The relationship between school mobility and the acquisition of early literacy skills

Amy C. Franco

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A Dissertation
entitled
The Relationship Between School Mobility and the Acquisition of Early Literacy Skills
by
Amy C. Franco
Submitted to the Graduate Faculty as partial fulfillment of the requirements for the
Doctor of Education Degree in Educational Foundations and Leadership

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August, 2013
The relationship between frequent mobility and student achievement is complex. While studies have shown that frequent mobility may have a detrimental effect on student achievement, the suggestion that poverty is an underlying cause for poor academic progress has been proposed (Buerkle & Christenson, 1999; United States GAO Report, 2010). The purpose of this dissertation project was to study frequent mobility and its possible connection to achievement and literacy. The author has compiled research concerning the relationship between student mobility, socio-economic level and academic achievement (Burkham, Lee, & Dwyer, 2009; Daneshvary, 2005; Eddy, 2011; Necati, 2006; A Report from the Kids' Mobility Project, 1998). The study employed the definition of highly mobile as students who change school enrollment three or more times before the end of third grade for reasons other than promotion to the next grade. The author has investigated research regarding the development of literacy, and the current brain science informing the teaching of reading through code-focused instruction that is developmentally designed (Connor, et al., 2011). The purpose of the literacy investigation is to determine the effects experienced by students whose educational experience is disrupted by frequent enrollment changes creating the possibility that they
will miss essential pieces of instruction and skill training that are regarded as crucial steps in the developmental hierarchy of reading acquisition.

This quantitative study was conducted on data compiled from the entering fourth grade population of an urban, northwest Ohio, school district to determine whether a relationship exists between frequent mobility before the end of the third grade and the mastery of early literacy skills. The data analysis findings were reviewed for each subscore of the fourth grade DIBELS Next assessment for 533 students. In addition to the descriptive statistics, a Chi-square test and multiple linear regressions were performed to determine whether an association exists between socio-economic status and mobility status.

The findings of this study establish strong evidence in two areas. First, on average, students who were frequently mobile during the first three years of school scored lower in reading comprehension and on an overall composite score than did students who were identified as stable. Second, the study establishes that frequent mobility during grades kindergarten through three affects student academic achievement most profoundly in the area of reading comprehension, regardless of the child's socio-economic level.
For my beautiful children, Ben and Nicki.

From you I've learned about courage, grace, and how to turn a disadvantage into a great strength.

For Ron...You never questioned my ability to actually complete this, and your unwavering love and support gave me great strength.

And for transient children everywhere, who have had no voice in the direction of their own personal circumstances.
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Table of Contents

Abstract iii
Acknowledgements vi
Table of Contents vii
List of Tables xi
List of Figures xiii
List of Abbreviations xiv

I. Introduction 1
   A. Introduction 1
   B. Statement of the Problem 3
   C. Historical Overview 5
   D. Rationale 6
   E. Student Mobility and Title I of the No Child Left Behind Act 7
   F. Significance of the Problem 12
   G. Purpose of the Study 13
   H. Research Questions 15
   I. Limitations, Delimitations and Assumptions 16
   J. Definition of Terms 16
   K. Organization of the Study 17

II. Review of Literature 19
   A. Historical Overview of Research on Student Mobility 20
   B. Prevalence of Mobility 36
   C. Family Stressors Caused by Mobility 37
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>D. Mobility and Poverty</td>
<td>38</td>
</tr>
<tr>
<td>E. Mobility and Academic Performance</td>
<td>39</td>
</tr>
<tr>
<td>F. Types of Moves</td>
<td>41</td>
</tr>
<tr>
<td>G. Homelessness</td>
<td>44</td>
</tr>
<tr>
<td>H. Children of Migrant Workers</td>
<td>45</td>
</tr>
<tr>
<td>I. Displaced Children</td>
<td>48</td>
</tr>
<tr>
<td>J. Department of Defense Education Agency Schools</td>
<td>50</td>
</tr>
<tr>
<td>K. Mobility and Student Behavior: The Effects on Academic Achievement and Performance</td>
<td>53</td>
</tr>
<tr>
<td>L. Definition of High Mobility</td>
<td>54</td>
</tr>
<tr>
<td>M. Frequent Mobility and the Acquisition of Basic Early Literacy Skills</td>
<td>56</td>
</tr>
<tr>
<td>N. New Research Focus</td>
<td>59</td>
</tr>
<tr>
<td>O. Dynamic Indicators of Basic Early Literacy Skills Next</td>
<td>64</td>
</tr>
<tr>
<td>P. Conclusion</td>
<td>68</td>
</tr>
<tr>
<td>III. Methodology</td>
<td>69</td>
</tr>
<tr>
<td>A. Research Background</td>
<td>69</td>
</tr>
<tr>
<td>B. Sample Selection</td>
<td>70</td>
</tr>
<tr>
<td>C. Definition</td>
<td>73</td>
</tr>
<tr>
<td>D. Research Design</td>
<td>74</td>
</tr>
<tr>
<td>E. Measures</td>
<td>74</td>
</tr>
<tr>
<td>a. Independent Variable</td>
<td>74</td>
</tr>
<tr>
<td>b. Dependent Variables</td>
<td>74</td>
</tr>
<tr>
<td>F. Research Questions</td>
<td>75</td>
</tr>
</tbody>
</table>
G. Hypotheses 76
H. Data Analysis 78
I. Sample Size Justification 80
J. Instrument Selection 81
K. Controls for Confounding Variables 82
L. Data Collection Procedures 83
M. Summary 83

IV. Results 85
   A. Introduction 85
   B. Descriptive Statistics 85
   C. Hypothesis Test Results 87
      a. Results for Research Question 1 87
      b. Results for Research Question 2 89
      c. Results for Research Question 3 91
      d. Results for Research Question 4 95
      e. Results for Research Question 5 98
   D. Exploratory Analysis 101
   F. Summary 105

V. Summary, Conclusions, and Recommendations 106
   A. Summary of the Problem 106
   B. Purpose of the Study 106
   C. Summary of the Sample 109
   D. Summary of the Research Findings 110
a. Frequent Mobility During the Early Years Impacts Students' Reading Comprehension 113

b. Frequent Mobility Negatively Affects Student Achievement, Independent of Socio-economic Level 114

E. Recommendations for the School District 116

a. The DODEA Schools 116

b. Schools Receiving Refugees from Natural Disasters 117

c. Diagnostic Assessment 117

F. Recommendations for School Policy Makers 118

G. Recommendations for Further Research 120

H. Conclusions 122

References 124

Appendices 138

A. Frequency Tables for all Variables 138

a. School 138

b. Mobility Status 138

c. Socioeconomic Status 139

e. Gender 139

B. Permission to Use Urban Northwest Ohio School District 140
List of Tables

Table 1. DIBELS Next Assessment Components.................................................................14
Table 2. United States Population Change in 2008.............................................................57
Table 3. UNWO School District Demographics.................................................................72
Table 4. Summary of Reliability Measures for DIBELS Next Measures for
  Grade 4..........................................................................................................................82
Table 5. Descriptive Statistics for the Dependent Variables...........................................86
Table 6. Descriptive Statistics for Fluency Test Scores by Mobility Status.....................89
Table 7. Two-Sample t-test to Compare the Average Fluency Test Scores by
  Mobility Status.............................................................................................................89
Table 8. Descriptive Statistics for Accuracy Test Scores by Mobility Status...............92
Table 9. Two-Sample t-test to Compare the Average Accuracy Test Scores by
  Mobility Status.............................................................................................................92
Table 10. Descriptive Statistics for Retell Test Scores by Mobility Status.......................95
Table 11. Two-Sample t-test to Compare the Average Retell Test Scores by
  Mobility Status.............................................................................................................95
Table 12. Descriptive Statistics for Comprehension Test Scores by Mobility
  Status............................................................................................................................98
Table 13. Two-Sample t-test to Compare the Average Comprehension Test
  Scores by Mobility Status............................................................................................98
Table 14. Descriptive Statistics for Composite Test Scores by Mobility Status...101
Table 15. Two-Sample t-test to Compare the Average Composite Test Scores
  by Mobility Status.......................................................................................................101
Table 16. Cross-classification Table of Socio-economic Status by Mobility Status

Table 17. Multiple Linear Regression of the Comprehension Score Versus Socio-economic Status and Mobility Status

Table 18. Multiple Linear Regression of the Composite Score Versus Socio-economic Status and Mobility Status
List of Figures

Figure 1. Error Bar Chart of Fluency Test Scores by Mobility Status.................88
Figure 2. Error Bar Chart of Accuracy Test Scores by Mobility Status.................91
Figure 3. Error Bar Chart of Retell Test Scores by Mobility Status....................94
Figure 4. Error Bar Chart of Comprehension Test Scores by Mobility Status.........97
Figure 5. Error Bar Chart of Composite Test Scores by Mobility Status.............100
List of Abbreviations

AIMS..........................Arizona Instrument to Measure Standards
AYP..............................Adequate Yearly Progress

DIBELS Next..................Dynamic Indicators of Basic Early Literacy Skills Next
DODEA.........................Department of Defense Education Agency

ESEA.............................Elementary and Secondary Education Act

GAO..............................Government Accountability Office

ITBS..............................Iowa Test of Basic Skills

NAEP.............................National Assessment of Educational Progress
NCLBA............................No Child Left Behind Act

ODE .............................Ohio Department of Education

UNWO ..........................Urban NorthWest Ohio School District
Chapter One

Introduction

Concern about the effectiveness of public education in the United States is growing. The ability to read with ease and comprehensive understanding is commonly recognized as a crucial skill for success in a world that is increasingly information-driven (Connor et al., 2011; Evans, Kelley, Sikora, & Treiman, 2010). As other nations in the developed world demonstrate academic test scores that out-distance the United States, questions have arisen in regard to the efficiency and effectiveness of our nation's public school system (Parr, 2010; Schmoker, 2006; Sousa, 2005; Vaughn & Linan-Thompson, 2004). Worldwide, education is recognized as the key to employment and high income (Evans, Kelley, Sikora, & Treiman, 2010). Moreover, in the United States, a free, public education has long been recognized as a possible means through which individuals may change personal circumstances of poverty and disadvantagement, yet the problem continues to be that not all students are achieving as they should.

One of the primary goals of the Elementary and Secondary Education Act (ESEA) of 1965 (U.S. Department of Education, 2010), which was to reduce the gap in achievement between students from low socio-economic families and their peers from affluent families, has not been attained (Elementary and Secondary Education Act, 2004). In response to this, one of the most sweeping reform movements in recent history, the No Child Left Behind Act of 2001 (NCLBA) was drafted. The No Child Left Behind legislation (United States Department of Education, Executive summary of the no child left behind legislation, 2004) which includes a target goal of 100% proficiency in reading by 2014, was adopted along with provisions for states to disaggregate data for the
determination of Adequate Yearly Progress (AYP) goals. Under the NCLB Act, school administrators and policymakers are held accountable for the provision of educational equity for all students (NAEP, 2003, as cited by Sousa, 2005). According to the Executive Summary of the No Child Left Behind Act (2004), the legislation reflects President George W. Bush's (2000-2003) dedication to ensuring that every child in the United States has the ability to read by the end of the third grade. The reforms called for by the No Child Left Behind legislation have been proposed in response to reports and statistics indicating that some children in the United States achieve much greater gains in reading proficiency than others (Kerbow, 1996).

In a report released in 2003, The National Assessment of Educational Progress (NAEP, 2003, as cited by Sousa, 2005) found that in the previous ten years, U.S. eighth graders had made no gains in reading achievement, and that the reading proficiency of twelfth graders had actually declined in the same decade (Sousa, 2005). Additionally, according to a recent report by Lee, Grigg, and Donahue (2007, as cited by Connor et al., 2011), more than 70% of students in the U.S. reach the fourth grade lacking the ability to adequately read and comprehend at established levels of proficiency. In response to recognition that students who lack the necessary skills to read well face tremendous difficulties in both future academic endeavors and the eventual pursuit of employment, the state of Ohio passed Senate Bill 316 in June of 2012. Bill 316 re-establishes and reinforces the requirement that all students who do not score proficient on the Ohio Achievement Assessment of reading by the end of the third grade will neither be promoted nor moved on to the fourth grade (SB 316: MBR, 2012). Also, in measures designed to improve education, the ESEA was reauthorized and amended in May of 2010
(U.S. Department of Education, 2010). Policy-makers, researchers, and educators have established the end of third grade as the focal point for benchmark measurements of student achievement of literacy in response to findings by the scientific community in the area of brain research. Scientific research has led experts to recognize that the early primary years of a child's education and development make up a developmental period during which the child's capacity for acquiring language skills is at its height. Furthermore, scientists have found that individuals who miss key components of literacy achievement exhibit greater stress and difficulty in mastering these components during later developmental periods (Duke & Carlisle, 2011; Foorman & Connor, 2011; Paratore, Cassano, & Schickedanz, 2011; Wiesel & Hubel, 1963).

**Statement of the Problem**

The problem, broadly stated, is that a large number of children in the United States are exhibiting academic achievement that is below an acceptable level (Parr, 2010; Schmoker, 2006). More specifically, according to Connor et al. (2011) the difficulty United States' children exhibit in achievement may be largely attributed to poor reading skills. "Every child has the capacity to succeed in school and in life. Yet far too many children ...are placed at risk by school practices that are based on a sorting paradigm in which some students receive high-expectations instruction while the rest are relegated to lower quality education and lower quality futures" (Kerbow, 1996, ii). Kerbow's words reflect the deeply held beliefs and fears of many. Concerns over issues of equity in education have led educators and policy makers to examine student performance on standardized measures with a critical eye to the possible causative factors leading to low student achievement. Poverty and the issues associated with poverty have long been cited
as contributory factors to low student achievement and lack of academic success. Although research shows a link between low student performance and low socio-economic level (McCarthy, 1988), some schools located in poverty-stricken areas have clearly found ways to overcome this factor and successfully educate students (Heinlin & Shinn, 2000; Parr, 2010; Popp, Stronge, & Hindman, 2003; Risko, 2008). Additionally, some students from poor families achieve success in schools that are under-performing. “Therefore, poverty alone does not cause school failure or individual failure” (Necati, 2006, p. 167). Closer inspection of the problem reveals several environmental characteristics of poor children that are frequently cited as possible causes for low academic achievement. These include lack of parental involvement, lack of value for the educational process on the part of families, and high student mobility (Rumberger & Larson, 1998). While research on the possible relationship between student mobility and academic achievement exists, it has not been shown whether frequent mobility prior to completion of the third grade is associated with lower academic achievement, or whether frequent mobility prior to the end of the third grade impairs students' achievement of specific early literacy skills that are vital to the ability to read with comprehension and higher thinking.

The purpose of this research project is to examine the possible relationship between high student mobility and low student achievement, as well as the possibility that the timing of frequent school changes has a significant effect on students' acquisition of vital literacy skills.
Historical Overview

The launch of Sputnik in 1957 caused school officials, officials elected to federal governmental positions, and parents to question the state of education in the United States. The Sputnik launch caused great alarm for citizens of the United States, and became a catalyst for a nationwide focus on school reform (Parr, 2010). By 1965, the conversation about school reform that had begun in 1957 evolved to a focus on accountability, resulting in the passage of the Elementary and Secondary Educational Act (ESEA) of 1965. One purpose of the ESEA was to provide funding for educational programs designed to serve at-risk student populations (U.S. Department of Education, 2010). Though many educators recognized that frequent student mobility resulted in negative consequences for students, little research was conducted on the problem before the 1980's (Kerbow, 1996). Previous to that decade, many advocates of school reform functioned under the illusion that students remained in attendance at one school for the bulk of their education, thus assuming that reform efforts would have a substantive effect (Kerbow, 1996). By 1983, the National Commission on Excellence in Education's (NCEE, 1983) publication of A Nation at Risk brought a sharp focus to the perception of low quality education in the United States. During this decade of increased accountability, attention to the plight of migrant and homeless children resulted in the passage of the McKinney-Vento Homeless Assistance Act of 1987, which stipulates that local education agencies must monitor and report on the academic achievement of homeless children and migrant children. Because migrant children suffer many of the same identifying characteristics as homeless children, such as sharing housing of another person due to economic hardship; living in motels, hotels, trailer parks, or camping
grounds; or lack of a primary nighttime residence; the McKinney-Vento Act established accountability for the schools attended by migrant and homeless children (United States Department of Education, Title VII-B of the McKinney-Vento Homeless Assistance Act, 2004). It was during this same time period that interest and attention began to develop in regard to the circumstances and academic well-being of frequently mobile children (Parr, 2010). Frequently mobile children are distinguished from migrant children in that mobility is considered to be residential movement within a county, while migration refers to changes in residence that are necessary due to the families' pursuit of seasonal or temporary work in occupations connected to such industries as agriculture and fishing (Popp et al., 2003; Titus, 2007; Vocke & Stearns-Pfeiffer, 2009). The two groups are similar in that both change schools often and both experience the effects, if any, that are brought about by frequent change. Accountability for the academic achievement of all children on the part of school districts has sparked researchers to conduct studies on the phenomenon of frequently mobile children, however, the possibility that moving during critical early learning periods in a child's life may have a lasting impact on the child's learning has not been carefully examined.

**Rationale**

In 2012, almost 36.5 million people who were one year old and older moved in the United States (Census.gov, 2012). More than 16 percent of the population with dependent children report that they have changed residences a minimum of one time each year (Ersing, Sutphen & Loeffler, 2009). Sixty one percent of the 100.2 million people who moved in the time period between 2005 and 2010 changed from one residence to another in the same county (Ihrke & Faber, 2012). Renters move more frequently than
 homeowners, with 27.7 percent, or 1 of every 4 persons, living in a rental facility making a change during the year in 2008 (Relodata.com, 2011). Housing-related reasons accounted for 16.4 million, or 43.7 percent, of residential moves made between 2009 and 2010. Family related reasons accounted for 30.3 percent (Census.gov, 2013). Changes in school registration for children can also result from the family becoming homeless, or due to the family's search for employment, as is the case with migrant workers. Families experience many life-events that can result in children withdrawing from and re-enrolling in the same school, or a mix of several schools (Ersing et al., 2009).

**Student Mobility and Title I of the No Child Left Behind Act**

Schools and school districts are under great pressure under the No Child Left Behind Act to prove student academic achievement that meets established criteria (Weckstein, 2003). While NCLB requires that all students of certain grade levels be assessed to determine their proficiency, or lack of proficiency, in specific academic skills (U.S. Department of Education, Executive Summary of the No Child Left Behind Act, 2004), the pressure on school systems to reach required levels of academic achievement, as measured and demonstrated by academic proficiency tests, can and has caused two areas of risk for mobile students.

The first risk is that transient students will not be assessed. Even though Title I specifies that schools assess and report results for 95 percent of students (Weckstein, 2003), there is one group of children whose assessment results are not counted against a school, and that is children who do not remain in a school for a full academic year because they leave, transfer, or withdraw. It stands to reason that a student's academic achievement and areas of weakness cannot be properly diagnosed, identified or addressed
if the student is not assessed (Weckstein, 2003). These students may slip by and go without the necessary educational foundation needed to learn and advance academically. While it is understandable that the Department of Education realizes the unfairness of holding schools accountable for the achievement of students who have not been educated by the school for a full year, it is also a danger that the students' educational gaps may go undetected under the present system (Weckstein, 2003).

The second area of risk facing highly mobile students is the danger that they will have limited access to the benefits provided through Title I (Weckstein, 2003). Title I specifies that schools must develop a plan for improvement that includes parental involvement, an enriched and accelerated curriculum, the use of research based instructional strategies, the employment of highly qualified teachers, and the identification of students' specific needs along with a plan for how to address and rectify lacking skills (U.S. Department of Education, 2010). Highly transient students may not be assessed and diagnosed as having specific skill deficiencies, and may therefore miss targeted instruction to address these problems (Weckstein, 2003).

Examination of the issue of frequent transience and mobility reveals that mobility is an unavoidable factor in education today (Alexander, Entwisle, & Dauber, 1996; Eddy, 2011; O'Donnell & Gazos, 2010; Reynolds, Chen, & Herbers, 2009; Parr, 2010; Rumberger, 2004; Rumberger & Larson, 1998). It also reveals that several sources feed the influx of mobile students into schools, as transient students come from many backgrounds that may include families that are impoverished, families that are relatively well off, children of migrant workers, children of families who have moved to improve
their circumstances and living conditions, and even homeless children (Alexander et al, 1996).

In 2010, the Committee on the Impact of Mobility and Change on the Lives of Young Children, Schools, and Neighborhoods conducted a workshop to examine the issue of mobile children and families by calling together experts in the field of childhood mobility from across the United States. In his concluding remarks to the members of the committee and the assembled audience, Chairman Stephen W. Raudenbush (2010) spoke about several conclusions that could be drawn from the data and information presented, but his over-arching message concerned the adoption of new research agendas by researchers in the field. Raudenbush stressed the need for the development of teaching methods, interventions, and processes to be used by schools to aid the academic advancement of mobile children (Raudenbush, 2010). Sandra J. Newman of the Institute for Policy Studies at Johns Hopkins University also offered a summation at the conference in which she cited the findings by several researchers at the workshop that "moves are not equal, that the timing of the move seems to matter..." (Newman, 2010, p. 62). The idea that timing of enrollment changes is crucial to children's academic achievement is supported in longitudinal studies of effects of student mobility on academic achievement. Research suggests that frequent mobility itself may not wield the greatest impact on academic achievement, but that frequently moving during the primary years of school may deal the heaviest blow in the area of acquiring language and reading skills. Some researchers have theorized that this is because changing schools during the primary years disrupts the acquisition of building blocks of learning that are critical pieces of literacy acquisition (Duke & Carlisle, 2011; Foorman & Connor, 2011; Gruman
et al., 2008; Kamil, Afflerbach, Pearson, & Moje, 2011; Kerbow, 1996; Paratore et al., 2011). Events experienced early in life have a powerful influence over the development of the brain, and current brain science reveals increasing evidence that environmental factors and specific experiences, when encountered at sensitive periods, actually determine the architecture of the brain (Fox, Levitt, & Nelson, 2010; Greenough, Black, & Wallace, 1987). The perceptual and cognitive abilities of humans are developed and built upon early life experiences and the scaffolding these experiences provide (Fox et al., 2010).

In 1963, Wiesel and Hubel proposed the concept of critical periods of brain plasticity during which the brain is particularly responsive to environmental events (Wiesel & Hubel, 1963). The work of Greenough et al. (1987) expanded our understanding of brain plasticity and of the processes involved in the learning of language and reading. It is by way of this research that knowledge has developed in relation to the acquisition of early literacy and language skills, and the consequences for the learner in later life, should these skills not be acquired during the optimal learning period. In 1987, Greenough et al. identified two types of brain plasticity that provide storage for information that is encountered through interaction with the environment. The two types of plasticity are: experience expectant plasticity, and experience dependent plasticity. Study of the characteristics of the two types of plasticity and their impact, not only on how humans learn, but on when is the optimal time for humans to learn language, is of critical use for the purpose of informing the development and timing of instructional strategies (Greenough et al., 1987).
In Raudenbush's concluding address to the 2010 Workshop on Student Mobility (2010), he called for research on the effects of student mobility to take a new direction. Raudenbush holds the position that further studies should increasingly focus on how to counter the impact of frequent mobility on children. While presenters at the workshop provided a great volume of information, Raudenbush found that the need to establish new research priorities that focus on a way forward became evident (Raudenbush, 2010). Rumberger (2010), also in final remarks to the same group, observed the need for the utilization on the part of researchers of better methodologies and techniques to study the highly complex phenomenon. Newman (2010), of the Institute for Policy Studies at Johns Hopkins University, provided a summation of the information presented at the symposium. In her summation, Newman stated that the central question of "whether mobility itself is a unique cause of negative outcomes for some students, net of other factors, is not yet a settled question". Newman stated her assessment of the present situation, saying that in moving forward "the key will be to make further progress in understanding the mechanisms by which mobility causes harm and the conditions in which it is most harmful" (Newman, 2010, p. 62). Further, Newman observes that,

The research on mobility is provocative, rich, and complex. It is emerging, but is still in a fairly immature stage of development in that it lacks rich, robust theories, tailored measurement tools, and sample populations that target the most important questions.

(Newman, 2010, p. 62)
This study will analyze frequent changes in school enrollment and the effects on students' acquisition of early literacy skills. The purpose of the study is to provide information and a knowledge base for school leaders who are searching for answers to the question of why some students fail to achieve in school while others thrive and flourish academically in the same general educational circumstances. In order to justify the implementation of programs designed to intervene at an early age to teach and reinforce early literacy skills, school leaders, administrators, policy makers, and teachers need quantitative evidence as a basis for their proposed initiatives. This study has been undertaken as a means to provide quantitative evidence so that school officials can make data-based decisions on how to best serve all students by providing focused, targeted, effective, instruction.

**Significance of the Problem**

Geographic mobility has long been an established aspect of American life (Morgan, 2005). In 1993, Wood, Halfon, Scarlata, Newacheck, and Nessim released the findings of a national study which stated that U.S. families relocated twice as often as families in Great Britain or Germany, and that young children were the most severely impacted. The 2000 U. S. Census Report indicates that in 1999, nearly 12 million children changed to a new residence (U. S. Census, 2000). According to Titus (2007) it is common for most students in the United States to make at least one non-promotional change in school, with more than 18% of students making school changes even though the family did not relocate. In 2000, the U.S. Census reported that 15% to 18% of school-aged children moved by changing residence in the previous year (Popp; Stronge; & Hindman, 2003). Titus (2007) found that almost one fifth of the population of the United States moved
annually, making it one of the most mobile nations in the world. In a study of 86,000 students in New York City, Maxwell (2008, as cited by Eddy, 2011) found that students who were continuously enrolled in school throughout their school age years were the exception, rather than the rule.

In view of the current mandates of the No Child Left Behind Act, and regarding the requirements of NCLB for implementation and accountability for school districts in order to ensure equity for all students, student mobility becomes an issue of great and timely importance. The researcher will seek to answer several questions. They are as follows:

Do frequent changes in school enrollment have a detrimental effect on students' academic achievement? Are students who have enrolled in school at least three times before the end of third grade behind stable students in specific literacy skills as determined by assessment using the Dynamic Indicators of Basic Early Literacy Skills (DIBELS)? What research based recommendations would provide schools with an effective diagnosis and intervention program?

**Purpose of the Study**

The purpose of this study is to examine student reading data for the 2011-12 third grade cohort to determine whether the literacy scores of students who enrolled in school three or more times before the end of the third grade (mobile students) were significantly lower than the scores of students who did not enroll in school three or more times before the end of third grade (stable students). Data generated from reading assessments (DIBELS) administered to the 2011-12 third grade cohort at the beginning of the students' fourth grade year (2012-13) were examined to determine whether the literacy scores of mobile students were significantly lower than the scores of stable students. If
the data indicated that frequently mobile students were unable to reach benchmark scores on the third grade DIBELS assessments, the researcher examined the aggregated assessment data to determine whether students were able to demonstrate mastery of specific, critical early literacy skills as assessed by DIBELS.

The skills that were measured are:

**Table 1.**

**DIBELS Next Assessment Components**

<table>
<thead>
<tr>
<th>Assessment Component</th>
<th>Skills Assessed</th>
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<tbody>
<tr>
<td>Fluency</td>
<td>Oral Reading Fluency in Words Correct (DORF words correct)</td>
</tr>
<tr>
<td>Accuracy</td>
<td>Accuracy of Oral Reading (DORF accuracy)</td>
</tr>
<tr>
<td>Retell</td>
<td>Comprehension</td>
</tr>
<tr>
<td>Comprehension</td>
<td>comprehension composite score (DAZE)</td>
</tr>
<tr>
<td>Composite</td>
<td>an overall composite score</td>
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Further, the researched examined current research regarding the brain science of reading and the acquisition of vital reading skills. The purpose of this review was to determine whether the current research supports the theory that the timeliness of missing the teaching of essential literacy skills has a relationship to the learner's ability to acquire these skills, even at a later time.
Dynamic Indicators of Basic Early Literacy Skills (DIBELS) data for the 2011-12 third grade cohort of an urban northwest Ohio school district (UNWO) were collected at the beginning of the students’ fourth grade year for this study to respond to the primary questions of the research.

**Research Questions**

The overarching research question is, what, if any difference is there in student academic reading achievement at the completion of 3rd grade between those who had changed enrollment less than 3 times prior to completion of 3rd grade and those who had changed enrollment 3 times or more prior to the completion of 3rd grade? The following specific questions will be addressed:

1. What, if any difference is there in the average “Fluency” exam score between those who had changed enrollments less than 3 times prior to completion of 3rd grade and those who had changed enrollments 3 times or more prior to the completion of 3rd grade?

2. What, if any difference is there in the average “Accuracy” exam score between those who had changed enrollments less than 3 times prior to completion of 3rd grade and those who had changed enrollments 3 times or more prior to the completion of 3rd grade?

3. What, if any difference is there in the average “Retell” exam score between those who had changed enrollments less than 3 times prior to completion of 3rd grade and those who had changed enrollments 3 times or more prior to the completion of 3rd grade?

4. What, if any difference is there in the average “Comprehension” exam score between those who had changed enrollments less than 3 times prior to completion of 3rd grade?
grade and those who had changed enrollments 3 times or more prior to the completion of 3\(^{rd}\) grade?

5. What, if any difference is there in the average “Composite” exam score between those who had changed enrollment less than 3 times prior to completion of 3\(^{rd}\) grade and those who had changed enrollment 3 times or more prior to the completion of 3\(^{rd}\) grade?

**Limitations, Delimitations and Assumptions**

The sample of this study is delimitated to quantitative analysis of student data from an urban northwest Ohio school district (UNWO). It is not known whether all students possess the same motivation levels and learning capacity. It is understood that every classroom differs from every other classroom in some respect; however, the school district (UNWO) under study has stipulated a specific curriculum and assessment program for all elementary schools, rendering the assumption possible that all students in the district are being presented with the same curriculum and skills in the same sequence. It is also assumed that classroom teachers are delivering the intended curriculum with integrity. It is assumed that proper protocol for testing procedures was followed for the administration of the Dynamic Indicators of Basic Learning Skills Next.

**Definition of Terms**

**Mobility.** For the purposes of this study, number of school enrollments will be used to determine mobility, and mobility will be defined as changing from one school to the next for reasons other than being promoted to another building due to requirements in the school structure (Rumberger, 2004). Re-enrollment in a previously attended school qualifies as a new enrollment or school change, as the study examines the effects of
missing vital information at key points in a student's school experience, or disruption in the flow of the school experience.

Frequent mobility. Frequently mobile students will be defined as those students who have enrolled in a school a minimum of three times before the end of the third grade.

Stable students. Stable students will be defined as those students who have enrolled in school two or fewer times before the end of third grade.

Homeless students. "The McKinney-Vento Act defines 'homeless children and youth' as individuals who lack a fixed, regular, and adequate nighttime residence" (McKinney-Vento, 2004, p. 2)

Migrant students. The McKinney-Vento Act (2004) identifies migratory children as homeless because they qualify under the circumstances defined for homeless students.

Achievement. The academic progress for an individual student as determined by scores on the Dynamic Indicators of Basic Early Literacy Skill (DIBELS) assessments. The benchmark scores provided will be Fluency (oral reading fluency words correct), Accuracy (accuracy of oral reading), Retell (number of words remembered), Comprehension (a comprehension composite score), and a DIBELS composite score.


Organization of the Study

This study is composed of five chapters. Chapter 1 is comprised of the introduction, problem statement, historical overview of research on student mobility, rationale for the study, significance of the problem, purpose of the study, research
questions, limitations and assumptions, definition of terms, and the organization of the study. Chapter 2 is a review of the body of literature in relation to mobility. It is composed of the following sections: an overview followed by the Historical Overview of the Research on Student Mobility, Prevalence of Mobility, Family Stressors Caused by Mobility, Mobility and Poverty, Mobility and Academic Performance, Types of Moves, Homelessness, Department of Defense Schools, Mobility and Student Behavior, Definition of High Mobility, Frequent Mobility and the Acquisition of Basic Early Literacy Skills, New Research Focus, the Conclusion, and an examination of mobility and student behavior as it affects academic achievement and performance. Chapter 3 is the methodology. Chapter 4 is an analysis and presentation of the results and leads to Chapter 5, which summarizes results and discusses the implications of the results. The conclusion of the study includes an examination of current science on reading acquisition and recommendations for school districts.
Chapter Two

Review of Literature

A review of the scholarly literature on student mobility reflects great concern for the academic progress of our nation's students. Educators, researchers, scholars and policymakers have developed, implemented and studied numerous reform efforts, both on the local level and the national level, that are designed to help all students experience success and demonstrate adequate progress and achievement. Local initiatives to improve instruction and student learning include efforts such as professional development for teachers, curriculum alignment, and the implementation of differentiated instructional practices (Nicotera, Teasley & Berends, 2007). On the national level, the No Child Left Behind Act represents an effort to improve student academic success and achievement by imposing greater accountability on school districts (Executive Summary of the No Child Left Behind Act, 2004). One result of the demand placed on school districts by No Child Left Behind to demonstrate academic achievement and progress for all students is the development of new academic standards and measurement-driven instruction. These measures rely on the supposition that teaching all children the same curriculum using the same scientific strategies will result in success: a supposition that has gone relatively undisputed. However, children who are not present, or are present for only a part of a school year, will not benefit from the same tactics (Kerbow, 1996; Parr, 2010). As a result, frequent student mobility has been identified as a factor central to the issue of student achievement (Eddy, 2011; Kerbow, 1996; Parr, 2010; Reynolds et al., 2009; Titus, 2007).
Historical Overview of Research on Student Mobility

While anecdotal evidence has caused many to suspect a relationship between transiency, or high student mobility, and low student achievement, the negative consequences of mobility on student academic achievement were not the subject of careful scientific study until the early 1980's (Kerbow, 1996; Alexander et al., 1996). During the 1950's and 1960's, family mobility was primarily a subject for study by sociologists concerned with helping children adjust to life-changes, such as moving to a new home due to the arrival of a new sibling or because older children moved out. During that time period, economists viewed family relocation as a largely positive event, as families changed residences largely in response to positive changes in employment. While these types of moves generated a certain amount of stress, the involved families were predominantly financially strong, intact, and usually Caucasian (Wood, Halfon, Scarlata, Newacheck, & Nessim, 1993).

It is true that throughout history the American dream often involved the vision of relocation as a means of social improvement, as the country itself was colonized by immigrants in search of a better life. Relocation in the United States has a dark side, however, as history shows us that disadvantaged families were often forced to move for reasons of poverty, job loss, eviction, and racism. "Moreover, families that are poor move 50% to 100% more frequently than families that are not poor" (Wood et al., 1993, p. 1334). While any family move creates psychological stress and social pressure for children, moves undertaken for reasons of poverty and race deal quite different effects on the child. Stressful, forced moves often display a complicated tangle of issues such as
divorce, job loss, eviction, and economic pressures that portend extremely negative effects on the children of the family (Wood et al, 1993).

It was during the 1980's that educational researchers included frequent student transiency as a student-level variable in examinations of the causes for low student academic achievement (Parr, 2010). According to Demie, Lewis, and Taplan (as cited in Parr, 2010) areas of the United States that experience high levels of family transience, often due to immigrant and/or migrant populations, have historically led the way in efforts to understand differences between the academic achievement of transient and non-transient groups. Early academic studies in the area of frequent student mobility provided little substantive knowledge regarding the phenomenon itself, or whether frequent transience can be linked to the low academic achievement of some students (Ingersoll, Scamman, & Eckerling, 1989).

Studies conducted previous to the 1980's include work completed in 1975 by Long, who conducted a study of census data and age-grade correspondence among students who had or had not relocated residences. Long's study involved examination of census data from the 1970 Census of Population which included figures on school enrollment and current grade, state of birth, and residence for students in 1965 and 1970. Long cross-tabulated progress in school with frequency of interstate migration. For this study, Long considered only interstate moves, and considered a student who lived outside his state of birth in 1965 and in another state in 1970 to be mobile. A student who lived in his state of birth in 1965 and in 1970 was considered to be stable. Long's hypothesis was that students who lived in more than one state suffered academically and were more likely to be below the expected grade for their age. Long (1975) reported no clear relationship
between relocation and lowered academic achievement; rather, through his census data examination Long determined some evidence that students who moved interstate were more often on grade level than their peers (Long, 1975).

In 1987, Straits released results of a study he conducted in an effort to clarify whether migration affects the academic progress of students. Straits' investigation involved determining whether children suffer negative academic consequences as a result of the family relocating, and in taking the study a step further, whether the children of well-educated parents suffer academic consequences that are similar to the children of parents with little education. Straits also tested the question of whether detrimental effects of migration could be attributed to cultural differences between areas of residence. Straits establishes "a surprising lack of adequate evidence on this question" (Straits, 1987, p. 34). Straits examined a national sample of 3500, 15 and 16 year old students taken from data compiled by the 1967 Survey of Economic Opportunity. Straits based his measure of achievement solely on examination of age-grade correspondence, a measure which he admits to being "crude" (Straits, 1987, p. 35). In addition, he limited his study to children whose families had moved a minimum of 50 miles, thereby excluding a large number of students whose families make shorter-distance moves (Ingersoll et al., 1989). Straits reported finding negative effects of relocation, but only in those families in which the parents had a limited education, and reports that his results support his prediction that the detrimental effect attributed to relocating is a result of cultural differences between the current and previous places of residence. Straits reports that the effects of such a move were statistically significant only for those teenagers whose family head had completed fewer than eight years of school (Straits, 1987).
During the latter part of the 1980's, school administrators found themselves increasingly faced with the prospect of accountability measures designed to determine the effectiveness of school districts. Such measures judged school effectiveness based on data accumulated from standardized achievement tests, and the onus was squarely laid on the doorstep of school administrators to produce test data that demonstrated improved scores. The impact of itinerant populations became a matter of special concern to administrators, as the informal opinion that frequently mobile students performed poorly on standardized tests gained popularity. Against this backdrop, Ingersoll et al. (1989) conducted a study designed to measure the actual impact of frequent mobility on the academic achievement of transient students. The authors cited the lack of a research base of empirical data on the problem as the purpose of their study, and therefore conducted a study drawn from the student data of the Denver Public Schools. At that time, the Denver Public School System consisted of a multiethnic, urban population of more than 60,000 students in grades kindergarten through 12. The authors identified 5 student groups: Group 1 consisted of continuing students who were on the DPS census as of Fall, 1985, but had neither requested a within-schools transfer nor withdrawn from and re-entered the system (no moves); Group 2 consisted of continuing students who were on the Fall, 1985 school census and who had made only one change either within schools, or by withdrawing and re-entering (1 move); Group 3 was comprised of students who were on the Fall, 1985, census and had made more than one request for either a within-schools transfer or had withdrawn from and re-entered the system (more than 1 move); Group 4 was made up of students who were no longer on the DPS census for Fall of 1985 (withdrawn); and Group 5 consisted of new-entry students who were registered as of
Fall, 1986, but had not been registered for the Fall of 1985. The authors conducted an analysis of mobile students across grade levels, but within mobility groups, and discovered that the number of students classified as mobile decreased as the grade level increased (Ingersoll et al., 1989). Mean composite achievement score analyses revealed highly significant differences in achievement among the five different mobility groups. Groups 1 and 4, the two groups that were relatively more stable than the other three groups with one move each, demonstrated consistently higher academic achievement than did the more mobile groups. Further, analysis of the data indicated that mobility holds a greater negative impact on students in the earlier grades, though some major detriment is noted well into grade nine.

Ingersoll et al. controlled for the contaminating effect of socioeconomic status by using analysis of covariance (ANCOVA). The authors developed an estimate of student socioeconomic status by using census data to determine residential addresses, and used this as the covariate. Ingersoll et al. reported that, even under measures to control for poverty, mobility presented an aversive effect on student achievement (Ingersoll et al., 1989).

Since the 1980's, a number of studies have established an association between frequent mobility and academic achievement that is lower than that of more stable students (O'Donnell & Gazos, 2010; Reynolds, Chen, & Herbers, 2009; Rumberger, 2004; Rumberger & Larson, 1998), while other researchers have found the findings of studies to be inconclusive (Alexander et al., 1996; Heinlein & Shinn, 2000).

Wood et al. (1993) conducted a study published in the *Journal of the American Medical Association* in 1993 designed to investigate reported links between identified
measures of child dysfunction (specifically learning disorders, delays in growth or development, behavioral problems, and academic failures) to high rates of family mobility. The authors discovered that measures of child dysfunction and family transience were "independently associated with multiple sociodemographic characteristics such as poverty, race, and family structure" (Wood et al., 1993, p. 1334). The authors found that all four measures of child psychoeducational dysfunction were more common among children identified as living in poverty, or poor socioeconomic status (SES). Further, the authors reported that white children, as opposed to minority children, had a higher rate of delays in growth and were less likely to have repeated a grade or to have a high number of behavior problems. The children of intact, or two-parent, families demonstrated that they were significantly less likely to have repeated a grade or to have a high incidence of behavior problems or learning disorders than did children of single parent families. The authors also found that repeating grades and behavior problems were found much more commonly in families in which one or both parents did not graduate from high school. Wood et al. found that the same multiple sociodemographic characteristics that were connected to low socioeconomic status were also significantly associated with frequent family transience. That is, children of frequently mobile families, when compared to stable children, were 50% to 100% more likely to have a delay in academic growth or development, to have an identified learning disorder, to have been held back a grade, or to have a high incidence of documented behavior issues (Wood et al., 1993). When controls for the confounding covariates of socioeconomic status, parental education, and sex of the child were exercised, high mobility was found to be not significantly related to identified learning disorders or
delays in growth, but was significantly linked to likelihood that a child would fail a grade or demonstrate frequent behavior problems (Wood et al., 1993). The authors concluded that the number of risk factors associated with a family have a bearing on whether the child will suffer academically and behaviorally, and that the risk factors of frequent mobility, poverty, separated parents, and parental educational accomplishment are intertwined to a significant degree (Wood et al., 1993). The authors further recommend that schools and social agencies recognize the complex, intertwined nature of the affecting factors, not only when making decisions regarding how to best educate a child, but also in determining the degree of involvement of social services for the family (Wood et al., 1993).

In 1996, three major studies were released that investigated student mobility as a factor affecting academic success, as well as the magnitude of the impact of mobility on schools, transient students, and stable students.

In 1996, Alexander et al. released the findings of a study conducted using the data of a Baltimore, Maryland school district. The authors remarked at the outset of the study that evidence indicating that transience alone could cause poor student achievement was thin and inconclusive. The authors referred to the emotionally damaging effects of breaking up peer groups, working with new teachers, experiencing a new physical plant, and encountering different academic emphases at a new school as underlying causes for poor academic performance. Alexander et al. also cited the difficulty of conducting a study with no established definition of the term mobility, nor method to categorize the parameters of types of moves, as factors detrimental to the effective, scientific study of
the problem. The authors discovered through profiling students in their sample group that mobility involved

two very different migration streams, distinguished on the basis of their destination. It is the relatively well-to-do and Whites who most often leave the city system; it is the poor and minorities who most often shift about within it.

(Alexander et al., 1996, p.6)

Alexander et al. found that the data contraindicated the idealized image of the neighborhood school into which children settled and moved through the grade structure with ease and fluidity. They considered their findings inconclusive, as other areas of importance that could well affect student achievement warranted examination. The authors cited socioeconomic level and the underlying reasons for family moves as factors worthy of careful scrutiny in future research (Alexander et al., 1996).

Also in 1996, findings of a comprehensive study initiated by local planners and researchers in Minneapolis, Minnesota called *A Report From The Kids’ Mobility Project* provided groundbreaking results and implications in the study of the effects of frequent student mobility on student achievement (Buerkle & Christenson, 1999). Three separate studies were coordinated into the project (A Report from the Kids’ Mobility Project, 1998). The first was a quantitative analysis of the relationship between frequent student mobility and academic achievement. Concurrently, the researchers conducted an evaluation of the possible correlation between frequent mobility and other factors thought to possibly provide an effect on student achievement, such as socioeconomic levels, race, family structure, and attendance. The quantitative analysis established several findings. The first was that children who moved frequently had much poorer attendance than did
stable students. Good attendance is widely recognized as a factor crucial to student achievement, and the project's researchers found that students who "on average, were absent 20 percent of the time scored 20 points lower than students who attended school nearly every day" (A Report from The Kids' Mobility Project, 1998, p. 4). Further, the researchers' data show that the average reading scores for students identified as highly mobile (moved 3 or more times) were half that of stable students (A Report from The Kids' Mobility Project, 1998).

The second phase of the study was a review of the existing body of research on student mobility. The literature review, conducted by Tennenbaum (A Report from The Kids' Mobility Project, 1998), supported findings indicating that students who changed schools frequently demonstrated substantially lower academic achievement than more stable students. In addition, Tennenbaum reviewed studies that suggest that moving during the primary grades may be more damaging than frequently relocating during the later years of school, possibly indicating that students who miss school during critical learning periods have great difficulty achieving at higher academic levels throughout their school careers (A Report from The Kids' Mobility Project, 1998).

The third phase of The Kids' Mobility Project was a qualitative analysis of 100 families that were identified because of a history of frequent moves (Buerkle & Christenson, 1999). The qualitative study was conducted through interviews and case studies of the families themselves, with the purpose of finding answers to questions such as the reasons why families move, what emotional effects on the family were recognized by the parents on mobile families, and whether the parents saw a negative effect on their children's academic success that they considered to be attributable to the cycle of frequent
moves. The researchers found that moves made for negative reasons, such as eviction, loss of employment, avoiding dangerous situations, or loss of income due to chemical dependency were reported by families to be the most stressful. In such cases, the researchers found it difficult, if not impossible, to separate the stressful factors from the move itself. Another step in the qualitative study involved the ranking of students by their teachers on a scale of psychological skills (Buerkle & Christensen, 1999). The findings of the study were that..."despite the potentially confounding influence of income on achievement, we found that students who had not changed schools in the preceding year and a half had higher math scores than children who had" (Buerkle & Christenson, 1999, p. 8). In addition, children from the group that had not moved were rated by their teachers as more accomplished in such psychological skills as relaxing, making social connections, and handling separation. The researchers found the greatest impact of the study, however, developed from the poignant and revealing stories collected from the parents (Buerkle & Christenson, 1999).

Another study released in 1996 is often cited as a landmark study on the issue of student mobility and its relationship to academic achievement. In that year, Kerbow of the University of Chicago, published the findings of a study he conducted using data from Chicago public elementary schools. Kerbow initiated the study in response to his recognition of the scarcity of research in the area of student mobility, his perception of a lack of recognition by the educational community of the phenomenon of frequent student transience being a factor of validity and importance, as well as the negligible supply of either innovative solutions to the problems or strategies to address the problems created by a mobile student population. Kerbow also added another dimension to his study by
exploring the possibility that frequent moving in and out of a classroom on the part of a substantial portion of the students of the class could have a deleterious effect on the academic achievement of the stable students of a class and, therefore, a school (Kerbow, 1996). Because previous research in the area of student mobility had dealt only with interdistrict moving, Kerbow (1996) advanced his study to analyze patterns of mobility within the school system, and in and out of the same elementary school (intradistrict moving). Kerbow's study controlled for poverty, and consisted of following the trajectories of students who moved several times throughout their elementary years. Kerbow found that the frequently mobile students' achievement growth was less than that of stable students. Furthermore, the gap widened as the number of school changes increased, and achievement levels of mobile students were lower than those of non-mobile students throughout that student's school years. Kerbow also found that one move had little impact on a student's academic achievement levels, but differences became greater as number of moves increased. Kerbow's data also indicate that students from relatively advantaged backgrounds seemed to suffer an even greater impact than did their less-privileged peers (Kerbow, 1996). Kerbow tracked and analyzed data from stable elementary classrooms, and from the more typical Chicago elementary classrooms that experience a steady flow of students withdrawing and new students enrolling on a continuous basis. Kerbow found the "...data suggest a portrait of classroom life that is replete with disruptions as students enter and exit" (Kerbow, 1996, p. 23). In addition to the constant disruption caused by the changing flow of students, Kerbow found that the teachers of such classes tended to repeat and review for new students and introduced fewer new skills and topics than did teachers of stable classrooms, thereby creating a
"flattening effect" on the curriculum and slowing the "curricular pace" (Kerbow, 1996, p. 24). Kerbow extended his study to include recommendations for schools and practices for districts to adopt that would help to defray the negative impact of frequent mobility.

Rumberger conducted an extensive study, the results of which were released in 2000, in an effort to find causal factors for students failing to complete school. Rumberger's findings have contributed significantly to the research base concerning the effects of frequent student mobility and its implications for the well-being of children. In 1999, high school dropouts were cited as a matter for national concern by the nation's governors and the President of the United States in response to recognition of the social costs associated with the rising incidence of dropouts. Social costs that are often associated with dropping out may include unemployment, lower earnings, engagement in criminal activities, and dependency on social programs (Rumberger, 2000). Rumberger's data reveal that 77% of students questioned concerning reasons for dropping out selected "school-related reasons" (Rumberger, 2000, p.9). Closer investigation uncovered an array of reasons for students to become disenchanted with school, but underlying causes, "particularly those causes or factors that long ago may have contributed to students' attitudes, behaviors, and school performance " (Rumberger, 2000, p.9) were difficult to discern through the interview process. Rumberger investigated the problem through the Individual Perspective framework, in response to theories that dropping out is the culminating act of a "process of disengagement" (Rumberger, 2000, p. 10) that began long ago. The framework and Rumberger's research suggest an inter-related connection between several factors encountered in elementary school. One implication of the study is the inter-connectedness of lack of school stability, or frequent moving, and low academic
achievement (Rumberger, 2000). In a previous study released in 1998, Rumberger and Larson (1998) reported that students who had experienced even one school change were more likely to drop out before graduating high school than their stable peers (Rumberger & Larson, 1998).

In 2009, Reynolds et al. of the University of Minnesota conducted a meta-analysis of 16 studies from 1990-2008. After establishing that a link does exist between mobility and lower academic achievement, the authors conducted an analysis through which they addressed three major questions. First, the authors sought to establish the magnitude of the link between transience and achievement for students in grades K-8. Second, the authors questioned whether the association between mobility and school performance is affected by timing of moves and number of moves, and third, the authors sought effective interventions for schools to employ. The findings of Reynolds et al. indicate "a robust relationship between the number of school moves and reading achievement" (2009, p. 15). Also, the analysis revealed that frequent mobility is associated with significantly lower achievement in both reading and math by up to one third of a standard deviation. The authors' findings also determined the existence of a threshold number of moves which, when crossed, is associated with a third of a year less educational achievement than stable students, and established that threshold as 3 moves. Reynolds et al. also report that mobility during grades K-4 is associated with a greater reduction in achievement levels than is mobility after grade 4. In their search for effective interventions, Reynolds et al. investigated numerous available models of instruction that purport to remedy the effects of frequent mobility, but discovered that very few have been empirically evaluated. The preschool-to-third grade education model (PK-3), also identified as the
extended early childhood program, is the single model that has demonstrated success supported by data (Reynolds et al., 2009). The PK-3 model begins with the Child-Parent Center and Expansion Program in preschool, and is extended into the primary grades. The first funding for the program through Title I was in 1967. The goal of the program is to improve student attendance, increase parental involvement, and help children develop vital communication and oral language skills. Participants in the CPC program have demonstrated significantly higher levels of school achievement (Reynolds et al., 2009).

Burkam, Lee, and Dwyer (2009) undertook a study on the effects of mobility on student academic achievement in response to their perception that the bulk of currently released studies have been conducted with major flaws or oversights. First, Burkam et al. cite that much of the previous research has been of a local nature on school districts or cities, rendering their results of limited value for generalization. Next, the authors identify the lack of controls for existing cognitive achievement or socio-demographic status as flaws in previous work on frequent student transience. Third, the authors take issue with the nature of previous studies as being cross-sectional, rather than longitudinal in nature, and finally, the authors deem that the bulk of previous research has been conducted to determine the effects of mobility on older students, with little focus on the detrimental effects on young children. The results of the study conducted by Burkam et al. were released in 2009. The data for the study were taken from the Early Childhood Longitudinal Study, Kindergarten Class of 1998-99 (Burkam et al, 2009). The results of the study reinforce the findings of previous studies, establishing that frequent mobility can be very damaging to student achievement. The study found that school changes due to family reasons (changing schools for reasons other than because of the structure of the
school system) are far more common than due to structural reasons, and mobility rates are similar for males and females. The authors found that disadvantaged children change schools more frequently than any other group, with lower-SES and Black children experiencing the highest levels of school mobility (Burkam et al., 2009). Changing schools only once during the first four years of schooling had little or no impact on academic achievement, while changing schools two or more times during the same time period has a small impact on cognitive development. The authors found much more complex implications when investigating conditional effects. For instance, children receiving special education are typically harmed by a school change, and children whose school changes amounted to twice during the first two years of school had more serious cognitive difficulties. The authors' determinations are both informative and incomplete. While Burkam et al. have identified findings that have great impact for educators, the authors opened many areas for investigation in future studies (Burkam et al., 2009).

Several studies released in 2012 explored the academic and social well-being of students experiencing frequent educational disruptions due to residential instability and homelessness. Voight, Shinn, & Nation (2012) examined the longitudinal effects of residential moves on students' academic achievement and social well-being. In order to study the possible effects of frequent residential mobility on young children, the authors established a method for calculating the index of mobility. The authors summed the number of moves in a child's record during the years from kindergarten through second grade, and divided that sum by the number of years for which the student's data were available. "Further, an additional move was added to the sum-prior to division-if a student had missing data during kindergarten, first, or second grade when she otherwise
would have been included" (Voight et al., 2012, p. 387). The authors did determine a correlation between frequent changes of primary residence and low academic achievement, which, in their summation, may be attributed to a number of factors, including the severing of social ties and changes in routine.

In another study released in 2012, Herbers et al. studied the possibility that certain specific situations may cause students to demonstrate differences in academic achievement. The authors examined data from students they placed in the following categories: those in poverty, as indicated by inclusion in the free lunch program (FRE); those included in the reduced price meals program (RPM); those experiencing homelessness and frequent residential mobility (HHM); and those students in the category of the general population (GEN). The authors sought to determine the possible effect of each of the identified situations on students' academic achievement alone, as well as the possible impact of these factors on children's success in school when studied in combinations. The study also sought to determine whether the oral reading capabilities demonstrated by first grade children are an accurate indicator of future levels of academic achievement and competence. The researchers' longitudinal study did indicate that students' oral reading fluency, as demonstrated in first grade, can be considered an accurate indicator of later academic achievement in grades three through eight. Further, the authors found that, of the identified groups, the students who demonstrated the lowest first grade achievement levels and, therefore, the highest levels of possible future risk, were those in HHM category. The HHM students' scores indicated greater risk than either students of low income or students with stable housing. The authors suggest that this difference in long-term academic achievement may be due to the possibility that
students who struggle with early reading may learn to dislike reading, read less often than their peers, and, therefore, continue to fall behind in school (Herbers et al., 2012)

Also in 2012, Fantuzzo, LeBoeuf, Chen, Rouse, and Culhane released a study focused on the combined effects of homelessness and school mobility. The authors undertook the study in an effort to fill a gap in the available research in the area of examination of the "unique and combined relations of homelessness and school mobility with the educational well-being of young children" (Fantuzzo et al., 2012, p.394). The authors determined that, when faced with only homelessness, students demonstrated no significant differences in the areas of reading and math achievement. However, those students who experienced school mobility as a single factor demonstrated lower scores in reading achievement than did students without the conditions of either homelessness or school mobility (Fantuzzo et al., 2012).

**Prevalence of Mobility**

Student mobility is defined as “. . . the phenomenon of students changing schools for reasons other than grade promotion” (Rumberger, 2004, p.1). According to the 2009 U.S. Census Bureau, (as reported in Relodata, 2011) more than 35 million Americans changed residences between 2007 and 2008. The 2009 American Housing Survey (U.S. Department of Housing and Urban Development, 2011) states that the number of households that moved in 2008 due to eviction rose 127% to 191,000. The survey also reported that the number of households that increased in size due to having family members or friends move in rose 10% to 6 million (U.S. Department of Housing and Urban Development, 2011). Recent figures show that the United States has one of the highest rates of family mobility in the industrialized world. About one-fifth of all
Americans move yearly, and the issue has great significance for American children (Heninlein & Shinn, 2000). In 2008, ten percent of United States families with children of school age moved, according to census data (United States Census Bureau, 2009). These figures are compounded by the fact that almost two-thirds of residential relocations require a change of school for the children of the family, and that large numbers of school changes occur without a residential relocation (Reynolds et al., 2009). Public schools often encompass highly mobile populations within a school district (Engec, 2006), and educators have long made informal observations that school mobility has a detrimental effect on the academic success of children. As Americans become more and more transient, student mobility becomes an ever increasing factor for educators and may present a source for the serious concern of school boards and policy makers (Engec, 2006).

**Family Stressors Caused by Mobility**

While the focus of this study is primarily on the academic achievement of highly mobile children, no study of mobility would be complete without addressing the emotional and financial stresses faced by families that are in a state of constant upheaval. The relationship between transience and academic achievement is a complex issue (Eddy, 2011). The stressors for the children of highly mobile families extend beyond academic concerns. Students may lack preparation for the upcoming school day in a number of areas, such as lack of proper supplies, the prospect of facing an unfamiliar routine, and lack of homework preparation (as a result of little parental help and support, no proper place to complete homework, or lack of understanding of assignments). Differences in
curriculum and academic expectations from school to school also put mobile students at a distinct disadvantage (Noll & Watkins, 2003).

**Mobility and Poverty**

The U.S. Department of Education (as cited by Engec, 2006) states that in 1992, 3% of U.S. eighth graders moved from one school to another, and 10% of these students moved two or more times. In addition, 29% of White students and 36% of Black students moved at least twice after entering first grade. Of those students who changed schools two or more times, 23% lived with two parent families and 65% lived in a single parent family. In families whose earnings totaled less than $10,000 per year, 39% of students moved two or more times. Only 31% of those students who changed schools more than two times had an annual family income of more than $20,000. Therefore, 69% of those transient students came from families earning less than $20,000 per year (Engec, 2006). While a connection between low socio-economic level and frequent mobility may be drawn, a connection between low socio-economic level and low academic achievement is not always the case (O'Donnell & Gazos, 2010). Studies conducted by Ingersoll et al. (1989), Alexander et al. (1996), and Kerbow (1996) provide evidence that the effects of social status and family resources can be managed and neutralized.

Economic factors such as the collapse of the auto industry and several banks, and the establishment of stringent requirements for mortgage qualification (United States GAO Report, 2010) have caused the numbers of frequently mobile families to swell. According to the United States Department of Housing and Urban Development (2009), renters relocated five times more often than homeowners in that year, and these families typically reported total income levels below the poverty line. In 2009, the United States
reported job loss numbers that were higher than in any other year since the statistics were created (American Housing Survey, 2009 as reported by U.S.A. Today, 2010). These statistics support the position that transience is very closely intertwined with poverty.

Low income families often find that they face many obstacles. Frequent moves can mean limited support from extended family, and parents find that their children have problems with adjustment, behavior and self-esteem (Buerkle & Christenson, 1999). Teachers facing the pressure of preparing students for high stakes tests are often at a loss as to how to identify the needs of mobile students (Engec, 2006). The pursuit of “...decent, affordable, and safe housing” (Buerkle, 1999, p.9) is often exhausting, frustrating and fruitless for low income families. Often, low income families pay a greater portion of their budget for housing than they can afford, leaving little left for food, day care, and health care (Daneshvary, 2005). Families who are unable to pay rent move frequently, and their children will more than likely change schools twice as often as comparable families whose housing needs are less desperate (Daneshvary, 2005).

**Mobility and Academic Performance**

Several researchers have found an adverse relationship between number of moves and student achievement scores, and that children who move often typically have poor school attendance, which in itself is a predictor of poor school performance (Buerkle & Christenson, 1999; United States GAO Report, 2010). According to the findings of the Report from The Kids' Mobility Project (1998), students whose absenteeism amounted to 20% of their total attendance averaged 20 points lower on reading assessments than students who were in attendance almost every day. “The effects of residential mobility on children’s and youths’ school performance has been well documented in the literature”
According to A Report from The Kids' Mobility Project, residential transiency has many devastating results that include “. . . students from already-struggling families . . . 'fall behind' academically and socially, forfeit social support systems and sometimes act out their feelings of loss in ways that further isolate them” (1998, p.2). Multiple studies cited in A Report from The Kids' Mobility Project (1998) indicate that mobility and transience in the primary grades may have a more devastating effect on student achievement than in later grades. A Report from The Kids' Mobility Project (1998) cites research collected for the Family Housing Fund of Minneapolis indicating that students who move often (three or more times) in the primary grades may be unable to reach high levels of academic achievement due to absence during critical learning periods and missed opportunities. Both the gaps in learning and the flawed academic foundation that result from moving within a district, and/or in and out of a district, are difficult for classroom teachers to recognize and identify. The success of efforts to intervene and remediate are often thwarted by further family moves (Engec, 2006).

In 2000, Heinlein and Shinn conducted a review of the available studies on mobility and found the research to be inconclusive. They cite studies that report negative effects, some that found positive effects, and some that found no effect at all (Heinlein & Shinn, 2000). Heinlein and Shinn cite the various definitions used by researchers to describe student mobility, as well as varying definitions for adequate academic achievement. The authors refer to a failure by researchers to standardize the use of such characteristics as "cause, distance, amount, recency, and location" (Heinelin & Shin, 2000, p. 349).
While studies on the impact of frequent mobility on the academic achievement of children who change schools often have been conducted, few studies have investigated the impact of frequent mobility by a large portion of a class or school on the students who stay. Kerbow investigated the phenomenon in his 1996 study of Chicago elementary schools. As a partial explanation for teachers' difficulties in demonstrating improving student test scores, Kerbow remarked on the lack of a "stable cohort of students whose progress they can track over time" (Kerbow, 1996, p. iii). Smither and Clark conducted a study of what they termed as "The Chaos Factor" (Smither & Clark, 2007, p. 1). Smither and Clark found that

Many populations are directly impacted by student mobility, moving from micro to macro: mobile students, their classroom peers, teachers, and the larger school community itself. Mobility impacts the interactions between the different agents within a school as well as the agents themselves. (Smither and Clark, 2007, p. 3)

**Types of Moves**

Early literature on the seriousness of high mobility and its possible impact on a students' education is inconsistent, possibly due to the variations in definitions of both mobility and academic achievement (Heinlein & Shinn, 2000). In a review of previous studies on mobility and academic performance, Heinlein & Shinn (2000) found studies reporting only negative effects; studies reporting both negative and positive effects; and studies reporting no effect at all.

The difficulty many researchers have found in reaching consensus over the question of the seriousness of frequent mobility may be attributed, at least in part, to the many
definitions under which studies are conducted. Each research study has identified and
classified the nature of the study by first establishing a definition of transience, or
frequent mobility. Each study has also examined the data compiled from the test scores
for children of many different age groups and economic levels, and from vastly different
areas of population, specifically urban, rural, densely populated, or sparsely populated.
Different researchers also have established different numbers of moves that would
qualify a family as frequently mobile.

As an example, for the purposes of study, Buerkle and Christensen (1999)
identified and classified four types of family moves. The four categories are: coping,
forced, upward, and lifestyle. Buerkle and Christensen found that, of the 100 families
studied, 80 families felt that their most recent move was decidedly negative and was
made for purposes of either coping (changing housing to avoid such situations as
dangerous neighborhoods or substandard conditions) or forced (eviction due to failure to
pay rent). Families who moved under these circumstances often faced the reality of future
moves to avoid similar situations. Twenty of the studied families moved as either an
upward or lifestyle change. These moves were much more positive in nature and, in the
case of upward mobility, a pattern of frequent moves was not a factor. Families who
moved due to lifestyle did so as a choice, and both types of moves did not carry the
negative reactions that frequent forced moves brought. The findings of the study
reinforce previously gathered evidence that families who moved as a means to cope with
life situations, or were forced to move, usually resided in high-risk neighborhoods and
were often the recipients of public assistance (Buerkle & Christensen, 1999). In another
example, Ingersoll et al. (1989) studied students in grades K-12 in the Denver Public
School system by establishing five classifications identified by number of transfers. Ingersoll et al. identified their study groups as follows: Group One had made no moves; Group Two had made only one move; Group Three had made more than one move and included students of many moves; Group Four consisted of students who had withdrawn and for which no further information was available; and Group Five consisted simply of new student entries. The authors investigated the effects of mobility on transient students by conducting an analysis of test scores across the identified groups. The analysis was made across grade levels but within groups, and the authors found that the students in the more stable groups exhibited higher academic achievement than did the students in the more mobile groups.

Titus, in a third example, conducted a very different study in 2007 by grouping students into categories according to the reason for the moves that their families had made, yet his categories differed greatly from those established by Buerkle and Christensen. Titus identified groups as: (1) homeless children; (2) children of migrant families; and (3) children of families enlisted in the armed forces and attending Department of Defense Schools. Titus' study included an in-depth investigation of children who had been displaced by natural disasters, as well as the methods employed by school districts to absorb these students with remarkable ease and fluidity. The stark contrast between methods and practices employed to absorb children displaced by natural disasters and the established practices used to admit transfer students was a focus of the study. Titus stresses the difficulties encountered by families as they attempt to register for a new school, caused in part by strict specificity of enrollment requirements and the differences between the requirements of most public school systems. He outlines
procedures used by some schools, as well as the effectiveness demonstrated by these procedures. Titus includes recommendations for the adoption of specific practices that these schools have found to be productive and for which success has been demonstrated by data indicating increased student academic achievement (Titus, 2007).

"Taken together, the majority of the literature on school mobility suggests that school change has a negative influence on academic achievement, academic progress, and non-academic outcomes" (Burkham et al., 2009, p. 13). However, little research exists that involves a careful look at the timing of moves in the lives of children, and the possibility that all moves may not have the same impact on a child's academic achievement.

**Homelessness**

"It is estimated that more than one million children will experience homelessness each year. About one third are in shelters and another one third in shared housing. Some 100,000 youth may experience homelessness on any given night" (Titus, 2007, p. 84). Titus advanced the categorization of types of student moves in his study published in 2007 to include homeless and displaced children. Title I of the Elementary and Secondary Education Act addresses homelessness and the obligations and implications for school districts in meeting the needs of homeless students (ESEA, 2004). It is important to establish the concept of homelessness. Homeless students are identified by Titus (2007) as those who move from shelter to shelter. The McKinney-Vento Act (U.S. Department of Education, 2004) further identifies homeless children as those "who lack a fixed, regular, and adequate nighttime residence" (U.S. Department of Education, 2004, p. 2). McKinney-Vento also establishes that children who share housing with another person,
live in motels, hotels, trailer parks or camping grounds, are abandoned in hospitals or awaiting foster care placement, are deemed to be homeless. McKinney-Vento goes on to specify that children and youth who are living in parks, public spaces, cars, and substandard housing are homeless, as are children of migrant workers (U.S. Department of Education, 2004). Titus (2007) recognized homeless children as a category in his study of frequently mobile children, and identified two sub-categories of homeless children: children of migrant workers and displaced children (Titus, 2007).

**Children of Migrant Workers.** In the United States, seasonal crops are harvested by more than three million farm workers who travel from place to place on a regular basis in search of employment (U.S. Department of Education, 2004; Titus, 2007; Vocke & Stearns-Pfeiffer, 2009). Because these families travel to harvest seasonal crops, they commonly work three months out of a year, and their search for employment necessitates that their children move and change schools at least three times per year (Vocke & Stearns-Pfeiffer, 2009). The children of migrant workers place a heavy burden on school systems, as their needs may include English-language services and healthcare in addition to the challenges of properly educating children who will be present for only a portion of the school year (Titus, 2007; Vocke & Stearns-Pfeiffer, 2009). The unique challenges facing school districts who struggle to provide proper educational opportunities that appropriately meet the needs of migrant children have been recognized since the early 1940's (Popp et al., 2003), and the Elementary and Secondary Education Act of 1966 identifies and defines migrant children, while addressing the need for school districts to provide for their educational needs (ESEA as cited by Popp et al., 2003). The reauthorization of ESEA defines "migratory child" as:
(2) **MIGRATORY CHILD.** - The term "migratory child" means a child who is, or whose parent or spouse is, a migratory agricultural worker, including a migratory dairy worker, or a migratory fisher, and who, in the preceding 36 months, in order to obtain, or in order to accompany such parent or spouse in order to obtain, temporary or seasonal employment in agricultural or fishing work-

(A) has moved from one school district to another;

(B) in a State that is comprised of a single school district, has moved from one administrative area to another within such district; or

(C) resides in a school district of more than 15,000 square miles, and migrates a distance of 20 miles or more to a temporary residence to engage in a fishing activity. (Title I, Part C of the *No Child Left Behind Act of 2001*, Section 1309(2), as cited by Popp et al., 2003, p. 26)

As most migrant families' income is well below the established poverty line, the children often lack many basic educational resources and supplies such as school supplies, adequate clothing, and access to computers (Parr, 2010; Popp et al.; Titus, 2007; Vocke & Stearns-Pfeiffer, 2009). "Children of migrant workers, by their very designation as 'migratory,' may seem the most obvious group of students who meet the definition of highly mobile" (Popp et al., 2003, p. 26). The very disruption and continuous transience that are an integral aspect of migrant life have long been attributed with creating a negative effect on the academic achievement of migrant children (Parr, 2010; Popp et al., 2003). In addition to differences in background knowledge, migrant children may suffer from lower expectations for their academic performance by schools.
and school personnel, in part due to their absence during key times of the school year. Other damaging factors are delays or failures in records transfer, lack of alignment of curriculum standards, failure to identify current levels of learning and achievement, poor involvement by migrant parents, and limited English proficiency. The identification of these issues has prompted research into methods and programs to address the needs of migrant students, with a resultant "wealth of successful and promising practices that support the educational needs of migratory students" (Popp et al., 2003, p. 30). These initiatives include efforts on the part of school systems to standardize curriculum and academic requirements and to ease the swift transfer of student records. Current developments and advancements in technology hold promise for swift, cost-effective transfer of student records, learning plans, and diagnostic assessments. The use of distance learning also holds promise for methods that would overcome the challenges children face when encountering differing academic standards as they move from school system to school system (Popp et al., 2003).

Economic measures resulting in cutbacks for many areas of educational services have, however, also affected the provision of optimal, or even fairly serviceable, programs for migrant students (Vocke & Stearns-Pfeiffer, 2009).

Numerous barriers prevent educators from implementing creative pedagogy and working more closely with families. These barriers include administrative pressures and standardized testing requirements, as well as lack of autonomy, lack of authority to exercise flexibility and lack of resources in the classroom. As a result, the potential exists for schools to isolate and marginalize students and families with limited English skills. (Vocke & Stearns-Pfeiffer, 2009, p. 32)
**Displaced Children.** In 2005, Hurricane Katrina hit land and destroyed the homes and schools of millions of families on the Gulf Coast. Students from Alabama, Louisiana, and Mississippi were displaced and forced to seek refuge in schools throughout the United States temporarily. "Much can be learned about student mobility from the experiences of more than 200,000 students from Alabama, Louisiana, and Mississippi..." (Titus, 2007, p. 84). In recognition of the fact that school moves are difficult even in the best of circumstances, educators side-stepped normal procedures for admission and processing of records to enable the displaced students to begin with ease and facility (Titus, 2007). Normal school procedures for the admission of new students present entering families with an "obstacle course" (Titus, 2007, p. 82) of requirements in the form of paper work, transfer specifications, school-start ages for kindergarteners, local standards and credit requirement variations. Even the ages at which students are allowed to drop out before earning a high school degree differ over the 50 states (Titus, 2007). The displaced students from Hurricane Katrina met with much less resistance and far greater efforts to ease transitions and provide supports for the emotional health of incoming students. Organized efforts to provide the aid of local social agencies, link new students with existing students, and forgo mountains of paperwork presented a much less resistant course for already traumatized children. Each year, students throughout the United States are displaced by such natural disasters as floods, tornadoes, and storms. Much can be learned from the generous treatment school personnel offered to the displaced children of Katrina in providing an educational atmosphere that is welcoming and appropriate for the recently homeless and for any incoming students (Titus, 2007).
Central to the discussion of the education of transient children is the question of the extent to which school systems are permitted to go in determining residency and immigration status before admitting new students. The delays caused in a child's education while background checks are completed and residency is verified can accumulate with time and frequency of moves, thereby presenting a formidable overall delay in the continuation of academic achievement. Children who move frequently lose school time during the move, often during the search for housing, and can then lose more time as the particular school or system determines the student's eligibility to enroll. In 1982, The Supreme Court addressed the question in *Plyer v. Doe*. The ruling handed down by the court establishes that undocumented children have the same right to attend public schools as do United States citizens and permanent, or stable, residents (*Plyer v. Doe*, 1982). School districts may request the age and residency of students, but immigration status cannot be a requirement of enrollment. The updated McKinney-Vento Act of 2004 (Title VII-B of the McKinney-Vento Homeless Assistance Act, U.S. Department of Education, 2004) denotes specific differences in the previous version of the Act. The principal differences include:

- express prohibition against segregating students in a separate program or school based on the child's status as homeless;
- requirement for transportation for children to and from the school of origin;
- the requirement for immediate school enrollment;
- new specifications in the "best interest" determination for a child's school placement;
- each LEA must designate a local liaison for homeless children and youth;
  and

**Department of Defense Education Agency Schools (DoDEA)**

Military families are constantly on the move. Most remain 3 or fewer years at one assigned military post before being reassigned to a new post, with the result being a student population turnover rate of 37% yearly (Titus, 2007), a rate comparable to that of many urban and inner city schools (Bridglall & Gordon, 2003). Roughly 40% of the DoDEA enrollment is comprised of students of color, deeming the student population similar to that of New York State's public schools. Pay scales for military personnel are relatively low, thereby resulting in fully 50 percent of all DoDEA students being eligible for free and reduced lunches (Bridglall & Gordon, 2003). Yet, despite demographics that are much like those of inner city public schools, the DoDEA schools are decidedly successful. (Bridglall & Gordon, 2003; Smrekar, Guthrie, Owens & Sims, 2001; Titus, 2007).

The Department of Defense Education Agency (DoDEA) monitors student progress through a series of standardized assessments. Students in grades 3 through 11 are assessed by the norm-referenced Terra Nova Achievement Test. DoDEA students ...
"score well above the national average every year, in every subject area, and at every grade level tested" (Titus, 2007, p.87). *The Nation's Report Card* (The National Assessment of Education Progress) reports that DoDEA students consistently outscored
students in other participating school districts. On writing assessments given to students in grade 5, 8 and 10, DoDEA students consistently achieve superior designations. On the SAT I (Scholastic Achievement Test) administered in 2005, DoDEA participants' math and verbal scores were decidedly above average. "Despite high mobility, the overall academic achievement of students in the DoDEA schools, as measured by a battery of tests, is among the highest in the nation. For African American and Hispanic students, it is the highest in the nation" (Titus, 2007). While DoDEA schools operate in a military context found to be supportive of student achievement, many other factors of the school systems could easily be incorporated into non-military schools. A study published by Smrekar et al. (2001) identified specific factors of the DoDEA schools that the authors deem to be both remarkable and conducive to the excellent academic achievement experienced by DoDEA schools. The factors accounting for high achievement, as identified by the authors, include the development of an atmosphere of stability within a dynamic of change and mobility. As students move in and out and experience constant change, members of the staff of the schools ensure that constancy and sameness are the norm within the school (Smrekar et al., 2001; Titus, 2007). The majority of the teachers in the DoDEA schools hold licenses, and most choose to remain at the same school throughout their career. Teachers of DoDEA schools proudly refer to their own personal expectations for students as exceptionally high, and feel that these very expectations are a factor in outstanding student performance (Titus, 2007). Within two days of a new student entering a school, a computer-based diagnostic program is employed to diagnose skill levels in both reading and math. Student records often arrive electronically to coincide with the entry of the student, yet the school has a back-up procedure to follow
should this process and procedure fail. In such an instance, staff members conduct an interview to determine student academic standing. All processes are standardized and each detail is adhered to in characteristic military fashion. For each new student, a guidance counselor conducts a brief orientation and assigns an experienced student as a formalized buddy (Titus, 2007). DoDEA schools exhibit fluid transition, curricular alignment, standardized academic goals, and strict continuity of instruction for all students (Bridglall & Gordon, 2003; Smrekar et al., 2001; Titus, 2007).

In their 2001 study of Department of Defense schools, Smrekar et al. identified eight core standards found in the DoDEA schools which could be emulated by school systems, particularly those dealing with transient student populations. They eight core standards are:

- Centralized direction-setting with local decision-making.
- Policy coherence and regular data flow regarding instructional goals, assessments, accountability, and professional training and development.
- Sufficient financial resources linked to instructionally relevant strategic goals.
- Staff development that is job-embedded, intensive, sustained over time, relevant to school improvement goals, and linked to student performance.
- Small school size, conducive to trust, communication and sense of community.
- Academic focus and high expectations for all students
- Continuity of care for children in high quality pre-schools and after-school programs.
• A 'corporate commitment' to public education that is material and symbolic and that is visible and responsive to parents within the school community.

(Smrekar et al., 2001, p. i)

The hallmark of DoDEA schools is a dedication to above-average expectations reflected in high standards and teachers' sense of personal accountability (Bridglall & Gordon, 2003; Smrekar et al., 2001). The focus and pride of the system are evident in a reflection made by a teacher who said, "Your study is looking at why minority students do better. I think the answer to that question is that all our students do better. There are no 'minority' students here" (Smrekar et al., 2001, p. vi). The sentiments are echoed in the words of another teacher who stated, "Nobody targets minority students. They don't do as well here as white students, but they do better" (Smrekar et al., 2001, p. 46). The study concluded that the DoDEA schools find success through a combination of in-school instruction, out-of-school activities, and involvement of the community into productive educational opportunities for students (Smrekar et al., 2001).

Mobility and Student Behavior: The Effects on Academic Achievement and Performance

Mobility appears to have a significant effect on behavior as well as on academic achievement, and the disciplinary measures taken by school administrators often involve removal of the student from the class or the school, even if temporarily. Ultimately, the student misses even more school, compounding and exacerbating the problem. Data collected by Engec (2006) show that the rate for in-school suspensions for highly mobile students is significantly higher than the rate for students with fewer moves or no moves. The in-school suspension rate for one enrollment is 7.27, two enrollments is 10.86,
enrollments is 13.24, four enrollments is 13.78, and five enrollments is 14.65. The same conclusion can be drawn from examination of the data for out-of-school suspensions, with the rate of out-of-school suspensions highest for students who enrolled four or more times within a given school year (23.14) and lowest for students with no moves (9.49) (Engec, 2006). Similar findings regarding high rates of suspension for students from highly transient families were also reported by the National Center for Homeless Education (Garriss-Hardy & Vrooman, 2005) in a study that notes the implications of poor adjustment in high suspension rates.

**Definition of High Mobility**

Analysis of test data indicates that “. . . the greater the number of moves, the lower the average reading scores for students in the study” (Kids' Mobility Project, 1998, p.12). In fact, students whose families relocated more than three times in the 6½ month period of the study demonstrated reading achievement scores that were substantially lower than those of students from more stable families, with the difference being as much as 20 points (A Report from The Kids' Mobility Project, 1998). Further evidence of these findings was reported by the U.S. General Accounting Office in a report compiled in 1995. The report indicates that highly transient students are more likely to repeat a grade and to be low-achievers (1995). The United States GAO Report published in 2010 reiterated these findings. A study of test data compiled from the Louisiana Public School System from 1997-1998 (Engec, 2006) shows that, as mobility increased, the performance of students on achievement tests decreased, even when results were controlled for ethnicity. For the purpose of the study, moves were divided into categories by groups of none, one, two, or three or more and as obligatory (the next grade is not
offered at the student’s present school), optional (family choice), or non-mobile. Test performance scores on the Iowa Test of Basic Skills (ITBS, 1998) were higher for non-mobile students (74.54) than for students who moved two or more times within the same school year (46.64). In addition, the ITBS scores for students with one new enrollment (52.97) were higher than for students who experienced two, three, or more moves (46.64). The data indicate that transience has a detrimental effect on students’ test performance scores, even when the results are controlled for other factors, such as race and socio-economic level. The same study also reveals that the ITBS scores for non-mobile students were greater than those of mobile students, regardless of the reason for students’ moving, but those students who made obligatory moves (the grade the student needed is not offered at the student’s current school) had lower scores than students who did not move (grades K-12 were provided in one school), and students who made optional moves scored even lower (Engec, 2006).

The United States GAO report of 1994 (as cited in the United States GAO Report of 2010) reported that, on a nationally representative sample, the nation's third graders who had changed schools three or more times were significantly behind their counterparts who had never changed schools. This held true for reading (41% vs. 26%) and math (33% vs. 17%). Examination of data within differing income groups also supported the conclusion that those who had moved frequently were more likely to be low academic achievers, as compared to those who had never changed schools, regardless of income group. The trend to relocate continues, as the GAO report of 2010 reports that 18% of students moved three or more times by the eighth grade. Another finding of the report was that,
for third graders, one in six attended at least three different schools after the first grade (United States GAO report, 2010).

For the purposes of this study, mobility will be defined as enrolling in a new school for reasons other than being promoted to the next school (Rumberger, 2004). Number of moves will be calculated by number of school enrollments. High, or frequent, mobility will be defined as involving those students who have enrolled, or re-enrolled, in school three or more times before the end of the third grade.

**Frequent Mobility and the Acquisition of Basic Early Literacy Skills**

An examination of the current body of literature related to family mobility and student academic achievement reveals the implicit assumption that educational reforms and initiatives aimed at improving the quality of American schools will be implemented and the effectiveness of these programs will rely on their application to a constant population of children within a district, school, or classroom (Kerbow, 1996). The assumption is false, however, as the populations of the nation's schools are continuously changing (Burkam et al., 2009; Kerbow, 1996) with the situation even more pervasive in urban centers and large cities (Kerbow, 1996). Children who frequently change schools share many characteristics, and mobility is prone to be most frequent among several subgroups. Families of low socioeconomic status, African American families, and Hispanic families move more often than any other group in the United States (Black, 2006; Center on Rural Education and Communities; United States GAO Report, 2010; Ingersoll et al., 1989; Raudenbush, 2010). The negative effects that are associated with chronic moving and relocation may be even more destructive for the children of these subgroups (Black, 2006; Burkam et al., 2009; Ingersoll, 1989; Raudenbush, 2010;
Reynolds et al., 2009). Statistics taken from the United States Census (U. S. Census Bureau, 2009) indicate that in 2008, population changes included the relocation of families as follows:

**Table 2.**

**United States Population Change in 2008 Shown in Percentage of Total Movers**

<table>
<thead>
<tr>
<th></th>
<th>White</th>
<th>Black</th>
<th>Hispanic</th>
<th>Below Poverty Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>10%</td>
<td>10%</td>
<td>16%</td>
<td>15%</td>
<td>22.8%</td>
</tr>
</tbody>
</table>

These figures clearly demonstrate the link between mobility and poverty. As some studies have shown that poverty alone does not cause poor academic achievement (Burkam et al., 2009; Daneshvary, 2005; Eddy, 2011; Necati, 2006; A Report from the Kids’ Mobility Project, 1998) mobility becomes a factor worthy of study. In his address to a workshop convened by the Board on Children, Youth, and Families in June, 2009, Chairman Steven Raudenbush presented several important findings synopsized from the data and programs represented at the symposium. The findings are:

- **Mobility is highest and most likely to be most harmful among particular subgroups.**

  Poor families move more than nonpoor families. Hispanic and particularly African American families move most frequently of all. There are consistent negative associations between moving and achievement and other outcomes for disadvantaged children, which are most pronounced for the children who move most and for special education students and English language learners.
• Some kinds of mobility are more harmful than others.

Moves made within districts are more likely to be harmful, as are moves made during the school year, rather than between grades. However, the reasons people move vary, as do their destinations. Mobility could have positive effects in some situations and negative ones in others. For this reason, the effects tend to average out in the context of large data sets, suggesting that mobility has little effect when averaged over heterogeneous populations. However, the impact may be quite significant for subgroups, even though these effects can be difficult to capture.

• The greatest harm is associated with multiple moves

Children who move three or more times in the first few years of school show the most negative associations. However, there is good reason to regard multiple moves over time not only as a clearly defined variable but also as a marker for a cluster of developmental problems and other risk factors. A high rate of mobility could be a contributing factor on its own, but it is consistently accompanied by other risks, such as family disruption, homelessness and economic disruption. It is difficult to disentangle the factors; for example, if a highly mobile child is also frequently absent from school, is that because of the mobility, or is it a sign of other underlying problems in the family?
- **High mobility in schools affects everyone.**

  The best available evidence suggests that all children in highly mobile schools experience negative effects, even if they do not move themselves. The churning of students is likely to make instruction more difficult, to interfere with the continuity of programming, to necessitate more review, and to disrupt social networks. (Raudenbush, 2010, pp. 53-54)

  Raudenbush stated, "Given this picture, it is time to get past the question of whether moving by itself has an average effect in the total population of U.S. families" (2010, p. 54).

**New Research Focus**

In his address to the workshop convened by the Board on Children, Youth, and Families (2009), Raudenbush urges the adoption of "fresh research agendas" (Raudenbush, 2010, p. 54) focused beyond the negative effects experienced by children who move frequently and the impact felt by the general population of the schools which transient students attend. Raudenbush calls for the careful examination of interventions designed to assist frequently mobile students (Raudenbush, 2010). Newman, in her concluding remarks to the same symposium, reviewed several of the key findings of current studies that had been presented, and expressed the urgency of addressing mobility by addressing the areas where it is most harmful. Newman agreed with Raudenbush that the time for discussion of whether transience and frequent mobility are harmful is past. Newman urged the members of the conference to begin to act by developing interventions and programs to aid frequently mobile children both emotionally and academically. Newman referred specifically to recent research pointing to the idea that
not all moves are equally harmful, and that moves during the early years of school can deal the heaviest blow (Newman, 2010). The idea that timing of moves is crucial to children's academic achievement is supported in longitudinal studies of effects of student mobility on academic achievement. Research suggests that frequent mobility during the primary years of school may be the most harmful, and researchers theorize that this is because changing schools during the primary years disrupts the acquisition of building blocks of learning that are critical pieces of literacy acquisition (Duke & Carlisle, 2011; Foorman & Connor, 2011; Gruman et al., 2008; Kamil et al., 2011; Kerbow, 1996; Parataore et al., 2011). Further, failure to successfully acquire the basic building blocks of literacy can have a profoundly negative effect on later comprehension and higher level learning skills if diagnosis and remediation are not provided (Duke & Carlisle, 2011; Foorman & Connor; 2011; Gruman et al., 2008; Kamil et al., 2011; Paratore et al., 2011; Vellutino, Fletcher, Snowling & Scanlon, 2004).

Researchers agree that events experienced early in life powerfully influence the brain. Current brain science reveals increasing evidence that environmental factors and specific experiences, when encountered at sensitive periods, actually determine the architecture of the brain (Fox et al., 2010; Greenough et al., 1987). Humans' perceptual and cognitive abilities are built upon early life experiences and the scaffolding they provide (Fox et al., 2010). Early experiments conducted by Wiesel and Hubel (1963) brought about the concept of critical periods of brain plasticity during which the brain is particularly responsive to environmental events (Wiesel & Hubel, 1963). In more recent years, researchers in brain science have deepened our understanding of the processes involved in the learning of language and reading (Greenough et al., 1987). It is by way of
this research that we have developed knowledge relating to the acquisition of early literacy and language skills, and the consequences for the learner in later life should these skills not be acquired during the optimal learning period. In 1987, Greenough et al. identified two types of brain plasticity that provide storage for information that is encountered through the environment. The two types of plasticity are experience expectant plasticity, and experience dependent plasticity.

Experience expectant plasticity is reliant on environmental input to complete development of sensory and motor systems by determining which of the many synapses found in the young brain will survive. The young human brain is equipped initially with a plethora of neural synapses. The purpose of this excessive amount of neural pathways and connections is so that the brain can be fine-tuned as experiences determine which of the synapses will survive and which will be permanently lost. Experience expectant plasticity literally determines how the brain will develop, governed by the actual interactions encountered during critical periods. Experience expectant plasticity "underlies many sensitive-or critical-period phenomena" (Greenough et al., p. 540, 1987). The timing of encountering certain learning experiences, particularly language acquisition, is critical because of this characteristic of the brain. It is the experience expectant process that is designed to make use of the environmental information encountered by the human brain (Greenough et al., 1987).

Experience dependent plasticity accounts for "...the storage of information that is unique to the individual" (Greenough et al., 1987, p. 540). The function of experience dependent plasticity is to store information, such as where and how to find food and safety, and the survival of the individual is reliant on this capability. For this reason, this
area of the brain is capable of producing new synapses and allows variations in timing of the experiences it stores that are dependent on the individual. Experience expectant plasticity has a much more narrow, "window" (Grenough et al., 1987, p. 539) of time for the input of experiences, and absence of experiential input at the critical time results in mostly negative consequences. "That there are sensitive periods during which experience manipulations profoundly affect sensory-system development in mammals is well known..." (Greenough et al., 1987, p. 540). Bateson (as cited by Greenough et al., 1987) has likened the critical period concept to opening a window very briefly, with experience having a developmental effect only during the time that the window is open.

Learning the spoken language is an ability that comes naturally to human beings, however, learning to read is a complicated process that begins with understanding that human speech is composed of specific, individual sounds called phonemes, and that those sounds can be translated to written language, a process that can only be accomplished by individuals with full understanding of the alphabetic principal (Connor et al., 2011; Foorman & Connor, 2011; Sousa, 2005; Vaughn & Linan-Thompson, 2004). Specific, essential pieces of information and understanding are critical to learning to read in the primary grades, and to becoming a skilled reader in the later grades. These skills are best learned when taught during a critical learning period during the early years of school (Connor et al., 2011; Sousa, 2005; Paratore et al., 2011). Individuals who have missed these essential skills during early primary years may learn them through carefully designed remediation, though the process will be more difficult and require more effort on the part of the learner (Paratore et al., 2011; Sousa, 2005; Vaughn & Linan-Thompson, 2004).
By request of the U.S. Department of Education in 1997, The National Reading Panel (as cited by Foorman & Connor, 2011) compiled a report on the application of current research in the effective teaching of reading to classroom practice. The panel conducted meta-analyses of the body of available research on the teaching of phonemic awareness and phonics. The panel's findings were that (1) teaching phonemic awareness is effective in teaching reading and spelling; and (2) systematic phonics instruction effectively produces significant results in the teaching of reading to children in kindergarten through sixth grade, including children with reading disabilities and children from all socio-economic levels, however, the impact is strongest in kindergarten and grade one. According to the National Reading Panel of 2000 (as cited by Vaughn & Linan-Thompson, 2004), more than 52 peer-reviewed studies indicate that explicit instruction in phonemic awareness has significant benefits in the teaching of reading. The early literacy skills that have been identified as crucial to the development of skilled reading are "...phonological awareness, word decoding and encoding, text structure, vocabulary, and comprehension..." (Connor et al., 2011, p. 191).

The implications that can be drawn from the combined evidence of (a) research on the components of the effective teaching of reading, and (b) available brain science on the critical nature of timing in the successful acquisition of specific skills lead to the theory that if children miss certain, specific pieces of early literacy teaching due to frequent mobility, and if these deficits are not properly diagnosed and remediated, the student will suffer drastically in efforts to become a skilled reader.
In this chapter, the researcher has reviewed the historical perspective of frequent student mobility as it has developed through time and recent history in the United States. The researcher has also reviewed empirical evidence in the area of frequent mobility and its effects on the academic achievement of students, as well as current developments in brain science with the possible implications for the necessity of critical timing in the teaching of essential literacy skills. A synthesis of current research in the teaching of reading and the breakdown of skills that must be mastered by the student to become a skilled reader has also been included.

Chapter 3 will include a description of the methodology for the study. Chapter 3 will also present a thorough examination of the Ohio Achievement Test and justification for its use in this particular study.

**Dynamic Indicators of Basic Early Literacy Skills Next**

DIBELS Next is a system of formative assessments designed to provide schools with a research based and proven method to be used as a diagnostic measure of student achievement and development in basic essential early literacy skills. The DIBELS assessments are brief measures that are administered to all students three times each year for the purpose of establishing benchmark scores, diagnosing gaps, predicting and measuring growth, and determination of individual student achievement and academic need (Dynamic Measurement Group, 2010; Goffreda & DiPerna, 2010; Good III et al., 2011; Wilson, 2005). DIBELS Next is the updated version of the earlier DIBELS assessments (Good III et al., 2001).

Numerous researchers have conducted impartial studies of DIBLES' validity and reliability when used as a predictor of student academic achievement. In 2001, Elliott,
Lee, and Tollefson of the University of Kansas examined the correlation between DIBELS scores and standardized achievement scores. The researchers sought to evaluate DIBELS effectiveness in a nationally representative sample composed of more diverse students than the original studies of DIBELS that were conducted by Good et al. (1992) at the University of Oregon. The results of the conduction of hierarchical regression supported previous findings that DIBELS is a valid, reliable measure of students' specific abilities in literacy (Elliott et al., 2001).

In 2005, Vander Meer, Lenz, and Stollar conducted a study of the accuracy of the predictive relationship between the Oral Reading Fluency goals that were established as DIBELS benchmarks, and student results on the Ohio Proficiency Test (OPT). The researchers found that, in general, the DIBELS/CBM (Curriculum-Based Measurement) of Oral Reading Fluency (ORF) is valid for setting individual student goals. The researchers analyzed data for both third and fourth graders of two Ohio school systems, and found that the predictive ability of the DIBELS benchmarks was accurate and reliable (Vander Meer et al., 2005). Also in 2005, Wilson analyzed the data from 241 third grade students on both AIMS (Arizona Instrument to Measure Standards) and DIBELS. Wilson's study found a strong, positive relationship between AIMS and the DIBELS Oral Reading Fluency scores, and his findings support the use of DIBELS for the accurate diagnosis of individual gaps in literacy skills. Further, Wilson's study supports the use of DIBELS scores to identify student achievement levels as Low Risk, At Risk and Some Risk for the purpose of providing targeted interventions with specificity and accuracy (Wilson, 2005).
Rouse and Fantuzzo, of the University of Pennsylvania, compared three DIBELS subtests to student achievement and reading ability that had been measured in three ways: 1) as reported by teachers; 2) for individually assessed students; and 3) for students assessed in a group. All measures involved the use of a nationally standardized test. The researchers report a significant relationship between the DIBELS subtests and literacy constructs measured at the completion of first grade. When compared to results of the Developmental Reading Assessment (DRA), multiple regression analyses confirmed that a significant relationship exists between the specific, core components of literacy assessed by DIBELS and effective reading instruction for first graders (Rouse & Fantuzzo, 2006, p. 349). The DIBELS scores also had a strong, predictive relationship between subtests of the TerraNova Test of Basic Skills in both Vocabulary and Language and Reading. The researchers found the strongest relationships in Language and in Phoneme Segmentation Fluency. The findings of the Rouse and Fantuzzo study are significant to this researcher's study in that validity of DIBELS measurement of specific, individual, literacy skills has been established, as well as "criterion-related validity with standardized assessments of overall reading ability..." (Rouse & Fantuzzo, 2006, p. 350).

In 2008, Kaminiski and Cummings studied the link between assessment and instruction, and the use of DIBELS for that purpose. Through their analysis, the authors determined that DIBELS is a strong tool to be used for the purposes of formative assessment. DIBELS meets high standards for both validity and reliability, and provides a crucial piece for team decision-making on such issues as the early identification of students at risk, and the evaluation of adequate progress toward goals.
In 2010, Goffreda and DiPerna of Pennsylvania State University conducted a meta-analysis of 26 studies concerning the reliability of each of the separate DIBELS indicators used in the early primary grades. The core indicators are: Initial Sound Fluency (ISF), Letter Naming Fluency (LNF), Phoneme Segmentation Fluency (PSF), Non-sense Word Fluency (NWF), and Oral Reading Fluency (ORF). The studies were reviewed for "quantitative reliability, validity, and decision-making accuracy data" (Goffreda & DiPerna, 2010, p. 466). The researchers found evidence to support the strength of score reliability for the purposes of both screening and decision-making for all of the core indicators, with the evidence for the strength of Oral Reading Fluency being the strongest in all areas.

Overall, the preponderance of literature and empirical data indicate that DIBELS and DIBELS Next provide assessment methods that are reliable and valid for formative assessment, as well as for the identification of gaps in students' literacy skills. For this study, the researcher will collect DIBELS Next data for the purpose of the possible identification of gaps in the literacy skills of students whose educational experience has been frequently interrupted by changes in school enrollment. "Assessing student performance on the basic early literacy skills, which are also known as core components or foundational skills, can help distinguish children who are on track to become successful readers from children who are likely to struggle and require additional support to be successful. These skills are the basic building blocks that every child must master in order to become a proficient reader (Adams, 1990, as cited by Good III et al., 2011).
Conclusion

In this chapter, the researcher has discussed the history of the study of student mobility and the evolution of the study to involve children who are homeless, migrant, from military families, or displaced by natural, catastrophic events. The prevalence of student mobility and transience has been presented and defined, and the discussion of the possible effects of mobility on individual students was introduced.

Chapter 2 has also involved the presentation of research regarding the current brain science as it relates to language acquisition. The researcher has presented a discussion of brain plasticity as it affects student learning, and the theory that the child is impacted more by the timing in his life of frequent interruptions to his schooling than he is by the reason for moving frequently. Chapter 2 has also included background and research on the Dynamic Indicators of Basic Early Literacy Skills Next (DIBELS Next).

Chapter 3 includes a description of the methodology for the study, as well as further justification for the use of DIBELS for this particular study. Additionally, Chapter 3 details the research design and data analysis chosen for this study.
Chapter Three

Methodology

Research Background

Since the late 1980's, studies have been undertaken to analyze the informal observation that frequent mobility has a detrimental effect on students' academic achievement. Early studies conducted by Long (1975) and Straits (1986) had found that moving had very little effect on student academic achievement, but the parameters of both research projects included only students who had either moved a minimum of 50 miles, or who had moved across state borders (Long, 1975; Straits, 1986). In the late 1980's, school districts and administrators began to experience greater accountability measures and were now required to report student academic growth, as well as lack of academic growth. This gave rise to several studies investigating the possible connection between frequent student transience and low academic achievement. During the 1990's, A Report from the Kids' Mobility Project (1996) provided both quantitative and qualitative data regarding the phenomenon of children who move frequently and their plight in the nation's public schools. Also in 1996, Kerbow released findings of a study of frequent mobility in the Chicago Public Schools, and the detrimental effects of transience on the academic achievement of students. In the next decade, numerous studies of the problem were conducted, and while a connection between frequent mobility and low academic achievement was established, each of the studies had used different definitions and descriptors of frequent mobility (Burkam et al., 2009; Reynolds et al., 2009; Rumberger, 2000), and none had investigated the possibility of a link between frequent mobility, as
measured by number of school enrollments, that is specific to the early elementary years and low academic achievement due to the timing of disruptions in a student's schooling.

This study focused on student mobility and the relationship between frequent mobility and academic achievement. The study examined the possible connection between frequent mobility prior to completion of the third grade and low reading achievement in third grade. A review of scientific research on the functioning of the brain has revealed that this is a critically important developmental period during which humans acquire language, and the ability to learn to read is at its peak. The author's purpose in conducting this study was to add to the present knowledge base on student mobility and academic achievement, and to provide insight into methods and procedures to be used for diagnosis and intervention for the purpose of providing students with the necessary skills to be successful in school.

Sample Selection

The study involved a quantitative analysis of data collected from the fourth grade population in an urban school district in Northwest Ohio for the 2012-13 school year. The data collected are assessment scores from the administration of Dynamic Indicators of Basic Early Literacy Skills Next (DIBELS Next) to entering fourth grade students in order to measure achievement levels of the 2011-12 third grade cohort. Scores were tracked using student ID numbers to determine which students enrolled in school three or more times before the end of third grade. Hypothesis testing was conducted to determine whether there is a significant difference in the measure of the dependent variable between the two groups: mobile students (those students who have enrolled in school three or more times before the end of the third grade), and stable students (those students who
have enrolled in school fewer than three times before the end of the third grade). The number of school enrollments for each student was determined by examination of students' cumulative record files. An additional move was added to the sum for students who are missing information and data for grades kindergarten, first grade, second grade, or third grade. The assumption was made that the student changed school enrollment during that time, thereby causing the lack of data on record (Voight et al., 2012).

DIBELS Next data for the cohort were used to identify the possible absence of specific early, foundational reading skills for students who were both frequently mobile and who failed to meet the cut scores in the DIBELS assessments. The skills and assessments are: Fluency (Number of Words Read); Accuracy (Number of Words Correct); Retell (Number of Words Remembered); DAZE (Comprehension); and a Composite score (Dynamic Measurement Group, 2010; Goffreda & DiPerna, 2010; Good et al, 2001; Goss, 2008).

DIBELS Next scores are easily accessed and the use of student identification numbers provided anonymity for test subjects. The school district's total population for the 2011-12 school year was 6,877 students, with elementary accounting for 3,680 of that number, 513 of which were third graders. DIBELS assessments were administered to 533 fourth grade students during the week of September 4, 2012 (UNWO District Data, 2012).
### Table 3.

#### UNWO School District Demographics

<table>
<thead>
<tr>
<th>Demographic Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Daily Enrollment</td>
<td>6,618</td>
</tr>
<tr>
<td>Black, non-Hispanic</td>
<td>8.9%</td>
</tr>
<tr>
<td>American Indian or Alaska Native</td>
<td>0.4%</td>
</tr>
<tr>
<td>Asian or Pacific Islander</td>
<td>0.6%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>5.6%</td>
</tr>
<tr>
<td>Multi-Racial</td>
<td>6.6%</td>
</tr>
<tr>
<td>White, non-Hispanic</td>
<td>79.4%</td>
</tr>
<tr>
<td>Economically Disadvantaged</td>
<td>53.3%</td>
</tr>
<tr>
<td>Limited English Proficient</td>
<td>1.3%</td>
</tr>
<tr>
<td>Student with Disabilities</td>
<td>13.6%</td>
</tr>
<tr>
<td>Migrant</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

Source: UNWO District Data, 2011

During the 2011-12 school year, 3,790 students qualified for free or reduced lunch (UNWO District Data, 2012).

The Risk Profile Report (ODE, 2012), a carefully detailed informational report provided by the state in which the school under study is located, identifies high-risk indicators for school districts. Risk indicators are characteristics identified as those which
pose "... high, negative correlations with nearly all academic report card measures" (ODE, 2012). The degree of mobility in the district is significant, and is therefore identified as a risk factor for the district. Mobility is identified by the "percent of students not in same building for a full academic year" (ODE, 2012). Mobility is rated at 79% for this district, meaning that the district's percentage of children who do not complete an entire academic year in only one building is higher than 79% of the school districts in the state (ODE, 2012). This study will be concerned with the mobility of the students of the 2011-12 third grade cohort, only.

Definition

For the purpose of this study, student mobility is defined as "...the phenomenon of students changing schools for reasons other than grade promotion" (Rumberger, 2004, p.1). Studies (Burkam, et al., 2009; Buerkle & Christenson, 1999; Daneshvary, 2005; Engec, 2006.; Ersing et al., 2009; Garriss-Hardy & Vrooman, 2005; A Report from The Kids' Mobility Project, 1998; Titus, 2007) have reported that moving and frequency of moving have a converse relationship on test scores. That is, as moving frequency increases, test scores decrease.

The potential impact of mobility on students' education is significant. Students who move often between schools may experience a range of problems such as:

- lower achievement levels due to discontinuity of curriculum between schools,
- behavioral problems,
- difficulty developing peer relationships, and
- a greater risk for dropping out.

(Education Week, 2002, p.2)

For the purposes of this study, high or frequent mobility is defined as involving those students who have enrolled, or re-enrolled, in schools three or more times before the end of the third grade.

**Research Design**

This study will involves examination of the data of entering fourth grade students' scores on the DIBELS assessments.

**Measures**

**Independent Variable**

*Mobility Status*: This variable was measured on a categorical measurement scale with two categories. Students’ mobility status prior to the completion of 3rd grade were coded as 0 = enrollment less than 3 times, or 1 = enrollment 3 times or more.

**Dependent Variables**

*Fluency*: This variable was measured on a continuous measurement scale with a range of 0 to 350. This variable quantifies the student’s reading fluency at the end of third grade and was measured at the beginning of fourth grade. Lower scores indicate poorer reading fluency while higher scores indicate better reading fluency.

*Accuracy*: This variable was measured on a continuous measurement scale with a range of 0 to 100. This variable quantifies the student’s reading accuracy at the end of 3rd grade and was measured at the beginning of fourth grade. Lower scores indicate poorer reading accuracy while higher scores indicate better reading accuracy.
**Retell:** This variable was measured on a continuous measurement scale with a range of 0 to 94. This variable quantifies the student’s reading retell ability at the end of 3rd grade and was measured at the beginning of fourth grade. Lower scores indicate poorer reading retell while higher scores indicate better reading retell.

**Comprehension:** This variable was measured on a continuous measurement scale with a range of 0 to 57. This variable quantifies the student’s reading comprehension at the end of 3rd grade and was measured at the beginning of fourth grade. Lower scores indicate poorer reading comprehension while higher scores indicate better reading comprehension.

**Composite:** This variable was measured on a continuous measurement scale with a range of 0 to 886. This variable quantifies the student’s overall reading ability at the end of 3rd grade and was measured at the beginning of fourth grade. Lower scores indicate poorer overall reading ability while higher scores indicate better overall reading ability.

**Research Questions**

The overarching research question is, what, if any difference is there in student academic reading achievement at beginning fourth grade between those who had enrolled in school less than 3 times prior to completion of 3rd grade and those who had enrolled in school 3 times or more prior to the completion of 3rd grade? The following specific questions were addressed:

1. What, if any difference is there in the average “Fluency” exam score between those who had enrolled less than 3 times prior to completion of 3rd grade and those who had enrolled 3 times or more prior to the completion of 3rd grade?
2. What, if any difference is there in the average “Accuracy” exam score between those who had enrolled less than 3 times prior to completion of 3rd grade and those who had enrolled 3 times or more prior to the completion of 3rd grade?

3. What, if any difference is there in the average “Retell” exam score between those who had enrolled less than 3 times prior to completion of 3rd grade and those who had enrolled 3 times or more prior to the completion of 3rd grade?

4. What, if any difference is there in the average “Comprehension” exam score between those who had enrolled less than 3 times prior to completion of 3rd grade and those who had enrolled 3 times or more prior to the completion of 3rd grade?

5. What, if any difference is there in the average “Composite” exam score between those who had enrolled less than 3 times prior to completion of 3rd grade and those who had enrolled 3 times or more prior to the completion of 3rd grade?

Hypotheses

\[ H_{10} \]: There is no statistically significant difference in the average “Fluency” exam score between those who had enrolled less than 3 times prior to completion of 3rd grade and those who had enrolled 3 times or more prior to the completion of 3rd grade.

\[ H_{1a} \]: There is a statistically significant difference in the average “Fluency” exam score between those who had enrolled less than 3 times prior to completion of 3rd grade and those who had enrolled 3 times or more prior to the completion of 3rd grade.
H2₀: There is no statistically significant difference in the average “Accuracy” exam score between those who had enrolled less than 3 times prior to completion of 3rd grade and those who had enrolled 3 times or more prior to the completion of 3rd grade.

H2ₐ: There is a statistically significant difference in the average “Accuracy” exam score between those who had enrolled less than 3 times prior to completion of 3rd grade and those who had enrolled 3 times or more prior to the completion of 3rd grade.

H3₀: There is no statistically significant difference in the average “Retell” exam score between those who had enrolled less than 3 times prior to completion of 3rd grade and those who had enrolled 3 times or more prior to the completion of 3rd grade.

H3ₐ: There is a statistically significant difference in the average “Retell” exam score between those who had enrolled less than 3 times prior to completion of 3rd grade and those who had enrolled 3 times or more prior to the completion of 3rd grade.

H4₀: There is no statistically significant difference in the average “Comprehension” exam score between those who had enrolled less than 3 times prior to completion of 3rd grade and those who had enrolled 3 times or more prior to the completion of 3rd grade.
H4a: There is a statistically significant difference in the average “Comprehension” exam score between those who had enrolled less than 3 times prior to completion of 3rd grade and those who had enrolled 3 times or more prior to the completion of 3rd grade.

H5o: There is no statistically significant difference in the average “Composite” exam score between those who had enrolled less than 3 times prior to completion of 3rd grade and those who had enrolled 3 times or more prior to the completion of 3rd grade.

H5a: There is a statistically significant difference in the average “Composite” exam score between those who enrolled less than 3 times prior to completion of 3rd grade and those who had enrolled 3 times or more prior to the completion of 3rd grade.

Data Analysis

All statistical analyses were performed using SPSS for Windows (IBM SPSS 19.0, SPSS Inc., Chicago, IL). All of the analyses were two-sided with a 5% alpha level. Demographic characteristics of the study sample were described using the mean, standard deviation and range for continuous scaled variables and frequency and percent for categorical scaled variables.

Hypothesis 1 was tested using a two-sample t-test. If the t-test is statistically significant, then the null hypothesis would be rejected and it would be concluded that there is a difference in the average “Fluency” exam score between those who had enrolled less than 3 times prior to completion of 3rd grade and those who had enrolled 3 times or more prior to the completion of 3rd grade. The size of the difference between the
two groups is demonstrated by reporting the average and standard deviation “Fluency” exam score separately for each group.

Hypothesis 2 was tested using a two-sample t-test. If the t-test is statistically significant, then the null hypothesis would be rejected and it would be concluded that there is a difference in the average “Accuracy” exam score between those who had enrolled less than 3 times prior to completion of 3rd grade and those who had enrolled 3 times or more prior to the completion of 3rd grade. The size of the difference between the two groups is demonstrated by reporting the average and standard deviation “Accuracy” exam score separately for each group.

Hypothesis 3 was tested using a two-sample t-test. If the t-test is statistically significant, then the null hypothesis would be rejected and it would be concluded that there is a difference in the average “Retell” exam score between those who had enrolled less than 3 times prior to completion of 3rd grade and those who had enrolled 3 times or more prior to the completion of 3rd grade. The size of the difference between the two groups is demonstrated by reporting the average and standard deviation “Retell” exam score separately for each group.

Hypothesis 4 was tested using a two-sample t-test. If the t-test is statistically significant, then the null hypothesis would be rejected and it would be concluded that there is a difference in the average “Comprehension” exam score between those who had enrolled less than 3 times prior to completion of 3rd grade and those who had enrolled 3 times or more prior to the completion of 3rd grade. The size of the difference between the two groups is demonstrated by reporting the average and standard deviation “Comprehension” exam score separately for each group.
Hypothesis 5 was tested using a two-sample t-test. If the t-test is statistically significant, then the null hypothesis would be rejected and it would be concluded that there is a difference in the average “Composite” exam score between those who had enrolled less than 3 times prior to completion of 3rd grade and those who had enrolled 3 times or more prior to the completion of 3rd grade. The size of the difference between the two groups is demonstrated by reporting the average and standard deviation “Composite” exam score separately for each group.

**Sample Size Justification**

The power calculations were performed using the PASS 2008 software (Hintze, 2008). As discussed elsewhere in the proposal, a sample size of 533 fourth grade students of the UNWO District, who have completed the 3rd grade, were obtained for this study.

Hypotheses 1-5 were tested using two-sample t-tests. The accuracy test score had a standard deviation of 6.0. According to Cohen (2008), small, medium and large effect sizes for a two-sample t-test are: $d=0.2$; $d=0.5$, and $d=0.8$ respectively. There were 439 students in the “less than 3 enrollments” group and 94 in the “three or more enrollments” group. A sample size of 533 (439 in the less than 3 enrollments group and 94 in the 3 or more enrollments group) achieves 80% power to detect an effect size of .32 (a small effect size) with standard deviations of 6.0 and 6.0, and with a significance level (alpha) of 0.05 using a two-sided two-sample t-test. For example, if the population average “Accuracy” exam score was 96 for the group that enrolled fewer than 3 times prior to completion of 3rd grade, and 94.09 for the group that enrolled 3 times or more prior to the completion of 3rd grade, this would correspond to an effect size of .32. This study would have had an 80% chance of detecting this difference at the 0.05 level of
significance. Thus, a sample size of 553 was justifiable for detecting small effect sizes for hypotheses 1 through 5.

**Instrument Selection**

In the Urban Northwest Ohio School District (UNWO) under study, DIBELS Next is administered to all elementary students three times each year. The scores are then used for the decision-making process during progress monitoring meetings to determine students' academic growth and achievement, as well as to diagnose the specific skills which each student may be lacking. Interventions and the appropriation of staff services are determined at these problem-solving meetings. DIBELS is designed as a preventive measure to preempt learning difficulties at an early stage. Educators follow a five step model when making determinations based on DIBELS scores. The steps are: 1) Identify the need for support at an early stage; 2) Determine whether the need for support is valid; 3) Design the support plan and implement it; 4) Review and re-evaluate the plan as needed; and 5) Conduct a review of outcomes (Good et al., 2011). The DIBELS measurements are administered easily and quickly, and provide educators with specific information regarding mastery of critical skills or the need for intervention (Good et al., 2002; Good et al., 2011; Vander Meer et al., 2005).

Test reliability for DIBELS Next is reported in three forms: Alternate form (use of a different form of assessment), test-retest (a repeat of the assessment) and inter-rater (the degree of agreement among raters).
### Table 4.

**Summary of Reliability Measures for DIBELS Next Measures for Grade 4**

<table>
<thead>
<tr>
<th>DIBELS Next Measure</th>
<th>Alternate Form</th>
<th>Test-Retest</th>
<th>Inter-Rater</th>
</tr>
</thead>
<tbody>
<tr>
<td>DORF words correct</td>
<td>.96</td>
<td>.97</td>
<td>.99</td>
</tr>
<tr>
<td>DORF Accuracy</td>
<td>.85</td>
<td>.91</td>
<td>.93</td>
</tr>
<tr>
<td>Retell</td>
<td>.80</td>
<td>.36†</td>
<td>.98</td>
</tr>
<tr>
<td>DAZE</td>
<td>.86</td>
<td>--</td>
<td>.98</td>
</tr>
<tr>
<td>DIBELS Composite</td>
<td>.95</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

(Good et al., 2011)

Overall, alternate form reliability is sufficient for screening and testing, tests-retest coefficients are adequate for making instructional decisions, and inter-rater reliability is high (Good et al., 2011).

**Controls for Confounding Variables**

Research has shown that children whose families are of higher socio-economic status suffer far fewer negative effects after family relocation. One reason given for this fact is that, very often, when families whose parents have a post graduate education relocate, the purpose of the relocation is for the of betterment of the family's living conditions and is undertaken by choice (Alexander et al., 1996; Buerkle & Christensen,
This study will take measures to investigate whether frequent mobility during a child's first three years of school has a negative impact on the child's ability to acquire vital literacy skills regardless of socio-economic level.

**Data Collection Procedures**

The researcher has been granted permission by the superintendent of an urban northwest Ohio school district (UNWO) to access the cumulative record files of the of the 533 students currently enrolled in the 2012-13 fourth grade. Through this examination of school records, the researcher will have access to the DIBELS scores for each student of the 2011-12 third grade cohort upon entering the fourth grade. The researcher will also determine a total number of school enrollments for each student. Students whose files are missing information for grades kindergarten, first, second, or third grade will be assigned an extra move under the assumption that the student changed school enrollment during that time (Voight et al., 2012).

**Summary**

The purpose of this study is to determine if there is a significant difference between the DIBELS Next scores of students identified as frequently mobile (at least three school enrollments before the end of third grade) and students identified as stable (fewer than three school enrollments before completion of grade three).

In order to justify the designation of school resources for targeted intervention services, school districts need evidence to inform their decisions. Students who move so frequently that their school experience is interrupted at least three times prior to the completion of third grade present a specific problem for school districts that must designate how precious resources are used. This study seeks to demonstrate whether
frequently mobile children suffer academically when compared to their stable counterparts, and whether the constant disruptions to the child's education result in failure to achieve specific early literacy skills that are vital to the student's academic growth and achievement.

The methodology for this study has been described in Chapter 3, specifically in the following areas: statement of the research questions, methodology, sample selection, research design, instrument selection, data collection procedures, data analysis. Chapter 4 analyzes the results of the statistical measures.
Chapter 4

Results

Introduction

The purpose of this study is to determine whether frequent school mobility has a detrimental effect on student academic achievement, and more specifically, whether a relationship exists between frequent mobility during the first three years of school and the acquisition of early literacy skills. School district personnel must have evidence based on credible data in order to justify decisions regarding the acquisition of funds for programs and initiatives. The overarching question of why some students achieve when others do not has prompted many theories and notions regarding which student characteristics are associated with low academic achievement and, therefore, where funds would best be allocated in order to have the greatest impact on overall learning. Previous studies (Buerkle & Christensen, 1999; United States GAO Report, 2010) have demonstrated that frequent mobility may be a contributing factor in low student achievement, but the suggestion is also proposed that poverty is the root cause. This study examines the effect of frequent school mobility during a student's early years while controlling for the possible influence of poverty.

Descriptive Statistics

Data were collected for a total of 533 students from 8 schools. Among the 533 students, 439 (82%) had fewer than 3 enrollments and 94 (18%) had 3 or more enrollments. A total of 246 (46%) students were not on free/reduced lunch and 287 (54%) were on free/reduced lunch. There were 253 (48%) females and 280 (52%) males. Table 5 shows descriptive statistics for the dependent variables (test scores). The smallest
possible score for fluency was 0 and the maximum possible score was 350. The average score in the sample was well below the middle score of 175, with an average (and standard deviation) of 96.4 (34.6) and a range of 8 to 257. The smallest possible score for accuracy was 0 and the maximum possible score was 100. The average (and standard deviation) score in the sample was 95.7 (6.0) and the range was 35 to 100. The smallest possible score for retell was 0 and the maximum possible score was 94. The average score in the sample was below the middle score of 47, with an average (and standard deviation) of 35.6 (16.8) and a range of 0 to 93. The smallest possible score for comprehension was 0 and the maximum possible score was 57. The average score in the sample was below the middle score of 28.5, with an average (and standard deviation) of 17.6 (6.8) and a range of 0 to 55. The smallest possible composite score was 0 and the maximum possible score was 886. The average score in the sample was below the middle score of 443, with an average (and standard deviation) of 325 (106) and a range of 19 to 735. See appendix A for detailed frequency tables for all demographic variables.

Table 5: Descriptive Statistics for the Dependent Variables

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluency Exam Score</td>
<td>533</td>
<td>96.39</td>
<td>34.648</td>
<td>8</td>
<td>257</td>
</tr>
<tr>
<td>Accuracy Exam Score</td>
<td>533</td>
<td>95.68</td>
<td>6.027</td>
<td>35</td>
<td>100</td>
</tr>
<tr>
<td>Retell Exam Score</td>
<td>533</td>
<td>35.63</td>
<td>16.751</td>
<td>0</td>
<td>93</td>
</tr>
<tr>
<td>Comprehension Exam Score</td>
<td>533</td>
<td>17.64</td>
<td>6.845</td>
<td>0</td>
<td>55</td>
</tr>
<tr>
<td>Composite Exam Score</td>
<td>533</td>
<td>325.11</td>
<td>106.066</td>
<td>19</td>
<td>735</td>
</tr>
</tbody>
</table>
Hypothesis Test Results

Results for Research Question 1. What, if any difference is there in the average “Fluency” exam score between those who had enrolled less than 3 times prior to completion of 3rd grade and those who had enrolled 3 times or more prior to the completion of 3rd grade?

H$_{10}$: There is no statistically significant difference in the average “Fluency” exam score between those who had enrolled less than 3 times prior to completion of 3rd grade and those who had enrolled 3 times or more prior to the completion of 3rd grade.

H$_{1a}$: There is a statistically significant difference in the average “Fluency” exam score between those who had enrolled less than 3 times prior to completion of 3rd grade and those who had enrolled 3 times or more prior to the completion of 3rd grade.

Hypothesis 1 was tested using a two-sample t-test. Figure 1 is an error bar chart which shows the average, and 95% confidence interval for the average Fluency score by Mobility Status. The figure gives some evidence that more mobile students scored lower on average compared to less mobile students. Tables 6 and 7 show there was not a statistically significant difference in the average Fluency score between the two groups, $t(531) = 1.90; p = .059$. The null hypothesis was not rejected and it was concluded that on average there is no difference in Fluency test scores between students who enroll fewer than 3 times prior to completion of 3rd grade and those who had enrolled 3 times or more prior to the completion of 3rd grade.
Figure 1: Error Bar Chart of Fluency Test Scores by Mobility Status.

Confidence interval = 95%.
Table 6: Descriptive Statistics for Fluency Test Scores by Mobility Status.

<table>
<thead>
<tr>
<th>Mobility Status</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 3 enrollments</td>
<td>439</td>
<td>97.70</td>
<td>34.654</td>
<td>8</td>
<td>257</td>
</tr>
<tr>
<td>Three or more enrollments</td>
<td>94</td>
<td>90.26</td>
<td>34.134</td>
<td>19</td>
<td>182</td>
</tr>
</tbody>
</table>

Table 7: Two-Sample t-test to Compare the Average Fluency Test Scores by Mobility Status.

<table>
<thead>
<tr>
<th>Fluency Exam Score</th>
<th>t</th>
<th>df</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.895</td>
<td>531</td>
<td>.059</td>
</tr>
</tbody>
</table>

Results for Research Question 2. What, if any difference is there in the average “Accuracy” exam score between those who had enrolled less than 3 times prior to completion of 3\textsuperscript{rd} grade and those who had enrolled 3 times or more prior to the completion of 3\textsuperscript{rd} grade?

H\textsubscript{0}: There is no statistically significant difference in the average “Accuracy” exam score between those who had enrolled less than 3 times prior to completion of 3\textsuperscript{rd} grade and those who had enrolled 3 times or more prior to the completion of 3\textsuperscript{rd} grade.
H2a: There is a statistically significant difference in the average “Accuracy” exam score between those who had enrolled less than 3 times prior to completion of 3rd grade and those who had enrolled 3 times or more prior to the completion of 3rd grade.

Hypothesis 2 was tested using a two-sample t-test. Figure 2 is an error bar chart which shows the average, and 95% confidence interval for the average Accuracy score by Mobility Status. The figure gives little evidence of a difference between the two groups. Tables 8 and 9 show there was not a statistically significant difference in the average Accuracy score between the two groups, t(531) = .46; p = .65. The null hypothesis was not rejected and it was concluded that on average there is no difference in Accuracy test scores between students who enroll fewer than 3 times prior to completion of 3rd grade and those who had enroll 3 times or more prior to the completion of 3rd grade.
Figure 2: Error Bar Chart of Accuracy Test Scores by Mobility Status.

Confidence interval - 95%.
Table 8: Descriptive Statistics for Accuracy Test Scores by Mobility Status.

<table>
<thead>
<tr>
<th>Mobility Status</th>
<th>N</th>
<th>Valid</th>
<th>Missing</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 3 enrollments</td>
<td>439</td>
<td>439</td>
<td>0</td>
<td>95.74</td>
<td>6.134</td>
<td>35</td>
<td>100</td>
</tr>
<tr>
<td>Three or more enrollments</td>
<td>94</td>
<td>94</td>
<td>0</td>
<td>95.43</td>
<td>5.527</td>
<td>66</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 9: Two-Sample t-test to Compare the Average Accuracy Test Scores by Mobility Status.

<table>
<thead>
<tr>
<th></th>
<th>t-test for Equality of Means</th>
<th>t</th>
<th>df</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy Exam Score</td>
<td></td>
<td>.459</td>
<td>531</td>
<td>.646</td>
</tr>
</tbody>
</table>

Results for Research Question 3. What, if any difference is there in the average “Retell” exam score between those who had enrolled less than 3 times prior to completion of 3rd grade and those who had enrolled 3 times or more prior to the completion of 3rd grade?

H₃₀: There is no statistically significant difference in the average “Retell” exam score between those who had enrolled less than 3 times prior to completion of 3rd grade and those who had enrolled 3 times or more prior to the completion of 3rd grade.
H3a: There is a statistically significant difference in the average “Retell” exam score between those who had enrolled less than 3 times prior to completion of 3rd grade and those who had enrolled 3 times or more prior to the completion of 3rd grade.

Hypothesis 3 was tested using a two-sample t-test. Figure 3 is an error bar chart which shows the average, and 95% confidence interval for the average Retell score by Mobility Status. The figure gives some evidence that more mobile students scored lower on average compared to less mobile students. Tables 10 and 11 show there was not a statistically significant difference in the average Retell score between the two groups, t(531) = 1.67; p = .095. The null hypothesis was not rejected and it was concluded that on average there is no difference in Retell test scores between students who enroll fewer than 3 times prior to completion of 3rd grade and those who had enroll 3 times or more prior to the completion of 3rd grade.
Figure 3: Error Bar Chart of Retell Test Scores by Mobility Status.

Confidence interval = 95%.
Table 10: Descriptive Statistics for Retell Test Scores by Mobility Status.

<table>
<thead>
<tr>
<th>Mobility Status</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 3 enrollments</td>
<td>439</td>
<td>36.19</td>
<td>16.776</td>
<td>0</td>
<td>85</td>
</tr>
<tr>
<td>Three or more enrollments</td>
<td>94</td>
<td>33.01</td>
<td>16.472</td>
<td>0</td>
<td>93</td>
</tr>
</tbody>
</table>

Table 11: Two-Sample t-test to Compare the Average Retell Test Scores by Mobility Status.

<table>
<thead>
<tr>
<th>t-test for Equality of Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>t</td>
</tr>
<tr>
<td>----</td>
</tr>
<tr>
<td>1.674</td>
</tr>
</tbody>
</table>

Results for Research Question 4. What, if any, difference is there in the average “Comprehension” exam score between those who had enrolled less than 3 times prior to completion of 3rd grade and those who had enrolled 3 times or more prior to the completion of 3rd grade?

H4₀: There is no statistically significant difference in the average “Comprehension” exam score between those who had enrolled less than 3 times prior to completion of 3rd grade and those who had enrolled 3 times or more prior to the completion of 3rd grade.
H4a: There is a statistically significant difference in the average “Comprehension” exam score between those who had enrolled less than 3 times prior to completion of 3rd grade and those who had enrolled 3 times or more prior to the completion of 3rd grade.

Hypothesis 4 was tested using a two-sample t-test. Figure 4 is an error bar chart which shows the average, and 95% confidence interval for the average Comprehension score by Mobility Status. The figure gives strong evidence that more mobile students scored lower on average compared to less mobile students. Tables 12 and 13 show the more mobile group had a statistically significantly lower average Comprehension score compared to the less mobile group. The average (and standard deviation) Comprehension score was 18.1 (6.9) versus 15.3 (5.9) for the less mobile, and more mobile groups, respectively, t(531) = 3.70; p < .001. The null hypothesis was rejected and it was concluded that on average, students who enrolled 3 times or more prior to the completion of 3rd grade score lower on the Comprehension exam than students who enroll fewer than 3 times prior to completion of 3rd grade.
Figure 4: Error Bar Chart of Comprehension Test Scores by Mobility Status.

Confidence interval = 95%.
Table 12: Descriptive Statistics for Comprehension Test Scores by Mobility Status.

<table>
<thead>
<tr>
<th>Mobility Status</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 3 enrollments</td>
<td>439</td>
<td>18.14</td>
<td>6.938</td>
<td>0</td>
<td>55</td>
</tr>
<tr>
<td>Three or more enrollments</td>
<td>94</td>
<td>15.30</td>
<td>5.880</td>
<td>0</td>
<td>30</td>
</tr>
</tbody>
</table>

Table 13: Two-Sample t-test to Compare the Average Comprehension Test Scores by Mobility Status.

<table>
<thead>
<tr>
<th>t-test for Equality of Means</th>
<th>t</th>
<th>df</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comprehension Exam Score</td>
<td>3.695</td>
<td>531</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>

Results for Research Question 5. What, if any, difference is there in the average “Composite” exam score between those who had enrolled less than 3 times prior to completion of 3rd grade and those who had enrolled 3 times or more prior to the completion of 3rd grade?

H5₀: There is no statistically significant difference in the average “Composite” exam score between those who had enrolled less than 3 times prior to completion of 3rd grade and those who had enrolled 3 times or more prior to the completion of 3rd grade.

H₅ₐ: There is a statistically significant difference in the average “Composite” exam score between those who enrolled less than 3 times prior to completion of 3rd grade and those who had enrolled 3 times or more prior to the completion of 3rd grade.
Hypothesis 5 was tested using a two-sample t-test. Figure 5 is an error bar chart which shows the average, and 95% confidence interval for the average Composite score by Mobility Status. The figure gives evidence that more mobile students scored lower on average compared to less mobile students. Tables 14 and 15 show the more mobile group had a statistically significantly lower average Composite score compared to the less mobile group. The average (and standard deviation) Composite score was 330.2 (106.5) versus 301.3 (101.4) for the less mobile, and more mobile groups, respectively, t(531) = 2.41; p = .016. The null hypothesis was rejected and it was concluded that on average, students who enroll 3 times or more prior to the completion of 3rd grade score lower on the Composite exam compared to students who enroll fewer than 3 times prior to completion of 3rd grade.
Figure 5: Error Bar Chart of Composite Test Scores by Mobility Status.

Confidence interval = 95%.
Table 14: Descriptive Statistics for Composite Test Scores by Mobility Status.

<table>
<thead>
<tr>
<th>Mobility Status</th>
<th>N</th>
<th>Valid</th>
<th>Missing</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 3 enrollments</td>
<td>439</td>
<td>439</td>
<td>0</td>
<td>330.22</td>
<td>106.454</td>
<td>32</td>
<td>735</td>
</tr>
<tr>
<td>Three or more enrollments</td>
<td>94</td>
<td>94</td>
<td>0</td>
<td>301.26</td>
<td>101.415</td>
<td>19</td>
<td>571</td>
</tr>
</tbody>
</table>

Table 15: Two-Sample t-test to Compare the Average Composite Test Scores by Mobility Status.

<table>
<thead>
<tr>
<th>t-test for Equality of Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>t</td>
</tr>
<tr>
<td>-----</td>
</tr>
<tr>
<td>2.414</td>
</tr>
</tbody>
</table>

Exploratory Analyses

For exploratory purposes, a Chi-square test was performed in order to determine if there was an association between mobility status and socio-economic status. Table 16 is a cross-classification table that shows the number (and percentage) of students that were on free/reduced lunch by mobility status. The more mobile group had a statistically significantly greater percentage of students on free/reduced lunch compared to the less mobile group. The number (and percentage) of students on free/reduced lunch was 223 (50.8%) versus 64 (68.1%) for the less mobile, and more mobile groups, respectively, Chi-Square(1) = 9.31; p = .002.
Table 16: Cross-classification Table of Socio-economic Status by Mobility Status.

<table>
<thead>
<tr>
<th>Mobility Status</th>
<th>No free/reduced lunch</th>
<th>Free/reduced lunch</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 3 enrollments</td>
<td>216</td>
<td>223</td>
<td>439</td>
</tr>
<tr>
<td>% within Mobility Status</td>
<td>49.2%</td>
<td>50.8%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Three or more enrollments</td>
<td>30</td>
<td>64</td>
<td>94</td>
</tr>
<tr>
<td>% within Mobility Status</td>
<td>31.9%</td>
<td>68.1%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Total</td>
<td>246</td>
<td>287</td>
<td>533</td>
</tr>
<tr>
<td>% within Mobility Status</td>
<td>46.2%</td>
<td>53.8%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Chi-square(1) = 9.31; p = .002

Considering the more mobile group had a greater percentage of students on free/reduced lunch, it is possible that the observed difference in the average Comprehension scores between the less mobile and more mobile groups could be attributable to socio-economic status rather than mobility. In order to investigate this possibility, a multiple linear regression analysis was performed in order to determine if mobility status explains a statistically significant percentage of variance in Comprehension scores when controlling for socio-economic status. The dependent variable was the Comprehension test score. Both socio-economic status and mobility status were entered into the model simultaneously. Table 17 shows that the overall model was statistically significant, F(2, 530) = 12.1; p < .001. Both socio-economic status (p = .001) and mobility status (p = .001) were statistically significant predictors of the Comprehension score. The R-square for the overall model was .044, which means that
socio-economic status and mobility status collectively explain only 4.4% of the total variance in Comprehension scores.

The final equation of the model is: \( CH = 19.1 - 1.89*SES - 2.51*MS \), where \( CH \) = the average Comprehension exam score; \( SES \) = socio-economic status (0 = no free/reduced lunch, 1 = free/reduced lunch), and; \( MS \) = mobility status (0 = less than 3 enrollments, 1 = 3 or more enrollments). When controlling for mobility status, the average Comprehension exam score is expected to be 1.89 points lower for students that are on free/reduced lunch compared to students that are not on free/reduced lunch. When controlling for socio-economic status, the average Comprehension exam score is expected to be 2.51 points lower for more mobile students compared to less mobile students. The results of this analysis provide strong evidence that on average, more mobile students tend to score lower on the Comprehension exam score than less mobile students, independent of their socio-economic status.

Table 17: Multiple linear regression of the Comprehension Score Versus Socio-economic Status and Mobility Status.

<table>
<thead>
<tr>
<th>Model a, b, c</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 (Constant)</td>
<td>19.099</td>
<td>.438</td>
<td>43.633</td>
<td>.000</td>
</tr>
<tr>
<td>Socioeconomic Status (^d)</td>
<td>-1.891</td>
<td>.588</td>
<td>-.138</td>
<td>-3.216</td>
</tr>
<tr>
<td>Mobility Status (^e)</td>
<td>-2.514</td>
<td>.769</td>
<td>-.140</td>
<td>-3.270</td>
</tr>
</tbody>
</table>

\(^a\) Dependent Variable: Comprehension Exam Score
\(^b\) The overall model was statistically significant, \( F(2, 530) = 12.1; p < .001 \)
\(^c\) R-square attributed to the overall model = .044
\(^d\) 0 = no free/reduced lunch; 1 = free/reduced lunch
\(^e\) 0 = less than 3 enrollments; 1 = three or more enrollments
A second multiple linear regression analysis was performed in order to determine if mobility status explains a statistically significant percentage of variance in Composite scores when controlling for socio-economic status. The dependent variable was the Composite exam score. Both socio-economic status and mobility status were entered into the model simultaneously. Table 18 shows that the overall model was statistically significant, $F(2, 530) = 6.74; p = .001$. Both socio-economic status ($p = .006$) and mobility status ($p = .042$) were statistically significant predictors of the Composite score. The R-square for the overall model was .025, which means that socio-economic status and mobility status collectively explain only 2.5% of the total variance in Composite scores.

The final equation of the model is: $CP = 343.1 - 25.3*SES - 24.6*MS$, where CP = Composite exam score; SES = socio-economic status (0=no free/reduced lunch, 1 = free/reduced lunch), and; MS = mobility status (0 = less than 3 enrollments, 1 = 3 or more enrollments). When controlling for mobility status, the average Composite exam score is expected to be 25.3 points lower for more mobile students compared to less mobile students. When controlling for socio-economic status, the average Composite exam score is expected to be 24.6 points lower for more mobile students compared to less mobile students. The results of this analysis provide evidence that on average, more mobile students tend to score lower on the Composite exam score than less mobile students, independent of their socio-economic status.
Table 18: Multiple linear regression of the Composite Score Versus Socio-economic Status and Mobility Status.

<table>
<thead>
<tr>
<th>Model a, b, c</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
</tr>
<tr>
<td>1 (Constant)</td>
<td>343.080</td>
<td>6.850</td>
</tr>
<tr>
<td>Socioeconomic Status d</td>
<td>-25.318</td>
<td>9.199</td>
</tr>
<tr>
<td>Mobility Status e</td>
<td>-24.586</td>
<td>12.032</td>
</tr>
</tbody>
</table>

a. Dependent Variable: Composite Exam Score
b. The overall model was statistically significant, F(2, 530) = 6.74; p = .001
c. R-square attributed to the overall model = .025
d. 0 = no free/reduced lunch; 1 = free/reduced lunch
e. 0 = less than 3 enrollments; 1 = three or more enrollments

Summary

This study found strong evidence to indicate that on average, students who enroll 3 times or more prior to the completion of 3rd grade score lower on Comprehension and Composite exams compared to students who enroll fewer than 3 times prior to completion of 3rd grade. These findings held true even when controlling for socio-economic status. There was no evidence to suggest that Fluency, Accuracy, or Retell exam scores were different between more mobile and less mobile students, however, the statistical significance (p < .001) of the Comprehension scores is highly significant. Further, the effect of the Comprehension score is robust enough to impact the overall Composite score, in spite of the effects of the scores in the three other assessments: Fluency, Accuracy and Retell. It may be concluded, therefore, that mobility has a profound effect on students' reading Comprehension.
Chapter 5

Summary, Conclusions, and Recommendations

Summary of the Problem

Along with the advent of the No Child Left Behind Act of 2001 (NCLBA) came increased concerns over the academic achievement and progress of students in the United States. The nation's public school system has become the subject of great scrutiny, as data indicate that students lack the foundational reading skills necessary to read and comprehend what is read. According to Snow (as cited by Connor et al., 2011, p. 189) comprehension skills are defined as "the active extraction and construction of meaning from all kinds of text." Comprehension skills are widely recognized as crucial to academic achievement (Evans et al., 2010; Parr, 2010; Schmoker, 2006; Sousa, 2005; Vaughn & Linan-Thompson, 2004). In 2005, Haycock (as cited by Schmoker, 2006) examined the results of The National Assessment of Educational Progress (NAEP) and reported that 38% of all fourth graders scored "below basic" on the reading portion of the exam. Though school districts have employed numerous initiatives to improve instruction, the results of these initiatives have often been less than what is desired or expected. In 2007, Lee, Grigg, & Donahue (as cited by Connor et al., 2011) reported that 70% of fourth graders lacked the skills to comprehend what was read at a level regarded to be proficient.

Purpose of the Study

The purpose of this study was to examine the potential relationship between frequent school mobility during grades kindergarten through three and students'
acquisition of early literacy skills. The researcher collected the DIBELS Next scores of entering fourth grade students and examined the scores to determine each student's level of achievement on four subtests, as well as a composite score. The students were also categorized into two groups: the *stable* group is composed of students who had enrolled in school less than 3 times before the end of third grade, and the *frequently mobile* group is composed of students who had enrolled in school 3 or more times before the end of third grade. This quantitative study was conducted on data compiled from the entering fourth grade population (533 students) of an urban, northwest Ohio, school district to determine whether a relationship exists between frequent mobility before the end of the third grade and the mastery of early literacy skills.

This study has been guided by the following research questions and hypotheses:

**H1₀**: There is no statistically significant difference in the average “Fluency” exam score between those who had changed enrollment less than 3 times prior to completion of 3<sup>rd</sup> grade and those who had changed enrollment 3 times or more prior to the completion of 3<sup>rd</sup> grade.

**H1<sub>a</sub>**: There is a statistically significant difference in the average “Fluency” exam score between those who had changed enrollment less than 3 times prior to completion of 3<sup>rd</sup> grade and those who had changed enrollment 3 times or more prior to the completion of 3<sup>rd</sup> grade.
H2_0: There is no statistically significant difference in the average “Accuracy” exam score between those who had changed enrollment less than 3 times prior to completion of 3\textsuperscript{rd} grade and those who had changed enrollment 3 times or more prior to the completion of 3\textsuperscript{rd} grade.

H2_a: There is a statistically significant difference in the average “Accuracy” exam score between those who had changed enrollment less than 3 times prior to completion of 3\textsuperscript{rd} grade and those who had changed enrollment 3 times or more prior to the completion of 3\textsuperscript{rd} grade.

H3_0: There is no statistically significant difference in the average “Retell” exam score between those who had changed enrollment less than 3 times prior to completion of 3\textsuperscript{rd} grade and those who had changed enrollment 3 times or more prior to the completion of 3\textsuperscript{rd} grade.

H3_a: There is a statistically significant difference in the average “Retell” exam score between those who had changed enrollment less than 3 times prior to completion of 3\textsuperscript{rd} grade and those who had changed enrollment 3 times or more prior to the completion of 3\textsuperscript{rd} grade.

H4_0: There is no statistically significant difference in the average “Comprehension” exam score between those who had changed enrollment less than 3 times prior to
completion of 3rd grade and those who had changed enrollment 3 times or more prior to the completion of 3rd grade.

H4a: There is a statistically significant difference in the average “Comprehension” exam score between those who had changed enrollment less than 3 times prior to completion of 3rd grade and those who had changed enrollment 3 times or more prior to the completion of 3rd grade.

H50: There is no statistically significant difference in the average “Composite” exam score between those who had changed enrollment less than 3 times prior to completion of 3rd grade and those who had changed enrollment 3 times or more prior to the completion of 3rd grade.

H5a: There is a statistically significant difference in the average “Composite” exam score between those who changed enrollment less than 3 times prior to completion of 3rd grade and those who had changed enrollment 3 times or more prior to the completion of 3rd grade.

Summary of the Sample

The sample for this study was composed of the entire entering fourth grade population of an urban, northwest Ohio, school district (UNWO). The entering fourth grade population of 533 students was chosen for the purpose of collecting data that would reflect the academic achievement levels in reading for students who had completed the third grade. Each student's cumulative record file was examined by the researcher for the
purpose of counting the number of school enrollments. DIBELS Next scores were accessed from the district's DIBELS database.

Summary of the Research Findings

The data analysis findings were reviewed for each subscore of the fourth grade DIBELS Next assessment. In addition to the descriptive statistics, a Chi-square test and multiple linear regressions were performed in order to determine whether an association exists between socio-economic status and mobility status.

Hypothesis 1 was tested using a two-sample t-test. While the bar chart reveals some evidence that mobile students scored lower on average compared to less mobile students, there was not a statistically significant difference in the average Fluency score between the two groups, $t(531) = 1.90; p = .059$. The null was not rejected, and it is concluded that there is no statistically significant difference between the average Fluency scores of the two groups.

Hypothesis 2 was also tested using a two-sample t-test, revealing that there is no statistically significant difference in the average Accuracy score between stable and frequently mobile students, $t(531) = .46; p = .65$. The null is not rejected, and it is concluded that there is no statistically significant difference in Accuracy test scores between students who enrolled fewer than 3 times prior to completion of third grade and those who had enrolled 3 times or more prior to the completion of third grade.

Hypothesis 3 was tested using a two-sample t-test, revealing that there is not a statistically significant difference in the average Retell score between stable and frequently mobile student groups, $t(531) = 1.67; p = .095$. Though there is some evidence indicated by the error bar chart that frequently mobile students scored lower, the null was
not rejected and it is concluded that there is no statistically significant difference in Retell scores between stable and frequently mobile groups of students.

Hypothesis 4 was tested using a two-sample t-test. This test revealed strong evidence that the frequently mobile group had a statistically significantly lower average Comprehension score compared to the stable group. The average (and standard deviation) Comprehension score was 18.1(6.9) versus 15.3(5.9) for the less mobile, and more mobile groups, respectively, \( t(531) = 3.70; p< .001 \). The null hypothesis was rejected and it was concluded that, on average, students who enroll 3 times or more prior to the completion of third grade score lower on the Comprehension exam than students who enroll fewer than 3 times prior to completion of the third grade.

Hypothesis 5 was tested using a two-sample t-test. This revealed that the frequently mobile group had a statistically significantly lower average Composite compared to the stable group. The average (and standard deviation) Composite score was 330.2(106.5) versus 301.3(101.4) for the less mobile, and more mobile groups, respectively, \( t(531) = 2.41; p = .016 \). Therefore, the null was rejected. It is important to note that the Composite score is a compilation of the sub test scores. Analysis of the results of the three subtests of Fluency, Accuracy and Retell all revealed no evidence of significantly lower scores for less mobile versus more mobile students. The strength of the effect of the Comprehension score was significant to the degree of impacting the Composite score.

Overall, the data indicate that students demonstrate little difference in the acquisition of the early literacy skills of reading individual words fluently (Fluency), reading individual words accurately (Accuracy), and being able to retell the selection using a significant number of words from that selection (Retell). However, a significant
difference was demonstrated in reading comprehension and understanding what has been read (Comprehension), as well as the summative score (Composite). These findings are valuable in that they may be taken to inform instruction and the programs and initiatives that are adopted to teach literacy. The purpose of the DIBELS Next Comprehension score is "to measure reasoning processes that constitute comprehension. Specifically...the student's ability to construct meaning from text, using comprehension strategies, word recognition skills, background information and prior knowledge, familiarity with linguistic properties such as syntax and morphology, and reasoning skills" (Dynamic Measurement Group, p.32, 2010). The results of the statistical analysis reveal an impact in the area of comprehension that is significant enough to effect the overall Composite score, even though the Composite is composed of all of the subtests. The DIBELS Next Composite score is considered to provide the most informative and accurate overall assessment of students' reading proficiency, as it is calculated from a compilation of scores (Dynamic Measurement Group, 2010).

The Chi-square test was conducted to determine whether an association between mobility status and socio-economic status was indicated, and whether socio economic status was actually the determining factor for low academic achievement. This involved a cross-classification showing the number of students on free/reduced lunch by mobility status. However, the frequently mobile group had a significantly greater percentage of students on the free/reduced lunch program, therefore rendering it possible that the observed difference in the average Comprehension and Composite scores could be attributed to socio-economic status, rather than mobility. Therefore, in order to investigate this possibility, a multiple linear regression analysis was performed to
determine if mobility status explains a statistically significant percentage of variance in Comprehension scores when controlling for socio-economic status. The final results of this analysis provide strong evidence that on average, more mobile students tend to score lower on the Comprehension exam score than less mobile students, independent of their socio-economic status.

A second multiple linear regression analysis was performed to determine whether mobility status explains a statistically significant percentage of variance in Composite scores when controlling for socio-economic status. The results of this analysis also provide evidence that on average, more mobile students tend to score lower on the Composite exam score than less mobile students, independent of their socio-economic status.

Therefore, the findings of this study establish evidence that on average, students who were frequently mobile during the first three years of school scored lower in reading comprehension and on an overall composite score than did students who were identified as stable, regardless of socio-economic level. This study contributes to the body of knowledge in the area of student mobility and academic achievement for two reasons:

(1) **Frequent Mobility During the Early Years Impacts Students' Reading Comprehension.** The data support the hypothesis that the timing of children's moves is of great significance to their ability to acquire the ability to read and comprehend what is read. That is, moving frequently during a child's first years of school has a great negative impact on literacy acquisition. Frequent interruptions to a child's early school experience impact the ability to read with comprehensive understanding and to employ higher levels of thinking skills.
Frequent Mobility Negatively Affects Student Achievement, Independent of Socio-economic Level. The data indicate that frequent mobility affects student academic achievement, most profoundly in the area of reading comprehension, regardless of the child's socio-economic level.

The profound impact of frequent mobility that takes place during the early years of a child's school experience may be attributed to the interruption of learning at a time period that has been established by authorities in the area of brain science as being crucial to the acquisition of language skills (Fox et al., 2010; Greenough et al., 1987). Greenough et al. (1987) relate this phenomenon to brain plasticity, which is categorized into two different types: experience expectant and experience dependant plasticity. Both types are designed to store information the human brain receives from the environment. According to Greenough et al., the human brain is initially loaded with an abundance of synaptic connections that are subject to experiential input that determines which of them will survive. "...there are sensitive periods during which experience manipulations profoundly affect sensory-system development..." Greenough et al., 1987, p. 540).

This study indicates that students who are frequently mobile maintain the ability to read words fluently and accurately, and to even repeat an adequate number of the words read; however, a significant number of these students do not develop the ability to extract meaning from what is read. Simply naming words with a lack of understanding of the meanings of those words is an exercise devoid of the higher level thinking skills of inference, prediction, or creation.

Reading may be defined as the process of extracting and constructing meaning from written text for some purpose. Skilled reading entails on-line
comprehension of meaning from running text. It is a complex process that depends on adequate development of two component processes: word identification and language comprehension. Language comprehension involves integration of meanings of spoken or written words in ways that facilitate understanding and integration of sentences in spoken or written text in the interest of understanding the broader concepts and ideas represented by those sentences.

(Vellutino et al., 2004, p.5)

The ability to read rapidly and fluently is only a beginning step in the process of learning to read. Without the ability to draw meaning and make applications, reading lacks usefulness.

It should also be noted that this study examined frequent mobility that takes place regardless of whether a child moves out of a school system, changes schools within a school system, or even withdraws and re-enrolls in the same school. The lower comprehension scores exhibited by students who change school enrollment frequently may be attributed to a number of factors, such as loss of instructional time, the social impact of leaving one school for another, and the difficulty students encounter in making social connections when the school experience is frequently interrupted, to name a few.

Many previously conducted studies have addressed the implications of socio-economic level as a possible influential factor in poor student academic achievement among frequently mobile students. Several studies found the factors to be closely interwoven, causing a blurred line between frequent mobility alone and frequent mobility accompanied by poverty (Alexander et al., 1996; Buerkle & Christenson, 1999; Popp et al., 2003; Wood et al., 1993). By controlling for the effects of poverty, this study
indicates that frequent mobility during a student's early years of school has a negative impact on academic achievement, independent of the socio-economic status of the child's family.

**Recommendations for the School District**

While this study implicates frequent mobility as a factor in low academic achievement, models exist in current practice that maintain high levels of student achievement in a population impacted by frequent mobility. Two such examples of high student achievement in a highly mobile population are the Department of Defense Education Activity Schools (DODEA) and the school systems that have absorbed students displaced by natural disasters, such as Hurricane Katrina (2005) and Hurricane Sandy (2012).

**The DODEA Schools.** The United States Department of Defense Education Activity Schools are unique in several important factors. The first is an established, standardized curriculum involving all schools. Under a structure that employs standardization of all schools, students experience the same standards and core content, regardless of where they live and attend school. The second is a computerized system of new student assessment. Students arriving at a new school are immediately given an assessment to diagnose true, appropriate placement and possible gaps in academic achievement. The faculty then differentiates the curriculum to fit the student's needs and developmental level. The third factor is immediate, electronic transfer of records to coincide with the arrival of the new student. The fourth factor is that each new student is assigned to an adult mentor. The mentor is available as an advocate and guide for the student, and it is the mentor's responsibility to ensure that the new student experiences a
positive, supportive atmosphere. The DODEA schools also cite a culture of extremely high expectations as a factor that positively impacts the level of accomplishment of students (Bridglall & Gordon, 2003; Smrekar et al, 2001).

**Schools Receiving Refugees from Natural Disasters.** School districts from across the United States that absorbed students displaced by Hurricanes Katrina and Sandy have become models of effective practice in helping the frequently mobile. Such model practices include the facilitation of new student admissions while school records are being acquired, the formation of organizations such as an ambassador's club to match new students with existing student partners, the provision of appropriate materials and supplies upon the new student's arrival, and sensitization of staff members to the plight of the new child in school as examples of practices that have proved effective in assisting new students who feel overwhelmed and alone (Titus, 2007)

**Diagnostic Assessment.** Immediate diagnostic assessment of the reading strengths and weaknesses of incoming students is crucial to the development of measures prescribed to improve achievement for frequently mobile students. Such assessments need only be brief measures of specific skills of reading, such as fluency, accuracy, and comprehension levels. Measures such as DIBELS may be conducted on individual students in a very brief amount of time and at very minimal cost, but the accurate diagnosis of student achievement levels is invaluable in properly placing and developing a program for a specific student.

Further recommendations to affect the academic achievement of frequently mobile students include small school size, pre-school and after-school programs, and active community involvement.
Recommendations for School Policy Makers

- **The Invisible Population.** Students who are frequently mobile are not included in the No Child Left Behind legislation as an at-risk, sub-group, but possibly the legislation should be expanded to include these students. No Child Left Behind requires that all students in specific grades be assessed, yet there is one group that may not be assessed, or whose results may not weigh in on accountability measures: that group is composed of students who do not remain in one school for an entire academic school year as defined by No Child Left Behind (Weckstein, 2003). Schools may allow these students to go undiscovered, as that relieves them of the accountability of their performance on the exams. However, if their test results are not counted, these students will not qualify for important Title I benefits - a situation that is clearly not in the best interests of the child. This creates a population of invisible, marginalized victims who are overlooked, often with the hope that they will transfer out of the school soon.

- **Electronic Transfer of Records.** School districts should consider the establishment of procedures and programs to ease the entrance of new students into the system and schools, such as immediate, electronic transfer of records. Students who relocate frequently may miss extended periods of school time due to moving. As these students attempt to register at a new school, they typically find that they must wait out for another
period of time while the receiving school obtains records from the previous school.

- **An Ambassador Program.** This would involve a program designed to link new students with both adult and student mentors. Such a program would be very low cost and could potentially provide great security to anxious, new students. Poor social adjustment, sadness over the loss of friends, and lack of familiarity must be considered as contributing factors for frequently mobile students' low academic achievement.

- **Standardization of Curriculum.** A standardized curriculum for all schools in a district would provide greater stability and academic continuity for those who must change schools. Though common core standards are now being phased in nationwide, the process has only begun and has not taken full effect at this time.

- **An Outreach Program for Families.** The establishment of an outreach program to provide information about community resources (such as food pantries, clothing closets, social agencies, mental health agencies, child care, doctors' offices, hospitals, clinics, churches and places of worship, transportation, etc.) would be invaluable to new families. Efforts to alleviate some of the stress experienced by mobile families would, in turn, assist the adjustment of the children of the families.

- **School Focus.** Sadly, when a child enrolls in a new school at a time later than the start of the year, it is often the case that the school personnel shake their heads and blame the previous school for the child's poor level
of achievement. Schools must shift away from that sort of helplessness and focus on how to help each child achieve academic success. This could include diagnostic assessment, differentiating the student's new program, and determining the child's strengths and interests.

**Recommendations for Further Research**

Based on the findings in this study, several recommendations for further research that may contribute to the knowledge base on frequently mobile students become apparent.

First and foremost, it is important to standardize definitions and delineating factors to be used in the study of frequent mobility. This study used the definition of frequent mobility as 3 or more school enrollments before the end of the third grade, but there are many definitions in use for study at this time. For instance, other studies have used only residential changes in their tabulations of frequent mobility, and some do not consider the event of a student moving out of a school and later back into the same school as a factor in the number of total moves for the student.

This study examined only present levels of achievement for beginning fourth grade students. A longitudinal study of the academic achievement of students as they complete elementary school, junior high, and high school to determine whether frequent mobility continues to impact students' learning would inform the discussion on the relationship between frequent mobility and low academic achievement.

While some research has been conducted into the effects of student transience on the students of a school or classroom who do not move, further investigation into the possibility of negative effects on the greater good warrant investigation. Some possible
negative results of a steady flow of new students into a classroom include teachers slowing down to accommodate new students, and a sense of constant upheaval within the class.

Educational reforms are designed to serve a population of students that remains in place throughout the school year; yet this is often not the reality in our public schools. Further investigation into reforms and programs tailored to serve a transient population are warranted.

Conducting an anonymous survey of teachers who are employed in schools with highly transient pupil populations could provide valuable insight into teachers' actual handling of new and frequently mobile students. The information provided by such a survey could help to heighten awareness on the part of school personnel to the plight of the children who are moving frequently. Also, a qualitative study involving interviews with children identified as frequently mobile would provide even further empathic understanding of the students and their families.

Finally, this study did not investigate student behavior as it relates to frequent mobility. For additional research, it is recommended that a future study focus on comparison of the behavior patterns of frequently mobile students and stable students, along with the possible correlation between frequent mobility, low academic achievement, and behavior resulting in office referrals. Office referrals may result in additional time out of school due to disciplinary actions such as suspension or expulsion, with the possibility of exacerbating an already existent problem.
Conclusions

The researcher can conclude that this study contributes to the knowledge base on frequent student mobility due to two important findings. They are as follows:

First, the students who change school enrollment frequently during the first three years of school demonstrate significantly lower levels of reading achievement in the area of reading comprehension, as well as on an overall composite DIBELS Next score. These findings coincide with what is already known about the science of the human brain and language acquisition, which takes place best during a window of opportunity that exists during the years before age 8. School district leaders may use this information to assist in important decision-making regarding programs and initiatives to adopt and put into place to assist students who change school enrollment often. Reading without comprehensive understanding is reduced to the meaningless recitation of words. Failure to develop the crucially important skills of comprehension, inference, prediction, and creation will handicap the student throughout his/her school years as the focus of learning changes from learning to read, and becomes reading to learn.

Second, this study provides strong evidence that students who change school enrollment frequently during the first three years of school score lower in reading comprehension than more stable students, regardless of socio-economic status. The question of whether frequently mobile students who fail to progress well academically do so as a result of mobility or as a result of low socioeconomic status has long been debated. In order to best serve the needs of students who fail to achieve educators may sometimes point to factors in the child's life that may seem to be insurmountable, and one of those factors is often socio economic level.
The realization that frequent mobility has the potential to negatively impact a child's academic achievement allows educators to investigate methods and means to assist the voiceless population of transient students with the goal of providing them with the means to improve academically, and the hope that academic advancement will help them to improve their lives in the future.
References


http://www.census.gov/newsroom/releases/archives/mobility_of_


http://www.census.gov/newsroom/releases/archives/mobility_of_

Center on Rural Education and Communities. (2012). *Poverty, housing insecurity and student transiency in rural areas*. Penn State University.


interactions on third graders' reading comprehension by differentiating literacy instruction. *Reading Research Quarterly, 46*(3), 189-212. doi: 10.1598/rrq.46.3.1


*Poverty and Race, (June),* 10/1/12-1-3.


Norm and score conversations with technical information. (1998). *Iowa Test of Basic Skills*.


Plyler vs. doe, 1-3 (U.S. Supreme Court 1982).


SPSS for Windows software, 19.0/ Chicago, IL: http//www.spss.com/software/statistics/


Appendix A

Frequency Tables for All Variables

### a. School

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APPENDIX B:

Permission to Use Northwest Ohio School District
The University of Toledo
Educational Leadership Department
GH100F, Mail Stop 921
Toledo, OH 43606

RESEARCH SUBJECT-APPROVAL LETTER
The Relationship Between School Mobility and the Acquisition of Early Literacy Skills

Principal Investigators:
Dr. Cynthia Beekley UT Professor 419-530-2621
Amy C. Franco Student 419-36-0813
Purpose:

Your approval is being sought for the use of district data in the research project entitled, The Relationship Between School Mobility and the Acquisition of Early Literacy Skills. This research is being conducted at the University of Toledo under the direction of Dr. Cynthia Beekley and Amy C. Franco. The purpose of this study is to determine if fourth grade students of the 2012-13 cohort who enrolled in schools at least three times before the end of third grade had significantly lower academic achievement compared to students who were stable. Additionally, the study will seek to determine the specific literacy skills that students have failed to master.

Description of Procedures:
Existing data from the Washington Local School District will be examined. Dynamic Indicators of Basic Early Literacy Skills (DIBELS) scores from the beginning of the 2012-13 school year will be collected using student ID numbers. Frequently mobile and stable students will be identified through an examination of student cumulative record files.

Potential Risks:
Student data will be kept confidential. Student identification numbers will be used to keep student names anonymous. The district name will not appear in this research study. There are minimal risks involved in the approval of use of the DIBELS data for this study, including loss of confidentiality.

Potential Benefits:
The findings of this study may help school districts involved in the process of determining the causes for low academic achievement. The findings may provide information to be used in the process of...
making data based decisions about methods for schools to use in screening students who are entering schools for the first time, or are re-entering after enrolling in another school. The study will also seek to provide the school system with information identifying specific gaps in students' acquisition of specific, early literacy skills that are crucial for future student achievement. The final portion of this study will entail the identification of research based methods that will provide the school district with an effective methodology for treatment of learning gaps. Most importantly, the results of this study may provide school districts with valuable information regarding why some students achieve while others fail, given the same general learning situation.

Confidentiality:
The researchers will make every effort to prevent anyone who is not on the research team from knowing detailed information about the data the district will provide. Although every effort will be made to protect student confidentiality, there is an extremely low risk that this might somehow be breached.

Contact Information:
Before you decide to give your approval for the use of district data in this study, you may ask any questions that you might have. If you have any questions, you should contact a member of the research team:

Dr. Cynthia Beekley
Amy C. Franco
419-530-2621
419-473-8274 (office) 419-367-0813 (cell)

SIGNATURE SECTION
You are making a decision whether or not you will approve the use of district DIBELS data for this study. Your signature indicates that you have read the information provided above, have had all of your questions answered, and have decided to approve the use of this data in the research.

Mr. Patrick Hickey
Superintendent
Signature
Date

Amy C. Franco
Signature
Date