANOVA to test each of the two hypotheses associated with this purpose. Also, the purpose of the study was to determine how resources were spent among six researcher-defined expenditure categories of NSLA funds by the changed NSLA funding level group and the unchanged NSLA funding level group. This chapter provides a summary of the statistical analysis.

#### **Hypothesis 1**

Hypothesis 1 stated that no significant difference will exist by change over time for a cohort of third through sixth grade students in Arkansas schools whose NSLA funding level changed from Level 2 funding to Level 3 funding versus those whose NSLA funding level remained at Level 2 funding on literacy achievement as measured on the Arkansas Literacy Benchmark Exam. The descriptive statistics associated with the

initial cohort of students Grades 3 through 6 are summarized in Table 5. No distinct pattern was found with respect to the differences in literacy scores on the basis of changed or unchanged NSLA funding levels. Standard deviations across the groups were found to be moderate. The sample was evenly split with 80 cases, representing 50% of the sample in the unchanged NSLA funding group and the remaining 80 cases from the changed NSLA funding group.

Table 5

*NSLA Funding Change and Literacy Score Relationship in Grades 3-6 Cohort*

Year	Unchanged NSLA Funding Level			Changed NSLA Funding Level		
	<i>n</i>	Mean	Std. Dev.	<i>n</i>	Mean	Std. Dev.
1	80	539.55	192.53	80	538.34	162.03
2	80	663.33	194.04	80	633.26	162.79
3	80	678.43	172.85	80	678.45	148.62
4	80	732.34	192.39	80	729.35	170.01

To test Hypothesis 1, a mixed factorial ANOVA was conducted to assess whether there was statistically significant differences in literacy achievement by NSLA funding level over time in literacy achievement. Before conducting the analysis, the following assumptions were tested: normality and sphericity. Normality was tested using skewness/kurtosis and the Shapiro-Wilk test. The assumption of normality was met, because the skewness and kurtosis values were between -1.0 and +1.0. In addition, the

Shapiro-Wilk test gave  $p$ -values greater than .05. Testing for sphericity determines if the variances of the differences between all possible pairs of groups are equal (Leech et al., 2011). Mauchly's test of sphericity is an important assumption of a repeated-measures ANOVA. Mauchly's test was used in order to determine whether the assumption of sphericity was upheld or violated. The test was not statistically significant, Mauchly's  $W = .957$ ,  $\chi^2(5) = 6.903$ ,  $p = .228$ . This result indicated that the assumption of sphericity was not violated in this analysis. Additionally, Levene's test of equality of error variances was examined for the between subjects effects, and the results indicated the assumption was not violated (Year 1,  $p = .206$ ; Year 2,  $p = .362$ ; Year 3,  $p = .149$ ; Year 4,  $p = .443$ ).

Results of the mixed factorial ANOVA indicated a significant main effect of time,  $F(3, 474) = 190.43$ ,  $p = .00$ ,  $\eta^2 = .55$ . However, the interaction between time and NSLA funding level was not statistically significant,  $F(3, 474) = 1.50$ ,  $p = .21$ ,  $\eta^2 = .01$  (see Table 6).

Table 6

*Tests of Within-Subjects Effects: Sphericity Assumed*

Source	Type III SS	df	MS	F	p	$\eta^2$
Time	3148444.08	3	1049481.36	190.43	0.00	0.55
Time * Funding	24843.93	3	8281.31	1.50	0.21	0.01
Error (Time)	2612317.24	474	5511.22			

Because the main effect of time was significant ( $p = .00$ ), it was followed up by a within-subjects contrast. The results indicated significant linear, quadratic, and cubic effects across the different time periods (see Table 7).

Table 7

*Tests of Within-Subjects Contrasts: Grades 3-6 Cohort*

Source	Type III SS	df	MS	F	p	$\eta^2$
Time						
Linear	2936373.20	1	2936373.20	488.90	0.00	0.76
Quadratic	129703.63	1	129703.63	23.41	0.00	0.13
Cubic	82367.26	1	82367.26	16.52	0.00	0.10
Error (Time)						
Linear	948955.39	158	6006.05			
Quadratic	875425.36	158	5540.67			
Cubic	787936.49	158	4986.94			

Furthermore, Figure 1 shows the trend in literacy achievement over time as associated with this analysis. The results are linear in nature due to the straight lines from 1 year of data to the next year of data. The results are quadratic because the slope of the line changes when compared to consecutive 3 years of data points. The results are cubic in nature since the slope of the data changes two times during the 4-year study period. As shown, regardless of NSLA funding level, literacy scores were found to increase over all 4 years steadily. The increase in scores from Year 1 to 2 was much greater than scores

from Year 2 to Year 3. Scores also increased more from Year 3 to Year 4 than scores from Year 2 to Year 3.

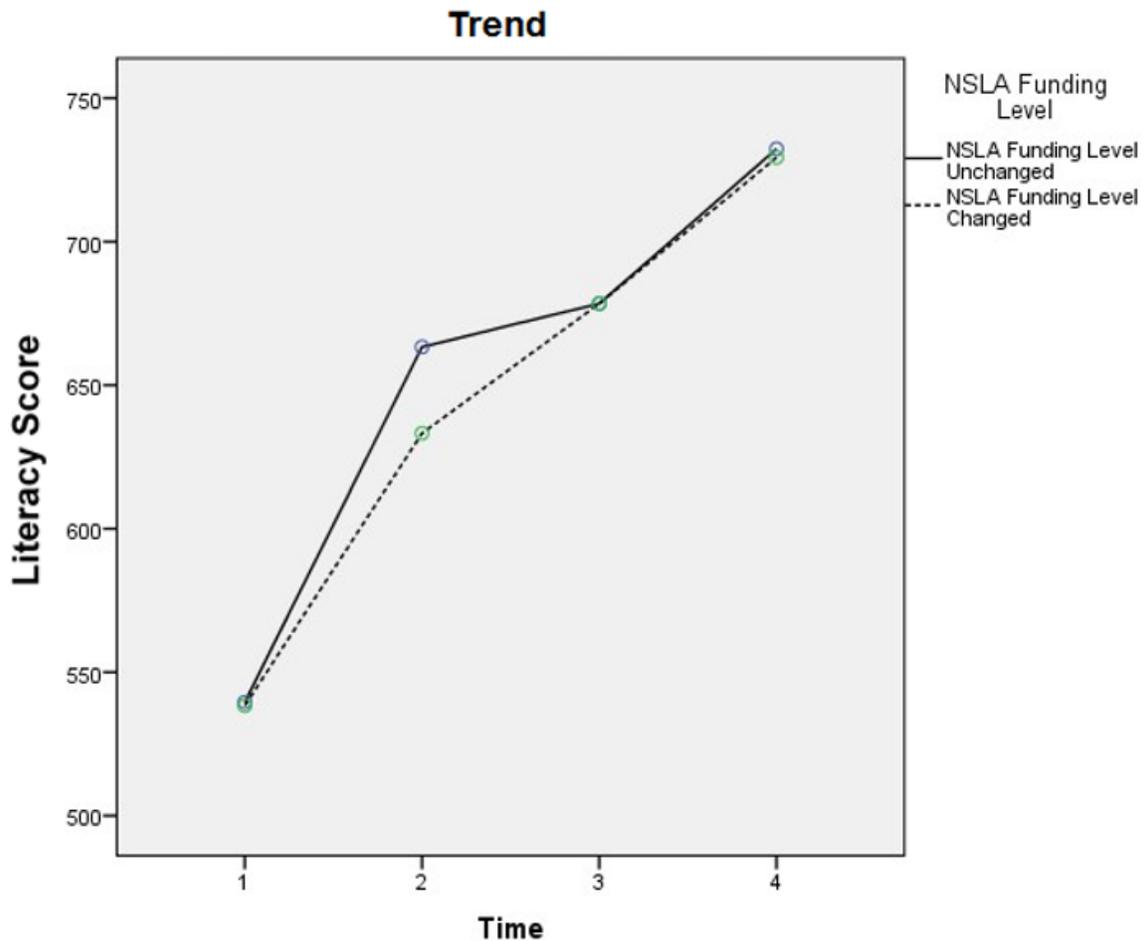


Figure 1. Estimated marginal means of the changed and unchanged NSLA funding levels for the cohort of students in Grades 3 through 6.

The results in Table 8 of the between-subjects effects associated with this analysis focus specifically on the impact of NSLA funding level change on literacy achievement. The results indicated that NSLA funding level change had no significant impact upon literacy achievement,  $F(1, 158) = .11, p = .74, \eta^2 = .00$  (see Table 8).

Table 8

*Tests of Between-Subjects Effects: Grades 3-6 Cohort*

Source	Type III SS	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>	$\eta^2$
Intercept	269676384.76	1	269676384.76	2540.69	0.00	0.94
NSLA Funding Level Change	11722.06	1	11722.06	0.11	0.74	0.00
Error	16770578.92	158	106142.91			

**Hypothesis 2**

Hypothesis 2 stated that no significant difference will exist by change over time for a cohort of fifth through eighth grade students in Arkansas exposed to schools whose NSLA funding level changed from Level 2 funding to Level 3 funding versus those whose NSLA funding level remained at Level 2 funding on literacy achievement as measured on the Arkansas Literacy Benchmark Exam. The descriptive statistics associated with the cohort of students Grades 5 through 8 are summarized in Table 9. No distinct pattern was found with respect to the differences in literacy scores on the basis of changed or unchanged NSLA funding levels. Standard deviations were found to be moderate. The sample was evenly split with 80 cases, representing 50% of the sample in the unchanged NSLA funding group and the remaining 80 cases from the changed NSLA funding group.

Table 9

*NSLA Funding Change and Literacy Score Relationship in Grades 5-8 Cohort*

Year	Unchanged NSLA Funding Level			Changed NSLA Funding Level		
	<i>n</i>	Mean	Std. Dev.	<i>n</i>	Mean	Std. Dev.
1	80	607.91	186.91	80	592.64	177.97
2	80	689.35	182.49	80	654.39	152.12
3	80	677.86	178.67	80	670.74	162.33
4	80	769.03	166.45	80	770.58	166.20

To test Hypothesis 2, a mixed factorial ANOVA was conducted to assess whether there were funding and time differences in literacy achievement. The following assumptions were tested: normality and sphericity. Normality was tested using skewness/kurtosis and the Shapiro-Wilk test. The assumption of normality was met, because the skewness and kurtosis values were between -1.0 and +1.0. In addition, the Shapiro-Wilk test gave *p*-values greater than 0.05. Testing for sphericity determines if the variances of the differences between all possible pairs of groups are equal (Leech et al., 2011). Mauchly's test of sphericity is an important assumption of a repeated-measures ANOVA. Mauchly's test was used in order to determine whether the assumption of sphericity was upheld or violated. Mauchly's test of sphericity was conducted with statistical significance being indicated, Mauchly's  $W = .858$ ,  $\chi^2(5) = 24.089$ ,  $p < .001$ . This result indicated the violation of the assumption of sphericity in this analysis. For this reason, the results of the tests of within-subjects effects as summarized in Table 10 are

calculated using the Greenhouse-Geisser correction as opposed to the results with sphericity assumed. Additionally, Levene's test of equality of error variances was examined for the between subjects effects, and the results indicated the assumption was not violated (Year 1,  $p = .784$ ; Year 2,  $p = .225$ ; Year 3,  $p = .729$ ; Year 4,  $p = .527$ ).

Statistical significance was indicated with respect to the effect of time. Results in Table 10 indicated a significant main effect of time,  $F(3, 474) = 140.73, p = .00, \eta^2 = .47$ . There was no statistical significance found with respect to the interaction between time and funding level change ( $p = .15$ ).

Table 10

*Tests of Within-Subjects Effects: Greenhouse-Geisser*

Source	Type III SS	df	MS	F	p	$\eta^2$
Time	2322431.28	3	774143.76	140.73	0.00	0.47
Time * Funding	29204.46	3	9734.82	1.77	0.15	0.01
Error (Time)	2607396.52	474	5500.84			

The results of the within-subjects contrasts associated with this analysis are summarized in Table 11. With regard to the effect of time, significant linear, quadratic, and cubic effects were found, while no significance was indicated with regard to any of the effects associated with the interaction.

Table 11

*Tests of Within-Subjects Contrasts: Grades 5-8 Cohort*

Source	Type III SS	df	MS	F	p	$\eta^2$
Time						
Linear	2089019.10	1	2089019.10	261.99	0.00	1.00
Quadratic	22860.35	1	22860.35	5.50	0.02	0.64
Cubic	210551.83	1	210551.83	48.18	0.00	1.00
Error (Time)						
Linear	1259863.75	158	7973.82			
Quadratic	657104.08	158	4158.89			
Cubic	690428.68	158	4369.80			

The estimated marginal means associated with this analysis are observed in Figure 2. As shown, significant increases were found over time, while no significant differences were indicated on the basis of NSLA funding level. The results are linear in nature due to the straight lines from 1 year of data to the next year of data. The results are quadratic because the slope of the line changes when compared to consecutive 3 years of data points. The results are cubic in nature since the slope of the data changes two times during the 4-year study period. Overall, test scores increased over the 4-year period for both changed and unchanged NSLA funding levels. However, scores for the unchanged NSLA funding group decreased from Year 2 to Year 3. The changed NSLA funding level group demonstrated a greater increase in scores from Year 1 to Year 2 and from Year 3 to Year 4 than from Year 2 to Year 3.

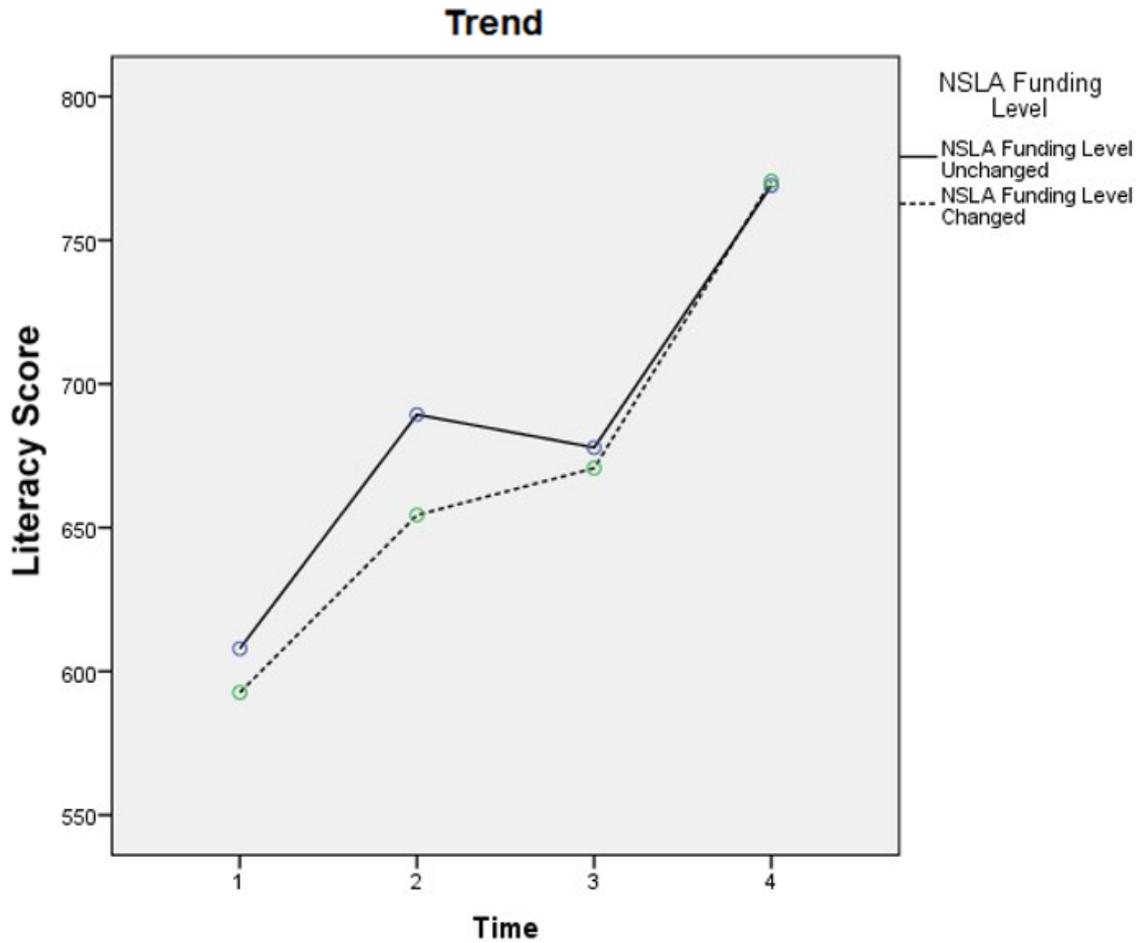


Figure 2. Estimated marginal means of the changed and unchanged NSLA funding levels for the cohort of students in Grades 5 through 8.

The between-subjects effects associated with this analysis are shown in Table 12.

These results indicate no statistical significance associated with NSLA funding level change ( $p = .58$ ).

Table 12

*Tests of Between-Subjects Effects: Grades 5-8 Cohort*

Source	Type III SS	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>	$\eta^2$
Intercept	295119204.38	1	295119204.38	2898.36	0.00	0.95
NSLA Funding Level Change	31150.35	1	31150.35	0.31	0.58	0.00
Error	16088032.02	158	101822.99			

**Research Question 1**

The data in the six researcher-defined expenditure categories for NSLA funds were compared and examined. The six categories were: (a) Literacy Coaches' Salaries and Benefits, (b) Literacy Materials and Supplies, (c) Literacy Professional Development, (d) Non-literacy Faculty Salaries and Benefits, (e) Non-literacy Professional Development, and (f) Other Non-literacy Approved ADE expenditures. Each category was examined for school years 2008-2011. Within each school year, a category contained both the dollar amount budgeted and the percentage of the total NSLA budget that the category received.

The average amount of NSLA funds received by each group in the study is presented in Table 13. The amount of money received by school districts fluctuated from year to year based on the number of students in the district that qualified for free and reduced-cost lunches.

Table 13

*Average Amount of NSLA Funds Received by All Districts in the Study*

	Unchanged NSLA Funding Level	Changed NSLA Funding Level
Year 1	\$349,599	\$283,307
Year 2	\$356,872	\$421,889
Year 3	\$373,658	\$421,645
Year 4	\$357,542	\$541,431

The first research question was to determine what percentage of NSLA program funds were allocated in each of the six researcher-defined expenditure categories identified in the study by the changed and unchanged NSLA funding level groups to determine if spending patterns existed. The percentages of NSLA funds allocated to the six researcher-defined expenditure categories can be observed in Table 14.

Table 14

*Percentage of NSLA Funds Allocated to the Categories by Each Group*

	Unchanged NSLA Funding Level				Changed NSLA Funding Level			
	Year1 (%)	Year 2 (%)	Year 3 (%)	Year 4 (%)	Year 1 (%)	Year 2 (%)	Year 3 (%)	Year 4 (%)
Literacy Coaches	11.90	9.73	7.30	7.51	28.61	33.35	31.63	22.89
Lit. Mat. & Supplies	8.66	2.92	1.42	2.41	1.48	6.05	6.14	6.44
Literacy Prof. Dev.	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.72
Non-lit. Faculty	61.75	75.11	83.60	76.64	64.96	46.18	54.22	53.36
Non-lit. Prof. Dev.	5.41	2.23	0.33	4.45	0.00	2.00	0.93	0.75
Other Non-lit. Exp.	11.99	10.02	7.34	8.99	4.96	12.43	7.08	15.84

The changed NSLA funding level group received additional NSLA funds per student who qualified for the free or reduced-cost lunch program after two years. The unchanged NSLA funding level group received the same amount of NSLA funds per student for all 4 years. The first category of expenditures was for Literacy Coaches. Expenses contained under Literacy Coaches included salaries and benefits. Over the 4-year period, both groups demonstrated a trend of spending less each year on Literacy Coaches in regards to the percentage of NSLA funds available (see Table 14).

The second category of expenditures was for Literacy Materials and Supplies. There was a general trend for the unchanged NSLA funding level group to decrease the amount of money spent on Literacy Materials and Supplies. However, the changed NSLA

funding level group demonstrated a small trend of increased amount of money spent on Literacy Materials and Supplies (see Table 14).

The third category of expenditures was for Literacy Professional Development. Most of the districts did not spend any of the NSLA money on Literacy Professional Development. Only one district from each group spent money in this category. Each of those districts only spent NSLA money 1 year out of the 4 years observed (see Table 14).

The fourth category of expenditures was for Non-literacy Faculty. Expenses under Non-literacy Faculty included salaries and benefits. The unchanged NSLA funding level group demonstrated a slight trend of increased expenditures for Non-literacy Faculty. There was no apparent trend for the changed NSLA funding level group with respect to the percentage of money spent. Both groups spent more money in this category than in the other five categories (see Table 14).

The fifth category of expenditures was for Non-literacy Professional Development. Regardless of the unchanged or changed NSLA funding level, there was neither an obvious trend of expenses from year-to-year nor difference regarding the percentage of money spent on Non-literacy Professional Development over the 4-year period. The only category with a lesser percentage of money spent than the Non-literacy Professional Development category was the Literacy Professional Development category (see Table 14).

The sixth category of expenditures was for all Other Non-literacy ADE Approved expenditures. Neither NSLA funding group demonstrated a pattern of expenditures in this category over the 4-year study period. There was no clear difference regarding the

percentage of money spent on all Other Non-literacy Approved expenditures over the 4-year period, regardless of the NSLA funding level (see Table 14).

### **Research Question 2**

The second research question was to determine in the group where NSLA funding changed from Level 2 to Level 3, how the additional moneys were spent in Year 3 and Year 4 and the extent those expenditures related to literacy. For the changed NSLA funding group, only two categories showed a consistent increase in expenditures for Year 3 and Year 4 compared to Year 2. There was an increase for Non-literacy Faculty and a small increase for Literacy Materials and Supplies for Year 3 and Year 4 of the study. The largest increase of expenditures was in the category for Other Non-literacy Expenditures during Year 4 (see Table 14).

Based on the average amount of NSLA funds expended in each category during the 4-year study, the category where the largest amount of NSLA funds was spent involved the Non-literacy Faculty Salaries and Benefits category. This observation was true for both the changed and unchanged NSLA funding level groups. The category where the least amount of NSLA money was spent involved Literacy Professional Development. Again, this observation was true for the changed and unchanged NSLA funding level groups. Both groups spent more money in the non-literacy categories than the literacy related categories. With the exception of two categories, expenditures were ranked the same for both groups. The average amount of all expenditure categories for both groups in order of the highest to the lowest amount of NSLA funds spent during the 4-year study period are displayed in Table 15.

Table 15

*Yearly Average NSLA Funds Spent per Category for Each Group*

Unchanged NSLA Funding Level		Changed NSLA Funding Level	
Expenditure Category	Amount (\$)	Expenditure Category	Amount (\$)
Non-literacy Faculty Salaries & Benefits	267,574	Non-literacy Faculty Salaries & Benefits	224,103
Other Non-literacy Expenditures	34,313	Literacy Coaches' Salaries & Benefits	119,757
Literacy Coaches' Salaries & Benefits	32,609	Other Non-literacy Expenditures	45,526
Literacy Materials & Supplies	13,661	Literacy Materials & Supplies	22,616
Non-literacy Professional Development	11,011	Non-literacy Professional Development	4,096
Literacy Professional Development	250	Literacy Professional Development	970

## **CHAPTER V**

### **DISCUSSION**

School districts throughout the state of Arkansas are searching for ways to meet the increased accountability standards regarding student achievement and the use of school funds. Since 2003, the ADE (2005) has provided schools with additional categorical funds called NSLA. Schools with the largest percentages of students applying for free or reduced-cost lunches receive larger allotments of NSLA funding to help increase student achievement. In December of 2012, the BLR (2012c) released an analysis of the relationship between the poverty status of school districts, student academic achievement, and the impact of NSLA funding on achievement for Arkansas students. The BLR found that increased NSLA funding was not associated with achievement gains.

The purpose for this quantitative study was to determine the effect of NSLA funding level over time on literacy achievement measured by the Benchmark Exam for third through eighth grade students in Arkansas school districts. First, this chapter includes reflections and conclusions about the data collected and analyzed in this study. Second, recommendations based on the conclusions found in the data analysis are included. Finally, the implications and significance of this study are discussed.

## **Conclusions**

To address the two hypotheses, a mixed factorial ANOVA was conducted. A mixed factorial ANOVA was chosen for this analysis because there were two independent variables, one was a between groups variable, and the other was a repeated measures variable. The dependent variable for each hypothesis was literacy achievement. Because the hypotheses required an examination of the interaction effects, and then the main effects, the mixed factorial ANOVA was the proper method of choice. Finally, the research questions were analyzed using descriptive statistics.

### **Hypothesis 1**

Hypothesis 1 stated that no significant difference will exist by change over time for a cohort of third through sixth grade students in Arkansas exposed to schools whose NSLA funding level changed from Level 2 funding to Level 3 funding versus those whose NSLA funding level remained at Level 2 funding on literacy achievement as measured on the Arkansas Literacy Benchmark Exam. There was no significant interaction between the independent variable of NSLA funding and the dependent variable literacy achievement scores. Based on these results, the null hypothesis for the interaction effect could not be rejected. However, there was a significant interaction between the independent variable of change over time and the dependent variable literacy achievement scores. For the main effect of time, a significant difference on literacy achievement was observed over time.

Regardless of NSLA funding level, literacy scores were found to steadily increase over all 4 years. Additionally, the differences presented on the basis of NSLA funding level change was found to be minimal. The results indicated that NSLA funding change

had no significant impact on literacy achievement scores. These findings agree with what the BLR reported in 2012 and 2013 for Arkansas student achievement data in relationship to NSLA funding (BLR, 2012c, 2013).

These findings do not contradict other studies (Archibald, 2006; Elliot, 1998; Ferguson, 1991) which have concluded that financial resources have a positive effect on student achievement, because NSLA funding only accounts for 3% of all K-12 funds per school year for Arkansas school districts (Derlikowski, 2013). Schools may also have used other funds besides NSLA funds to provide students with needed resources to achieve higher literacy scores.

## **Hypothesis 2**

Hypothesis 2 stated that no significant difference will exist by change over time for a cohort of fifth through eighth grade students in Arkansas exposed to schools whose NSLA funding level changed from Level 2 funding to Level 3 funding versus those whose NSLA funding level remained at Level 2 funding on literacy achievement as measured on the Arkansas Literacy Benchmark Exam. As with the first cohort, there was no significant interaction between the independent variable of NSLA funding level and the dependent variable literacy achievement. Based on these results, the null hypothesis for the interaction effect could not be rejected. There was a significant interaction between the independent variable of change over time and the dependent variable literacy achievement similar to the results of the first cohort. For the main effect of time, a significant difference on literacy achievement was observed over time.

Literacy achievement scores were found to steadily increase over all 4 years for the changed NSLA funding level group. However, for the unchanged NSLA funding

level group literacy achievement scores decreased in Year 3. Student literacy achievement scores were very similar for both changed and unchanged NSLA funding level groups during Year 3 and Year 4 of the study. The overall results indicated that NSLA funding level change had no significant impact on literacy achievement. These findings also agree with what the BLR reported in 2012 and 2013 for Arkansas student achievement data in relationship to NSLA funding (BLR, 2012c, 2013).

As stated with Hypothesis 1, these findings do not contradict other studies (Archibald, 2006; Elliot, 1998; Ferguson, 1991), which have concluded that financial resources have a positive effect on student achievement because NSLA funds account for such a small percentage of the K-12 funds provided to Arkansas school districts each year (Derlikowski, 2013). Schools may also have used other funds besides NSLA funds to provide students with needed resources to achieve higher literacy scores.

### **Research Question 1**

The research questions in this study examined the way districts spent the NSLA funds that were received during the 4-year study period. The first question to be addressed was what percentage of NSLA funds were allocated in each of the six researcher-defined expenditure categories identified in the study by the changed and unchanged NSLA funding level groups to determine if spending patterns existed? The six researcher-defined categories were: (a) Literacy Coaches' Salaries and Benefits, (b) Literacy Materials and Supplies, (c) Literacy Professional Development, (d) Non-literacy Faculty Salaries and Benefits, (e) Non-literacy Professional Development, and (f) Other Non-literacy Approved ADE expenditures. Each category was examined for school years 2008-2011.

The category where the largest amount of NSLA money was spent involved the Non-literacy Faculty Salaries and Benefits category. This observation was true for both the changed and unchanged NSLA funding level groups. The category where the least percentage and amount of NSLA money were spent involved Literacy Professional Development. Again, this observation was true for the changed and unchanged NSLA funding level groups. Both groups spent more money in the non-literacy categories than literacy related categories.

The Literacy Coaches' Salaries and Benefits was the second highest category to receive funds for the changed NSLA funding level group. The category Other Non-literacy Approved ADE expenditures was the second highest to receive funds for the unchanged NSLA funding level group. The changed NSLA funding level group spent three times the amount of NSLA funds on literacy categories than the unchanged NSLA funding level group.

Spending patterns were similar for both changed and unchanged NSLA funding level groups. During the last two years of the study, there was less difference in student literacy achievement for the two groups than in the first two years of the study when both groups were at the same NSLA funding level.

## **Research Question 2**

The second research question examined where the changed NSLA funding level group spent the additional money during Year 3 and Year 4, and to what extent were expenditures related to literacy? The three categories that received the largest amount of additional funds, in order of greatest to least, during the last two years of the study were: (a) Non-literacy Faculty Salaries and Benefits, (b) Other Non-literacy Approved ADE

expenditures, and (c) Literacy Materials and Supplies. However, there was not an increase in the actual percentage of NSLA funds spent on Literacy Materials and Supplies during the time period. Most of the additional money received was spent in a non-literacy related category.

### **Implications**

This study focused on what impact additional funding had on student literacy achievement over a 4-year period. The school districts were located in three different regions of Arkansas. This study adds to the body of research regarding the use of additional resources to improve student achievement. By examining the use of additional funds over several years, a better understanding can be achieved regarding the benefits of NSLA funds. This was a timely study due to the Arkansas Legislative Session of 2013 in which two bills were introduced to change the way NSLA funds could be spent by school districts.

The hypotheses for this study could not be rejected. The additional NSLA funds did not have a significant impact on literacy achievement. However, time was significant to improving literacy achievement for all cohorts in the study. Regardless of the NSLA funding level, student literacy achievement improved each year for all cohorts with the exception of one cohort for 1 year. Time was significant because students learned new material throughout each school year as indicated by improved literacy achievement. Time was also found to be significant in the studies conducted by Archibald (2006) and Biancarosa et al. (2010).

The minimum scaled score required for a student to reach the category proficient in literacy rises each year based on grade level. A fourth grader would be expected to

score higher than a third grader. Therefore, improved literacy achievement scores over time is an expectation of all students. Because student literacy achievement scores are expected to improve each year, what resources can be provided for teachers and students to ensure the greatest improvement in literacy achievement each year?

Biancarosa et al. (2010) made it clear that specified and supported literacy coaching initiatives are needed in order for literacy professional development and literacy coaches to have a positive impact on student achievement. Biancarosa et al. argued that the importance of having properly trained faculty is beneficial to both teachers and students. All of the groups in this study had literacy coaches on staff. However, no evidence was gathered to determine whether literacy coaches in this study received any specialized training that would have benefited teachers or students. It is worth noting that the category of Literacy Professional Development was where the groups in this study spent the least amount of money.

Literacy coaches require specialized knowledge and training. The specialized knowledge is needed to provide job-embedded, ongoing professional development for teachers. This approach to professional development is rooted in cognitive coaching, peer coaching, and mentoring (Biancarosa et al., 2010; L'Allier et al., 2010). Once literacy coaches have an established literacy knowledge base, they may build on that knowledge base and professional skills through active participation in ongoing professional development. In this study, there was a very small amount of NSLA money spent on Literacy Professional Development. However, the districts might have paid for Literacy Professional Development by using other funding sources. In either case, the Arkansas Legislature has been pushing for NSLA funds to be used in ways that affect student

achievement. Studies have shown that providing specialized professional development can have a positive impact on student achievement (Biancarosa et al., 2010; L'Allier et al., 2010; Vanderburg & Stephens, 2010).

This study implies that focusing money on non-literacy categories will not cause an improvement in student literacy achievement. The results of this study agreed with the information reported by the BLR in 2012 and 2013 (BLR, 2012c, 2013). NSLA funds were not being used in a way that caused an increase in student achievement.

## **Recommendations**

### **Potential for Practice/Policy**

On the state level, Arkansas educational leaders and policy makers understand the need to restructure how NSLA funds are being allocated and spent by school districts (Derlikowski, 2013). Since NSLA funds are intended to help increase academic achievement for students of poverty, it may be necessary to reduce the number of categories for spending NSLA funds. Research has shown that increasing resources in the appropriate areas can improve student achievement (Archibald, 2006; Biancarosa et al., 2010; Elliot, 1998; Ferguson, 1991). Reform of NSLA funding during the 2015 legislative session is already on the agenda for the Senate Education Committee. The current three levels of NSLA funding cause a discrepancy in the amount of NSLA funds allocated for districts that are only a fraction of a percent different in populations of students of poverty receiving free or reduced-cost lunches. A scaled allocation model would allow a gradual change in funds as the poverty level of the district increased or decreased. Restricting the use of NSLA funds to categories that have been associated with increased student achievement may be a necessary step for helping to close the

achievement gap between students of poverty and other students. Academic coaches, such as literacy and math coaches, should remain an approved category for the use of NSLA funds. However, additional restrictions could be applied to the category, such as approved ongoing professional development that meets or exceeds specified criteria.

This study showed that when some districts were given additional money, but spent the money the same way as districts who received no additional funds, the results were the same. Student literacy achievement was not positively impacted by the additional NSLA funds when the funds were not focused in an area which directly helps student achievement. Literacy coaches should have extensive and ongoing training so they can provide the coaching expertise that classroom teachers need to help student achievement increase.

### **Future Research Considerations**

Future researchers might build on this study by examining math achievement scores instead of literacy achievement scores. During the course of this study, math coaches were employed as equally as literacy coaches in most of the districts involved in this study. Math and literacy achievement scores are two areas which are watched closely when determining how successfully students are learning. Another possibility for future research would be to compare districts which have changed the spending of NSLA funds so the focus is more on literacy related categories instead of non-literacy related categories. At the time of this study, there were 30 different allowable categories for NSLA expenditures. Another future study might be designed to examine categories that have a direct impact on student achievement versus categories that have an indirect impact on student achievement.

With ever-increasing accountability for public education, school administrators must endeavor to make decisions about the expenditures of school funds that are research-based and are shown to be positively related to student achievement. Educators and state policy makers must work together to ensure that NSLA funds are allocated to the students who need additional services and support. Policy makers should ask if NSLA funds are making a difference in the achievement of the students for whom they are intended. If research shows that NSLA funds are not achieving the positive effect, then educators and policy makers should determine the reasons and make appropriate changes in how the funds are used. Final decisions must be based on research, not personal opinions of educators or state politics.

## REFERENCES

- 95-319. Op. Att’y Gen. (1995).
- Archibald, S. (2006). Narrowing in on educational resources that do affect student achievement. *Peabody Journal of Education* 81(4), 23–42.  
doi:10.1207/s15327930pje8104\_2
- Arkansas Department of Education. (2005). *Legal balance and categorical funds* [Director’s Communication]. Retrieved from <http://arkedu.state.ar.us>
- Arkansas Department of Education. (2010). *Raw to scale score conversion tables*. Retrieved from <http://www.arkansased.org>
- Arkansas Department of Education. (2011a). *Arkansas comprehensive school improvement planning (ACSIP)*. Retrieved from <http://www.arkansased.org>
- Arkansas Department of Education. (2011b). *Provision 2 USDA alternative for feeding students at no charge in high poverty population areas* [Director’s Communication]. Retrieved from <http://adesharepoint2.arkansas.gov>
- Arkansas Department of Education. (2012a). *Statewide information system reports*. Retrieved from <https://adedata.arkansas.gov>
- Arkansas Department of Education. (2012b). *Student special needs funding*. Retrieved from <http://www.arkansased.org>
- Arkansas Department of Education. (2012c). *Testing*. Retrieved from <http://arkansased.org>

- Arkansas Department of Finance and Administration. (2012). *Arkansas' budget brochure*. Retrieved from [www.dfa.arkansas.gov](http://www.dfa.arkansas.gov)
- Arkansas School Funding Code, A.C.A. § 6-20-2305(b) (4) (C) (2012).
- Association for Educational Communications and Technology. (2001). *Elementary and Secondary Education Act of 1965 (ESEA)*. Retrieved from <http://www.aect.org>
- Beegle, D. M. (2003). Overcoming the silence of generational poverty. *Talking Points*, 15(1), 11-20.
- Berne, R., Stiefel, L., & Moser, M. (1999). Social policy: School finance. *Journal of Management History*, 5(3), 165-179. doi:10.1108/13552529910271341
- Biancarosa, G., Bryk, A. S., & Dexter, E. R. (2010). Assessing the value-added effects of literacy collaborative professional development on student learning. *Elementary School Journal*, 111(1), 7-34. doi:10.1086/653468
- Biddle, B. J., & Berliner, D. C. (2002). Unequal school funding in the United States. *Educational Leadership*, 59(8), 48.
- Bureau of Legislative Research. (2010a). *National School Lunch Act (NSLA) categorical funding for Arkansas districts and schools* (Bureau of Legislative Research Project Number 10-142). Retrieved from <http://www.arkleg.state.ar.us>
- Bureau of Legislative Research. (2010b). *A report on legislative hearings for the 2010 interim study on educational adequacy* (Bureau of Legislative Research Project Number 09-205). Retrieved from <http://www.arkleg.state.ar.us>
- Bureau of Legislative Research. (2012a). *A report on legislative hearings for the 2012 interim study on educational adequacy* (Bureau of Legislative Research Project Number 12-024). Retrieved from <http://www.arkleg.state.ar.us>

- Bureau of Legislative Research. (2012b). *K-12 education categorical funding review*. Retrieved from <http://www.arkleg.state.ar.us>
- Bureau of Legislative Research. (2012c). *The relationship between NSLA funding and expenditures, and measures of student performance*. Retrieved from <http://www.arkleg.state.ar.us>
- Bureau of Legislative Research. (2013). *The relationship between NSLA funding and expenditures, and measures of student performance*. Retrieved from <http://www.arkleg.state.ar.us>
- Carey, K., & Center on Budget and Policy Priorities. (2002). *State poverty-based education funding: A survey of current programs and options for improvement*. Retrieved from <http://www.cpec.ca.gov>
- Cassidy, J., Garrett, S., Maxfield, P., & Patchett, C. (2009). Literacy coaching: yesterday, today, and tomorrow. *CEDER Yearbook*, 15-27.
- Cushman, K. L. (2011). *Effects of poverty funding on math and literacy achievement in Arkansas* (Unpublished doctoral dissertation). Harding University, Searcy, AR.
- Derlikowski, J. (2013). *NSLA education funding in the 89th General Assembly*. Retrieved from <http://www.aradvocates.org>
- Dickinson, G. B. (2009). *Funding public schools: A political conundrum*. Retrieved from <http://www.nationalforum.com>
- Drennon, C. (2006). Social relations spatially fixed: Construction and maintenance of school districts in San Antonio, Texas. *Geographical Review*, 96(4), 567-593. doi:10.1111/j.1931-0846.2006.tb00517.x
- Dupree v. Alma School District No. 30 29, Ark. 340, 651 S.W.2d 90 (1983).

- Elliott, M. (1998). School finance and opportunities to learn: Does money well spent enhance students' achievement? *Sociology of Education*, 71(7), 223–345.  
doi:10.2307/2673203
- Ferguson, R. F. (1991). Paying for public education: New evidence on how and why money matters. *Harvard Journal on Legislation*, 28, 465–497.
- Garet, M. S., Cronen, S., Eaton, M., Kurki, A., Ludwig, M., Jones, W., . . . Uekawa, K. (2008). *The impact of two professional development interventions on early reading instruction and achievement* (NCEE 2008-4030). Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, United States Department of Education.
- Gliner, J. A., Morgan, G. A., & Leech, N. L. (2000). *Research methods in applied settings: An integrated approach to design and analysis*. New York, NY: Taylor & Francis Group.
- Gorski, P. C. (2008). The myth of the “culture of poverty.” *Educational Leadership*, 65(7), 32-36.
- Greenwald, R., Hedges, L. V., & Laine, R. D. (1994). Money does matter somewhere: a reply to Hanushek. *Educational Researcher*, 23(3), 9–10.
- Greenwald, R., Hedges, L. V., & Laine, R. D. (1996a). The effect of school resources on student achievement. *Review of Educational Research*, 66(3), 361-396.  
doi:10.3102/00346543066003361
- Greenwald, R., Hedges, L. V., & Laine, R. D. (1996b). The school funding controversy: Reality bites. *Educational Leadership*, 53(5), 78-79.

- Gross, P. A. (2010). Not another trend: Secondary-level literacy coaching. *Clearing House: A Journal of Educational Strategies, Issues & Ideas*, 83(4), 133-137.  
doi:10.1080/00098651003774844
- Hanushek, E. A. (1986). The economics of schooling: Production and efficiency in public schools. *Journal of Economic Literature*, 24(3), 1141-1177.
- Hanushek, E. A. (1989). The impact of differential expenditures on school performance. *Educational Researcher*, 18(4), 45-51, 62. doi:10.3102/0013189X018004045
- Hanushek, E. A. (1991). When school finance “reform” may not be good policy. *Harvard Journal on Legislation*, 28, 423-456.
- Hanushek, E. A. (1994). Money might matter somewhere: A response to Hedges, Laine, and Greenwald. *Educational Researcher*, 23(3), 5–8.  
doi:10.3102/0013189X023004005
- Hanushek, E. A. (1997). Assessing the effects of school resources on student performance. *Educational Evaluation and Policy Analysis*, 19(2), 141–164.  
doi:10.2307/1164207
- Hanushek, E. A., Peterson, P. E., & Woessmann, L. (2012). *Achievement growth: international and U.S. state trends in student performance* (PEPG Report No.: 12-03) [Program on Education Policy and Governance]. Cambridge, MA: Harvard University.
- Hedges, L. V., Laine, R. D., & Greenwald, R. (1994). Does money matter? A meta-analysis of studies of the effects of differential school inputs on student outcomes. *Educational Researcher*, 23(3), 5–14.

- Herrstein, R. J., & Murray, C. (1994). *The bell curve: The reshaping of American life by differences in intelligence*. New York, NY: The Free Press.
- Kluegel, J. R., & Smith, E. R. (1986). *Beliefs about inequality: Americans' view of what is and what ought to be*. New York, NY: Aldine de Gruyter.
- L'Allier, S., Elish-Piper, L., & Bean, R. M. (2010). What matters for elementary literacy coaching? Guiding principles for instructional improvement and student achievement. *Reading Teacher*, 63(7), 544.
- Lakeview School Dist. No. 25 of Phillips County v. Huckabee, 351 Ark. 31, 91S.W.3d 472, (2002).
- Land, D., & Legsters, N. (2002). The extent and consequences of risk in U.S. education. In S. Stringfield & D. Land (Eds.). *Educating at-risk children* (pp. 1-28). Chicago, IL: University of Chicago Press.
- Langille-Hoppe, M., Maxey, M., Gonzalez, J. R., & Terrell, S. (2010). "What makes you think I'm poor?" A qualitative analysis of etic and emic perceptions of poverty in the Ozarks. *Journal of Ethnographic & Qualitative Research*, 4(3), 125-138.
- Leech, N., Barrett, K., & Morgan, G. (2011). *IBM SPSS for intermediate statistics: Use and interpretation*. New York, NY: Routledge.
- Lindsey, R. B., Robins, K. N., Terrell, R. D. (2009). *Cultural proficiency: A manual for school leaders*. Thousand Oaks, CA: Corwin.
- Marsh, J. A., Sloan McCombs, J., Lockwood, J. R., Martorell, F., Gershwin, D., Naftel, S., . . . Rand, C. (2008). *Supporting literacy across the sunshine state: A study of Florida middle school reading coaches*. Santa Monica, CA: RAND Corporation.

- Moynihan, D. P. (1969). *On understanding poverty: Perspectives from the social sciences*. New York, NY: Basic Books.
- National Access Network: Litigation. (2012). *Arkansas litigation*. National Access Network, Teachers College, Columbia University, New York, NY. Retrieved from <http://schoolfunding.info>
- National Center for Education Statistics. (2004). *Statistics in brief: Revenues and expenditures for public elementary and secondary education*. Retrieved from <http://nces.ed.gov>
- National Center for Education Statistics. (2012). *State finance programs*. Retrieved from <http://nces.ed.gov>
- NCLB Timeline 1965-2014. (2006). *Educational Leadership*, 64(3), 10-11.
- No Child Left Behind Act of 2001. (2002). Pub. L. No. 107-110, § 115, Stat. 1425.
- Noguera, P. A. (2011). A broader and bolder approach uses education to break the cycle of poverty. *Phi Delta Kappan*, 93(3), 8-14.
- Odden, A., Picus, L., & Goetz, M. (2006). *Recalibrating the Arkansas school funding structure* [Report prepared for the Arkansas General Assembly, Little, AR.]. Retrieved from <http://www.schoolfunding.info>
- Odden, A. R., & Picus, L. O. (2003). *Arkansas school funding formula structure* [Report prepared for the Arkansas General Assembly, Little Rock, AR.]. Retrieved from <http://www.schoolfunding.info>
- Odden, A. R., & Picus, L. O. (2008). *School finance: A policy perspective* (4th ed.). New York, NY: McGraw-Hill.
- Payne, R. K. (2005). *A framework for understanding poverty*. Highlands, TX: Aha.

- Payne, R. K. (2008). Nine powerful practices. *Educational Leadership*, 65(7), 48-52.
- Payne, R. K. (2009). Poverty does not restrict a student's ability to learn. *Phi Delta Kappan*, 90(5), 371-372.
- Peabody, P. T., Jr. (2012). Advancement via individual determination (AVID) system's impact on diversity and poverty issues in education. *National Teacher Education Journal*, 5(4), 21-24.
- Rose v. Council for Better Education, 790 S.W.2d 186 (1989).
- Rothstein, R. (1993). The myth of public school failure. *The American Prospect*, 13(4), 20-34.
- S. 811, 89th Gen. Assem., Reg. Sess. (AR. 2013).
- School Finance Act, Ark. Code Ann. § 6-20-301-319 (1984) (Repl.1993).
- Sirin, S. R. (2005). Socioeconomic status and academic achievement: A meta-analytic review of research. *Review of Educational Research*, 75(3), 417-453.  
doi:10.3102/00346543075003417
- Slavin, R. E. (1999). How can funding equity ensure enhanced achievement? *Journal of Education Finance*, 24(4), 519-528.
- Socioeconomic status*. (2012). Retrieved from <http://dictionary.reference.com>
- Stringfield, S., & Land, D. (2002). *Educating at-risk students*. Chicago, IL: University of Chicago Press.
- Tienken, C. H. (2012). The influence of poverty on achievement. *Kappa Delta Pi Record*, 48(3), 105-107. doi:10.1080/00228958.2012.707499
- Tucker v. Lake View School Dist. No. 25, 323 Ark. 693, 917 S.W.2d 530 (1996).

United States Department of Education. (2005). *10 facts about K12 education funding*.

Retrieved from <http://www2.ed.gov>

United States Department of Health & Human Services. (2013). *Temporary assistance*

*for needy families (TANF)*. Retrieved from <http://www.hhs.gov>

Vanderburg, M., & Stephens, D. (2010). The impact of literacy coaches: What teachers value and how teachers change. *Elementary School Journal, 111*(1), 141-163.

doi:10.1086/653473

Watt, K. M., Powell, C. A., Mendiola, I. D., & Cossio, G. (2006). School impact and

AVID: How have selected Texas high schools addressed the new accountability measures. *Journal of Education for Students Placed at Risk, 11*(1), 57-73.

doi:10.1207/s15327671espr1101\_4

Wilt, R. W. (2006). A success model for low-income students. *Inquiry, 11*(1), 65-73.

Wood, D. (2003). Effect of child and family poverty on child health in the United States.

*Pediatrics, 112*(3), 707-711.

## APPENDIX

APPENDIX A

Status of Request for Exemption from IRB Review



Status of Request for Exemption from IRB Review

(For Board Use Only)

Date: March 11, 2013

Proposal Number: 2013 – 026

Title of Project: Effects of Poverty Funding on Literacy Achievement over Time in Arkansas Schools

Name and Contact information for the Principal Investigator: Rick L. Gales

- Research exempted from IRB review.
Research requires IRB review.
More information is needed before a determination can be made. (See attachment.)

I have reviewed the proposal referenced above and have rendered the decision noted above.

This study has been found to fall under the following exemption(s):

- 1 [ ] 2 [ ] 3 [ ] 4 [x] 5 [ ] 6 [ ]

In the event that, after this exemption is granted, this research proposal is changed, it may require a review by the full IRB. In such case, a Request for Amendment to Approved Research form must be completed and submitted.

This exemption is granted for one year from the date of this letter. Renewals will need to be reviewed and granted before expiration.

The IRB reserves the right to observe, review and evaluate this study and its procedures during the course of the study.

Rebecca O. Weaver

Chair, Harding University Institutional Review Board