I, Tanya S. Davis, hereby submit this original work as part of the requirements for the degree of Doctor of Philosophy in Communication Sciences and Disorders.

It is entitled:
The Ohio Achievement Assessment and Deaf / Hearing Impaired Students: Have They Been Left Behind?

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The Ohio Achievement Assessment and Deaf / Hearing Impaired Students: Have They Been Left Behind?

A dissertation submitted to the Division of Research and Advanced Studies of the University of Cincinnati in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY
Ph.D.

in the Department of Communication Sciences and Disorders of the College of Allied Health Sciences

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ABSTRACT

The purposes of this study were 1) to examine Ohio Achievement Assessment data in the content areas of Reading, Science and Social Studies between the years of 2004-2010 to determine whether an achievement gap exists within the disability category of Deaf/Hearing Impaired; 2) to determine whether the trends present in the data of normal hearing students were also present in the data of students who are Deaf/Hearing Impaired, and 3) to determine what impact No Child Left Behind has had on student performance.

Ohio Achievement Assessment data from approximately 900 school districts in the state of Ohio was examined. These assessments were scored by the Ohio Department of Education and posted on their interactive Local Report Card website and disaggregated by school year, disability and race.

Results of the analyses in the content area of Reading revealed significant differences in the percent of normal hearing White Non-Hispanic students scoring Advanced and Accelerated as compared to their normal hearing Black Non-Hispanic peers. Significant differences were also revealed in the percent of Black Non-Hispanic students rated as Basic and Limited achievement as compared to their White Non-Hispanic peers. Trends present for normal hearing students were also present for the D/HI students in that more normal hearing and D/HI Black students scored in the lowest levels as compared to their White Non-Hispanic peers.

In the content areas of Science and Social Studies no difference was observed between the percent of White Non-Hispanic and Black Non-Hispanic normal hearing or D/HI students scoring in either level of proficiency. Trends present for the normal hearing group in the content area of Science were also present for the D/HI group with
more Black Non-Hispanic students scoring Basic. Trends present in the content area of Social Studies for the normal hearing students were also present for the D/HI students with fewer students scoring Advanced and Limited.

In regards to overall performance on the Ohio Achievement Assessment, the effect of No Child Left Behind is not noted as no significant change in student performance was observed for the period of 2004 to 2010. More Black Non-Hispanic normal hearing and D/HI students failed the Ohio Achievement Assessment as compared to their White Non-Hispanic peers which supports the presence of an achievement gap in Ohio public schools for both normal hearing and D/HI students.
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CHAPTER I
INTRODUCTION

Academic achievement gaps, defined as the discrepancy between the academic performance of minority students or those with disabilities as compared to non-minority students, is a major problem for school districts across the nation. This gap between the academic performance of minority and non-minority students is especially noticeable and exists in all school settings--urban, suburban and rural--and is present at all grade levels, from elementary to high school. Historical examinations of the academic performance of the students attending public schools in the nation reveal that on average, African American students have performed significantly lower than their non-minority peers in all academic content areas. As the population of the United States became more diverse, so did the student body of the schools across the nation, resulting in a need to examine the academic performance of other student subgroups. This examination revealed that White Non-Hispanic students outperformed their minority peers in all content areas (Cook & Evans 2000; Dee, 2003). This achievement gap exists between the performance of White Non-Hispanic students and students of many other subgroups including students of Hispanic descent, Black Non-Hispanic students, students with disabilities and students from families of lower socioeconomic status (Dee, 2003).

Significant achievement gaps were also found to exist between the academic performance of students with disabilities (SWD) and normal hearing students. There are several subgroups within the category of students with disabilities, including students with speech and language impairments, cognitive deficits, orthopedic impairments and students who are Deaf / Hearing Impaired (D/HI). Students in the category of D/HI were found to perform significantly below their normal hearing peers in the content area of
reading. Literacy development of students who are D/HI has always been a focal point due to the unique language needs of this population of students as academic success depends largely upon a student’s ability to read and comprehend language. Few if any studies have examined the academic performance of minority and non-minority students within the subgroups that makes up the category of students with disabilities. This study seeks to examine the academic performance of minority and non-minority D/HI students to determine if an academic achievement gap exits within this subgroup as well as to compare the achievement of D/HI students to that of their normal hearing general education peers.

Statement of the Problem

Student academic performance in the content area of reading is a major concern for educators as well as political leaders across the United States, as a students’ reading ability affects their achievement in all other content areas. The literacy skills students possess have a major impact on their ability to comprehend material in the content areas of science and social studies as well as their eventual ability to successfully transition to life after high school and become a productive member of society. Educators and political leaders across the nation agree that in order for students to become adults who are capable of fully participating in local, state, national and global communities, fundamental literacy skills are necessary.

Achievement gaps between the reading performance of minority and non-minority students as well as normal hearing and D/HI students are well documented throughout the literature. Major findings reveal that, on average, White, Non-Hispanic students tend to outperform Black, Non-Hispanic students on reading related tasks in all content areas as early as the first two years of school (Cook & Evans, 2000). The same is
true for normal hearing students as compared to D/HI students with trends showing
students with normal hearing ability significantly outperforming their hearing-impaired
peers (Furth, 1966; Gaustad & Kelly, 2004). These findings suggest a relationship
between race and academic performance as well as between hearing ability and academic
performance.

As a result of the ‘No Child Left Behind Act (NCLB) of 2001’ and the emphasis of
accountability for all students, the achievement of student subgroups has gained much
attention. Many academic programs and strategies have been implemented in schools in
an effort to reduce the discrepancies between the performance of minority and non-
minority students and to eventually eliminate the achievement gap (Gonzalez et al, 2006;
Oberman & Symonds, 2005). The achievement of students with disabilities in particular
has become a topic of interest for districts across the nation as the academic achievement
of this group in particular has impacted school, district and state report cards. Many
districts that have not met the standards set forth by state and federal mandates have
attributed their results to the performance of students with disabilities in their districts.
Little if any research exists on the topic of the academic performance of students within
the subgroup of students with disabilities. (any references?) Less research exists
comparing the academic gains of minority and non-minority D/HI students to that of their
minority and non-minority normal hearing general education peers. This study seeks to
identify the existence of trends in the academic performance of D/HI students as
compared to their general education peers as well as to identify trends in achievement gap
between minority and non-minority students.
Purpose of the Study

The purpose of this study is to explore the academic performance of students who are Deaf/ Hearing Impaired (D/HI) as it relates to literacy by looking at the content areas of Reading, Science and Social Studies to determine how their academic performance compares to that of their normal hearing peers. In this study, the academic performance of minority and non-minority D/HI students was compared to that of their general education normal hearing peers to determine: 1) the existence of an achievement gap within the disability category of Deaf / Hearing Impaired; 2) trends in the academic performance of Deaf / Hearing Impaired students overtime and 3) if these trends are similar to the trends seen in the data of the general education normal hearing student population. This was done by examining data from the 2004-2009 administrations of the Ohio Achievement Assessment. Specifically, this study examined the Reading, Science and Social Studies data of students who were in the 3rd grade during the 04-05 school year and tracked their academic performance each year as they progressed to the next grade (3rd grade, 2004-2005; 4th grade 2005-2006; 5th grade 2006-2007; 7th grade 2008-2009; 8th grade 2009-2010). This study revealed trends that existed in the performance of minority and non-minority D/HI students over time. Examination of the pass fail rates for the groups under study was also done to determined if the initiatives implemented in schools to improve academic performance affected the academic performance of the D/HI subgroup as compared to non-disabled students.

The existence of trends in the academic performance of normal hearing minority and non-minority students was determined and compared to the performance of D/HI minority and non-minority students. Data collected for this study were intended to provide evidence as to whether the educational strategies implemented in schools as a
result of NCLB addressed the needs of all students, particularly students who are D/HI or if this group of students continues to be left behind.

Significance of the Study

The significance of this study is paramount, as it will contribute valuable insight into the effect of current educational reform and accountability on the academic performance of students attending public schools. In light of the amount of resources that have been dedicated to the implementation of NCLB in schools across the nation it is necessary to determine if these educational strategies truly impact the performance of all students, not just those who have normal hearing and are non-minority. The results of this study may lead to examination of the other categories that constitute the subgroup of students with disabilities to determine if any gains have been made in the academic progress of any students with disabilities and the impact of NCLB on achievement gaps within these subgroups. The results of this study may be utilized to aid in the development and implementation of educational strategies focused on improving the academic performance of all students, including students with disabilities.

It is important for school administrators and educational policy developers to be able to utilize this information for immediate insight and decision-making in support of educational accountability as it relates to students with disabilities. Key strategies have been proven to produce gains in the academic performance of both general education students and students with disabilities however these strategies have not been widely implemented with NCLB. The results of this study will also contribute valuable insight and theory into the development of targeted training programs for intervention specialists who are responsible for the education of students with disabilities.
Research Questions

1. Is there a difference between the scores achieved in each level of proficiency in the content area of Reading on the Ohio Achievement Assessment by White Non-Hispanic, normal hearing and D/HI students and the scores achieved by Black Non-Hispanic normal hearing and D/HI students?

2. Are the trends present in the content area of Reading on the Ohio Achievement Assessment for Black Non-Hispanic and White Non-Hispanic normal hearing students also present in the data for Black Non-Hispanic and White Non-Hispanic D/HI students?

3. Is there a difference between the scores achieved in each level of proficiency in the content area of Science on the Ohio Achievement Assessment that was administered during the academic years of 2006-2007 and 2009-2010 to White Non-Hispanic, normal hearing and D/HI students and the scores achieved by Black Non-Hispanic normal hearing and D/HI students?

4. Are the trends present in the content area of Science on the Ohio Achievement Assessment that was administered during the academic years of 2006-2007 and 2009-2010 for Black Non-Hispanic and White Non-Hispanic normal hearing students also present in the data for Black Non-Hispanic and White Non-Hispanic D/HI students?

5. Is there a difference between the scores achieved in each level of proficiency in the content area of Social Studies on the Ohio Achievement Assessment that was administered during the 2006-2007 school year by White Non-Hispanic, normal hearing and D/HI students and the scores achieved by Black Non-Hispanic normal hearing and D/HI students?
6. Are the trends present in the content area of Social Studies on the Ohio Achievement Assessment that was administered during the 2006-2007 school year for Black Non-Hispanic and White Non-Hispanic normal hearing students also present in the data for Black Non-Hispanic and White Non-Hispanic D/HI students?

7. Has the percentage of Black and White Non-Hispanic normal hearing students and D/HI students passing or failing the OAA changed since implementation of NCLB?

8. Is there an achievement gap within the disability category of D/HI based on overall student performance on the OAA administered between the academic years of 2004-2005 and 2009-2010?

General Aim

The goal of this research is to determine if the achievement gap that exists between the academic performance of non-disabled, normal hearing Black and White Non-Hispanic students also exists within the disability category of Deaf/ Hearing Impaired.

Specific Aims

1. Examine Ohio Achievement Assessment data in the content areas of Reading during the years of 2004-2010 (grades 3-8), Science during the years of 2006-2007 and 2009-2010 (grades 5 and 8), and Social Studies during the year of 2006-2007 (grade 5 only).

2. Describe observed trends in the Ohio Achievement Assessment data for normal hearing and D/HI Black and White Non-Hispanic students and determine if the trends present in the data of the normal hearing students are also present in the data of the D/HI students.
3. Determine if an achievement gap exists within the disability category of D/HI.

Hypotheses

Hypothesis 1: There is a significant difference between the scores achieved in each level of proficiency in the content area of Reading on the Ohio Achievement Assessment by White Non-Hispanic, normal hearing and D/HI students and the scores achieved by Black Non-Hispanic normal hearing and D/HI students.

Hypothesis 2: The trends present in the content area of Reading on the Ohio Achievement Assessment for Black Non-Hispanic and White Non-Hispanic normal hearing students are also present in the data for Black Non-Hispanic and White Non-Hispanic D/HI students.

Hypothesis 3: There is a difference between the scores achieved in each level of proficiency in the content area of Science on the Ohio Achievement Assessment that was administered during the academic years of 2006-2007 and 2009-2010 by White Non-Hispanic, normal hearing and D/HI students and the scores achieved by Black Non-Hispanic normal hearing and D/HI students.

Hypothesis 4: The trends present in the content area of Science on the Ohio Achievement Assessment that was administered during the academic years of 2006-2007 and 2009-2010 for Black Non-Hispanic and White Non-Hispanic normal hearing students are also present in the data for Black Non-Hispanic and White Non-Hispanic D/HI students.

Hypothesis 5: There is a difference between the scores achieved in each level of proficiency in the content area of Social Studies on the Ohio Achievement Assessment that was administered during the 2006-2007 school year by White
Non-Hispanic, normal hearing and D/HI students and the scores achieved by Black Non-Hispanic normal hearing and D/HI students.

**Hypothesis 6:** The trends present in the content area of Social Studies on the Ohio Achievement Assessment that was administered during the 2006-2007 school year for Black Non-Hispanic and White Non-Hispanic normal hearing students are also present in the data for Black Non-Hispanic and White Non-Hispanic D/HI students.

**Hypothesis 7:** The percentage of Black and White Non-Hispanic normal hearing students and D/HI students passing or failing the OAA has changed since implementation of NCLB.

**Hypothesis 8:** There is an achievement gap within the disability category of D/HI based on overall student performance on the OAA administered between the academic years of 2004-2005 and 2009-2010.

Null Hypotheses

**Null Hypothesis 1:** There will not be a significant difference between the scores achieved in each level of proficiency in the content area of Reading on the Ohio Achievement Assessment by White Non-Hispanic, normal hearing and D/HI students and the scores achieved by Black Non-Hispanic normal hearing and D/HI students.

**Null Hypothesis 2:** The trends present in the content area of Reading on the Ohio Achievement Assessment for Black Non-Hispanic and White Non-Hispanic normal hearing students are not present in the data for Black Non-Hispanic and White Non-Hispanic D/HI students.
Null Hypothesis 3: There is not a difference between the scores achieved in each level of proficiency in the content area of Science on the Ohio Achievement Assessment that was administered during the academic years of 2006-2007 and 2009-2010 by White Non-Hispanic, normal hearing and D/HI students and the scores achieved by Black Non-Hispanic normal hearing and D/HI students.

Null Hypothesis 4: The trends present in the content area of Science on the Ohio Achievement Assessment that was administered during the academic years of 2006-2007 and 2009-2010 for Black Non-Hispanic and White Non-Hispanic normal hearing students are not present in the data for Black Non-Hispanic and White Non-Hispanic D/HI students.

Null Hypothesis 5: There is not a difference between the scores achieved in each level of proficiency in the content area of Social Studies on the Ohio Achievement Assessment that was administered during the 2006-2007 school year by White Non-Hispanic, normal hearing and D/HI students and the scores achieved by Black Non-Hispanic normal hearing and D/HI students.

Null Hypothesis 6: The trends present in the content area of Social Studies on the Ohio Achievement Assessment that was administered during the 2006-2007 school year for Black Non-Hispanic and White Non-Hispanic normal hearing students are not present in the data for Black Non-Hispanic and White Non-Hispanic D/HI students.

Null Hypothesis 7: The percentage of Black and White Non-Hispanic normal hearing students and D/HI students passing or failing the OAA has not changed since implementation of NCLB.
Null Hypothesis 8: There is not an achievement gap within the disability category of D/HI based on overall student performance on the OAA administered between the academic years of 2004-2005 and 2009-2010.

Definitions of Terms

Achievement Gap – the disparity in the academic performance of one group of students as compared to another. In regards to this study, the disparity in the academic performance of White Non-Hispanic students and their Black Non-Hispanic peers where the White Non-Hispanic students outperform the Black Non-Hispanic students at a rate of statistical significance in every content area.

Accountability – individual school districts and states being held responsible for specified academic results or outcomes of the students they educate

Black Non-Hispanic Students – students of African American descent without Hispanic influence

Core Content Areas – the principle academic subjects taught in schools; Reading (Language Arts), Science, and Social Studies

Deaf– a category of hearing impairment in which the individual has hearing levels that exceed 90 decibels average hearing level bilaterally

Deaf / Hearing Impaired – special education disability category

Hearing Impaired– having unaided average hearing levels greater than 25 decibels bilaterally

Language – a complex and dynamic system of conventional symbols used in various modes for thought and communication

Literacy – the ability to read and write effectively
Students with disabilities – students evaluated in accordance with rule 3301-51-06 of the Administrative Code and identified as having a cognitive disability, deafness / hearing impairment, a speech or language impairment, a visual impairment, a serious emotional disturbance, an orthopedic impairment, autism, traumatic brain injury, an other health impairment, a specific learning disability, deaf-blindness, or multiple disabilities, and who, by reason thereof, require special education and / or related services.

White Non-Hispanic students – students of White, Caucasian descent without Hispanic influence
CHAPTER II

REVIEW OF LITERATURE

In order to begin examining the research questions listed above, it is necessary to first understand aspects of federal laws that affect education, specifically the *No Child Left Behind Act* as it is applied to education of students who are Deaf or Hearing Impaired (D/HI). It is also necessary to understand the emphasis placed on educational accountability and the role of the Ohio Achievement Test as it relates to educational accountability in the state of Ohio. The relationship between language and reading as it pertains to the overall performance of D/HI students in the content area of reading will be discussed. The impact of reading as a skill on academic performance in other content areas (science and social studies) will be discussed as well. The following information will provide a review of related literature on these topics.

Educational Laws

The federal government plays an indirect but important role in education through funding and land grants while individual states assume a direct role in education by having the sole responsibility to create the specific laws that govern education in local school districts. The federal government provides assistance to states in the form of categorical grants which include the Acts that serve as the foundation for special education law; the Elementary and Secondary Education Act of 1965 (ESEA) which provides money to states to improve education for students with disabilities, the Education for All Handicapped Children Act of 1975 (now the Individuals with Disabilities Education Improvement Act), The Improving America’s Schools Act of 1994 (IASA), President Clinton’s Goals 2000: Educate America Act, and the No Child Left Behind Act of 2001, the 2001 reauthorization of IASA (Yell, 2006). These categorical
grants provide assistance to state educational systems and shape educational policy in the states by setting guidelines authorizing how these funds can be used. Though states have the option of electing to accept or not accept these grants, not accepting these grants results in states not receiving much needed federal assistance.

Education and school funding are responsibilities given to state governments as indicated by the 10th amendment of the U.S. Constitution. NCLB has had the greatest infiltration of the federal government into education in the history of the United States (Yell, 2006). NCLB is the first federal legislation to have created stringent criteria on how education is delivered at the state level and is the first law to penalize schools for non-compliance. This law will be discussed in detail due to its role in governing education today.

The No Child Left Behind Act

The No Child Left Behind Act (NCLB) was signed into law on January 8, 2002. The intention of this law is to ensure that all students have “a fair, equal, and significant opportunity to obtain a high-quality education and reach, at a minimum, proficiency on challenging State academic achievement standards and state academic assessments” and to close the achievement gap (Yell, 2006). NCLB attempts to accomplish this by aligning standards to high quality academic achievement testing, ensuring that instruction and academic programs offered in schools are scientifically based, holding schools accountable for the academic achievement of their students, equitably distributing resources to schools based on need and ensuring that teachers are highly qualified in the specific content areas that they are teaching (Yell, 2006). NCLB focuses on increasing the academic achievement of all public school students and improving the performance of low performing schools by requiring states to measure the progress of their students.
annually. States must set proficiency standards that school districts must attain within a set period of time. The results of student progress must be reported to parents and shared publicly.

The performance goals of NCLB state that by the 2013-2014 school year, all students will reach high academic standards, at a minimum, attaining proficiency or better in reading and mathematics and that all limited English proficient (LEP) students will become proficient in English and reach high academic standards, at a minimum, attaining proficiency or better in reading/language arts and mathematics. NCLB further states that all students will be educated in learning environments that are safe, drug free, and conducive to learning and that all students will graduate from high school. A performance goal was set when NCLB was developed indicating that by the year 2005-2006 academic year all students will be taught by highly qualified teachers. This goal has yet to be met. The law requires that each state develop a standard, called adequate yearly progress (AYP), to determine if schools are meeting state standards each year in a manner sufficient to allow 100% of their students to be proficient in reading and math by 2014. The law also requires that states test all students on statewide assessments and allows schools to provide students with disabilities access to testing accommodations and alternate means of assessments if needed (NCLB, 2001).

*The Achievement Gap and NCLB*

Considerable evidence exists regarding the persistence of the Achievement Gap; the continuing discrepancy that exists between the academic achievement of minority and economically disadvantaged students as compared to non-minority and affluent students. Lower standardized scores have been reported for both African American and Hispanic students as compared to other ethnic groups with African American students reported as
having the poorest academic performance of any major racial or ethnic group in the United States in all subjects, regardless of class levels (Gonzalez, Yawkey & Minaya-Rowe., 2006; Noguera, 2003; Oberman & Symonds, 2005). Many factors contribute to this disparity either within the school such as curriculum, academic rigor, teacher perceptions, school resources, or outside the school such as the educational level of the parents, socioeconomic status and family resources (Cook & Evans, 2000; Davis 2003; Dee, 2003; Gonzalez, 2001; Jencks & Phillips, 1998; Roscigno, 2000; Taylor, 2003).

Numerous studies have attempted to identify the degree to which differences within schools rather than outside schools account for documented disparities in test scores. As early as 1998, Jencks & Phillips published *The Black-White, Non-Hispanic Test Score Gap* referencing several studies that examined the nature and cause of this disparity. Urban school districts report lack of resources, inferior or non-existent curricula and lack of academic rigor as the major within school factors restricting the achievement of minority students. Negative teacher perceptions regarding the academic potential of minority students and lack of cultural sensitivity have been cited as the major factors affecting the performance of minority students attending rural and suburban schools. Several studies establish that two factors in particular; family income and parental educational level, are the primary outside contributors to the achievement gap for low income and minority students (Dee, 2003; Roscigno, 2000). High school test score surveys conducted between 1965 and 1992 revealed a reciprocal relationship between socioeconomic status and student performance; as socioeconomic status declined so did student performance (Jencks & Phillips, 1998). The rationale for this relationship being lack of family resources and limited access to educational experiences outside of those offered at school to reinforce education at home (Gonzalez, 2001).
Students from families stricken with poverty were also found to present with non-educational needs such as hunger and improper clothing which negatively impacted their ability to focus and learn while in class until these needs were adequately addressed (Cook & Evans, 2000; Gonzalez, 2001). Parents with limited educational experiences, who dropped out of school and those who recount negative experiences when they were in school pass these negative attitudes down to their children as well, further perpetuating the cycle of disadvantage and under-education in future generations (Davis, 2003; Dee, 2003; Taylor, 2003). These parents are often ill equipped to advocate for their children, as they do not understand how to navigate through the educational system to ensure that their children achieve academic success (Davis, 2003).

In an effort to reduce this gap in achievement, The No Child Left Behind Act (NCLB) was signed into law in 2002 changing the face of education with major reforms. The aim of NCLB is to “close the achievement gap with flexibility, accountability and choice so that no child is left behind” (NCLB, 2001). To achieve this goal, major reforms were enacted to hold schools accountable for accomplishing this task and ensuring that every child receives an education and makes academic progress in school.

NCLB and Education of the Deaf

In the 1970s, the Education for All Handicapped Children Act significantly impacted the field of Deaf education. State sponsored public schools for the Deaf were no longer allowed to operate differently from other public schools in the nation. Schools for the Deaf were now held accountable to comply with the same standards and implement the laws as other public schools. Federal mandates regarding special education reportedly had been met with disdain by educators of the Deaf who asserted that Deaf children should be considered differently from other students with disabilities
due to their unique learning challenges and educational needs (Cawthon, 2007; Loedon & Crittenden, 1993; Marschark, 1997; Steffan, 2004). The requirement that students are educated in the least restrictive environment with normal hearing peers and inclusionary practices were challenged as educators of the deaf believed that the need for deaf students to be educated with their peers in an environment well designed specifically to meet their educational needs was disregarded.

Educators of D/HI students believe that due to the unique academic needs of these students and their inherent membership in a cultural and linguistic minority group, students who are D/HI should not be categorized under the broad umbrella of students with disabilities (Cawthon, 2007; Ramsey, 1997). Educators of the Deaf continue to fight special education mandates asserting that NCLB does not consider the specific academic needs and greater challenges that students who are D/HI encounter at school (Cawthon, 2007; Marschark, 1997). As such, three components of NCLB are under scrutiny by Deaf educators: AYP, student assessments and HQT.

**NCLB Structure**

As previously stated, the purpose of NCLB is to close the achievement gap by holding schools accountable for educating all students and to assure that every public school student achieves by meeting set academic standards and educational goals, and is taught in a safe school environment by highly qualified teachers. Public school districts across the nation are charged with the responsibility of making sure that all students attain 100% proficiency on assessments that measure set academic standards. In addition, all students are expected to meet proficiency; this includes students of color, students from economically disadvantaged backgrounds, students with limited English proficiency and students with disabilities. NCLB strives to close the achievement gap
and produce American students who can compete in a global economy with their foreign counterparts.

NCLB has over 800 mandates for educators and six priorities in its efforts in closing the achievement gap. Appendix A presents the six priorities of NCLB that serve as the guiding principles of the law and are the primary areas that are being addressed by school districts across the nation. Other requirements include ensuring that every child is able to read by the third grade and developing school report cards to inform parents and community stakeholders of each school’s performance. In addition to these priorities, NCLB was designed to achieve the goals set forth by the law. These goals serve as the foundation for the ten titles or sections of NCLB, which are listed in Appendix B. Yell (2006) outlined the rigorous goals of NCLB, which are as follows:

- All students will achieve high academic standards by attaining proficiency or better in reading and mathematics by the 2013-2014 school year.
- Highly qualified teachers will teach all students by the 2005-2006 school year.
- All students will be educated in schools and classrooms that are safe, drug free, and conducive to learning.
- All limited English proficient students will become proficient in English.
- All students will graduate from high school (p. 181).

Three priorities of NCLB-- Adequate Yearly Progress (AYP), Highly Qualified Teachers (HQT) and Assessment--have significant effects on special education (Cawthon, 2007; Elliott & Braden, 2000). AYP impacts special education by requiring that students with disabilities are allowed to participate in statewide assessments and that the school district report these scores to the state. HQT establishes that students with disabilities receive the same quality instruction as their normal hearing peers and that this
instruction is provided by a teacher certified in the specific content areas being taught (Elliott & Braden, 2000). Accountability impacts special education similarly to AYP requiring that students with disabilities participate in statewide assessments and that students make progress on district-wide assessments as well.

*Adequate Yearly Progress (AYP).*

Adequate Yearly Progress (AYP) is a target set by each individual state that must be met by each public school district within that state. The results of the statewide assessments serve as the basis from which AYP targets are set. Student results are disaggregated by subgroup, depending upon the number of students in a particular group within the school. The minimum student group size is 30 for regular education students and 45 for students with disabilities. Thus, if there are 30 or more students in a particular subgroup (African-American, American Indian / Native Alaskan, Hispanic, Economically Disadvantaged, Limited English Proficient, etc.) their scores are reported and weighted into Adequate Yearly Progress. A starting point was established for AYP and each year, schools are expected to improve upon previous scores, thus making adequate progress each year towards achieving the goal of reducing the achievement gap and 100% student achievement by 2012 (Erpenbach, Forte-Fast & Potts, 2003). AYP targets for the 2007-2008 school year are included in Appendix C.

There are two ways for a school to make AYP. The first way is to have at least 95% of enrolled students participate in testing program (by subgroup), to have all students and all subgroups score at least proficient in statewide assessments, meet AYP targets for that year, and have all students and all subgroups meet the AYP target for graduation or attendance. The second way for schools to make AYP is called Safe Harbor. To make Safe Harbor, at least 95&% of students enrolled must participate in statewide testing (by
subgroup), the percentage of students in subgroups not scoring at least proficient
decreases by at least ten percent from the previous year, and students in each subgroup
must make progress in their graduation rate or attendance rate. The scores for every sub-
group must be at or above the annual AYP target set for that year’s goals or improvement
must be made from the goals achieved the previous year. The state of Ohio issues a
school report card to monitor the performance of its schools in reaching Adequate Yearly
Progress and meeting each of the required state indicators. (See Appendix D for Ohio
Test Content) Based upon the number of state indicators met, the school’s performance
index score, and whether or not individual schools made AYP, schools are given a
designation as Excellent with Distinction, Excellent, Effective, Continuous Improvement,
Academic Watch, or Academic Emergency.

NCLB’s effect on education is tremendous as it not only affects funding but the
teaching and learning that takes place inside of schools as well as. This is the first time in
the history of the United States that federal legislation has taken such a huge role in
education as there are benefits for schools that make AYP, as well as consequences for
schools that do not (Yell, 2006). These benefits and consequences are uniform across all
school districts in the United States. The primary benefit for schools that achieve AYP is
continued federal funding through NCLB. Public recognition is one of the rewards also
as school designations are posted on the state website and the district as well as the
school receives awards from the federal government. Because of the importance of the
student achievement and the federal challenge to reduce gaps in performance, specific
consequences have been identified for schools that do not make AYP and are determined
to not be in compliance with federal laws. The severity of consequences is dependent
upon the number of years the school does not make AYP, beginning after the first year.
Consequences for low performance include the school receiving technical assistance from their district, development of a 2-year improvement plan, “school of choice” for students, supplemental education services being offered to students, corrective action, and school restructuring. All levels can potentially be impacted by AYP as it is possible for individual schools, school districts and entire states not to make AYP. These federal consequences are indicated at each states website so that all schools within the state are fully aware.

*AYP and D/HI students.*

NCLB requires that states develop a standard, AYP, to determine if schools are meeting state standards. AYP is reported annually and the federal government monitors and tracks whether schools are meeting the target of reaching 100% proficiency by all students in the areas of reading and math by 2014. AYP places the same high standards of academic achievement for all students on all schools, including schools for the Deaf. In the 2002-2003 school year, only 3 schools for the Deaf met the targets set for AYP (NCLID, 2006). When schools fail to make AYP, parents have the right to remove their child from the school and place them in the school of their choice, allowing parents a more active role in their participation in their child’s education. AYP is the section of the NCLB that allows parents choice in their child’s education. A central question for most families with children who are D/HI regards the appropriate place of education for their child. Equal access to free and appropriate public education (FAPE) as outlined in the 2004 reauthorization of IDEA is part of this choice. As such, parents have many options on education, ranging from schools designed specifically for D/HI children to mainstreamed programs within public schools (Cawthon, 2007). The major concern regarding the school of choice portion of AYP is the effect schools of choice will have on
achievement of Deaf students as few educators of the Deaf are employed in alternative schools and few alternative schools are equipped to handle the specialized academic needs of D/HI students (Moores, 2005).

As previously stated, each individual state assumes a direct role in education by having the sole responsibility to create the specific laws that govern education in local school districts. Though NCLB governs most educational settings today, the unique and varied interpretations by the individual states result in this legislation affecting public school programs and schools for the Deaf differently (Cawthon, 2007). Because each state is allowed to develop its own system for reporting student progress a uniform system allowing for nationwide comparisons (of student success) within the law is not available, thus there are in fact 50 different versions of NCLB (Moores, 2005).

In the area of AYP, sub-groups have been identified that must be included in the schools report of student progress. Those sub-groups are students from different racial and ethnic backgrounds, students who receive free and reduced lunch (low socio-economic status), students with disabilities, and students who are limited in English proficiency. The AYP scores of D/HI students in their local school district are compared to the AYP of D/HI students who attend schools for the Deaf (Moores, 2005). Four categories were defined for the individual state program reporting scores of students who are D/HI. These four categories are: 1) the school for the Deaf receives its own AYP report card; 2) the assessment scores for individual students are sent to the referring school district: 3) individual student scores are aggregated at the state level or 4) schools for the Deaf are exempt from score reporting (Cawthon, 2007; U.S. Department of Education, 2002). In 2004, forty-five states were reported as having publicly funded schools for the Deaf (Cawthon, 2007). Less than two thirds of these schools received
their own school report card and AYP status for students during the 2004-2005 school year, one third reported data to a referring school, two schools were considered exempt from AYP reporting and one school aggregated data to the state level. As Moores (2005) points out, the major flaw of AYP in regards to schools of the Deaf is that entire school scores are being affected by performance of students with D/HI students. Although students with disabilities are included in AYP, scores are not disability specific and there are no clear guidelines or strategies for helping these students achieve the rigorous standards set by NCLB (Moores, 2005).

Highly Qualified Teachers and Paraprofessionals

The United States Department of Education has determined that the quality and skill of teachers has a significant effect on student achievement. States are required to develop a plan ensuring that all teachers who teach core academic subjects are highly qualified. The principle of Highly Qualified Teachers and Paraprofessionals was designed to address the issue of teachers having the appropriate skills and knowledge to teach their respective content areas. To meet HQT standards, teachers must hold a bachelor’s degree or higher from a college or university, have full certification or licensure in the subject matter they teach, and pass a state test indicating sufficient content knowledge of the subject being taught (Yell, 2006). Each state’s Department of Education has High Objective Uniform State Standards of Evaluation (HOUSSE) to evaluate a teacher’s knowledge and ability (Moores, 2005). Paraprofessionals are also required to be highly qualified and must have either a minimum of 2 years of college, an associate’s degree, or be able to demonstrate “rigorous quality standards” (Yell, 2006, p. 211) on a state test. NCLB further defines which duties are to be performed by the teacher and which duties are appropriate for paraprofessionals to perform.
Intervention specialists are required to meet the same standards as regular education teachers with a bachelor’s degree at minimum as well as full special education certification. Also, similar to regular education teachers, special education teachers must pass HOUSSE standards based on the level of school they teach (elementary, middle and high school) proving that they have knowledge in core academic subjects. Unique to special education teachers is the requirement that they are highly qualified in every core academic subject they teach. Special educators have met this requirement with much controversy as educators in self-contained classrooms who teach all content areas may potentially need certification in every area (English, math, science and social studies) (Erpenbach, et al, 2003; Nagel, Yunke & Malmgren, 2006; Yell, 2006). Further, it is mandated that high school teachers who work with students who are on an elementary level of instruction be knowledgeable of the subject matter on a level that they will be teaching. The professional requirements of teachers have become more rigorous today than in the past, thus a high school special education teacher working with students who are at a 5th grade reading level must have knowledge of 5th grade reading instruction and standards as well knowledge of secondary reading instruction and standards. This increase in professional expectations is due to the belief that highly qualified teachers who have substantial knowledge of their content areas and exemplary teaching skills will improve instructional delivery to students and increase student achievement.

HQT and D/HI students.

Before NCLB, special education teachers and educators of the Deaf were considered “highly qualified” in their respective areas simply by obtaining state licensure from approved programs (Luft, 2008). IDEA required that these educators have training and degrees specific to the disability area they were teaching. Under NCLB, the expectation
is that all students are educated by Highly Qualified Teachers (HQT). NCLB currently requires that all teachers have the required training, pass required statewide assessments, and have licensure in the core academic subjects being taught. Elementary teachers are not considered to be content specialists, thus they are required to pass rigorous state tests in areas of elementary curriculum including reading, writing, and mathematics. Secondary educators (middle and high school teachers) are considered content specialists, thus they must pass a rigorous state examination in each core content area taught; language arts, mathematics, social studies, and science. Educators teaching non-core instructional areas such as special education and vocational teachers must meet these same rigorous criteria. In addition, they must also have content specific licensure if they provide instruction to secondary students in core content areas. The problem for educators of the Deaf is that they now have to meet the requirements of both laws, and that NCLB mandates do not consider those put in place by IDEA (Luft, 2008).

Furthermore, many special educators question whether NCLB mandates which are geared towards improving the instructional practices of general education teachers also support improvement of the instructional practices of these teachers given their roles within the general teaching population (Luft, 2008).

Title IX of NCLB addresses the issue of HQT by establishing standards to ensure that highly qualified general and special educators educate all students. Under Title IX of NCLB, an elementary or secondary teacher is considered HQT if that teacher meets certain criteria. A “highly qualified” teacher has obtained full teacher certification from their state licensing agency and be able to demonstrate, through a formal state or local academic assessment, knowledge of and the ability to assist in instructing reading, writing, and mathematics (or, as appropriate, reading readiness, writing readiness, and
mathematics readiness) (Yell, 2006). Elementary school teachers must hold at least a bachelor’s degree in addition to having passed the State test demonstrating general subject knowledge and instructional skills in the areas of elementary curriculum as discussed above. If the teacher is a high school or middle school teacher new to the profession, they must hold at least a bachelors degree and have demonstrated competency in each of the core academic subjects they teach or have successfully completed a graduate degree, advanced certification, or an academic major in each core academic content area taught. If the teacher is not new to the profession, the teacher must hold at least a bachelors degree and demonstrate competency in each core academic content area taught. The majority of educators of the Deaf are employed in public school settings, thus bound by the mandates of NCLB. As such many of these educators are finding it difficult to meet the rigorous standards of NCLB and demonstrate the type of expertise needed to be considered HQT (Luft, 2008).

Assessment

The “Accountability for Results” premise of NCLB focuses on two aspects of education; improving academic performance of all students attending public schools, and improving the functioning of low performing schools. This is addressed in the third priority of NCLB, Assessment. In an attempt to comply with federal standards, states across the nation have developed rigorous standards that define what students should know and be able to do at each grade level. High stakes standardized assessments were developed to gauge and monitor student academic performance (Sanders & Horn, 1995). The state of Ohio developed specific benchmarks or academic standards that are uniform for all schools throughout the state. Thus a 3rd grade student being educated in the Akron public school district is required to meet the same benchmarks as a 3rd grade student in
being educated in the Cincinnati public school district. These benchmarks or academic standards serve as the foundation for the standardized assessments used throughout the state. As a result of the development of state-wide standards, states were required to develop valid and reliable assessments that could be used uniformly across each individual district to monitor student progress, track mastery of the state-wide academic standards, and hold each individual school accountable for their own results. Despite the fact that standardized testing has long been criticized for its bias, inaccurate assessment of student ability, emphasis on quantitative rather than qualitative aspects and the uninformative and misleading results achieved by standardized reading assessments, standardized assessments are administered to students at least twice each academic year (Orfield & Kornhaber, 2001; Phillips, 1994; Sanders & Horn, 1995).

Assessment and D/HI students.

Another criticism of NCLB as it relates to D/HI students is that although students with disabilities are mentioned in the sub- categories of AYP, the overall goal of NCLB is the education of all students and meeting of academic standards by all students (Moores, 2005). NCLB assessments are based on standardized assessments where special education students are expected to demonstrate the same competency of academic standards as general educations students. All students, including students with disabilities are required to be assessed annually on statewide assessments, schools are required to provide students with disabilities access to testing, and students with disabilities are either allowed accommodations for testing or able to participate in alternate assessment if needed. All students are expected to reach 100% proficiency in the area of reading by 2014, and all students must be assessed annually demonstrating a 5% improvement per year in achievement scores (CEC, 2002). Though student results
may be disaggregated, the results of students with disabilities must be considered against the same achievement standards as students in the general education population (Luft, 2008). With the mandates of student assessments and annual monitoring of progress in the areas of reading and math, Deaf educators believe that it will be difficult for Deaf students to attain this goal (Moores, 2005). Because the focus of NCLB is “all” students, no specific attention is given to D/HI students nor the population of special education students in general thus these students do not receive any additional assistance in attaining NCLB’s goals of 100% proficiency in math and reading by the year 2014 (Luft, 2008).

In the area of reading assessment, NCLB focuses on the Reading First initiative of which there are five components; phonemic awareness, phonics, fluency, vocabulary, and comprehension. Due to the strong emphasis on teaching reading through sound, educators of the Deaf contest that D/HI students will automatically fare poorly on the mandated assessments based on the information discussed in previous sections. Teaching Deaf children to read has long been an issue of discussion in the Deaf community. Educators of the Deaf believe that the goal of 100% success for all students attending public schools by the year 2014 year is unattainable (Moores, 2005).

The Ohio Achievement Assessment

Under NCLB, students in grades 3 through 8 are assessed annually in the core content areas of math and reading. In the state of Ohio students in grades 3 through 8 are administered the Ohio Achievement Assessment (OAA) in the core content areas of math and reading, as well as additional content areas specific to their grade. Science and Social Studies are introduced into the testing procedures at grade 5. Students in grade 10 are administered the Ohio Graduation Test (OGT) in the core content areas of reading
and math as well as content areas specific to their grade. Although the OGT is administered in the tenth grade, eleventh and twelfth grade students are required to re-take all portions of the examination that were not scored as proficient or above upon first administration in order to obtain a high school diploma. The specific content areas of the OAA and OGT that are addressed at each grade level are indicated in Appendices E, F and G.

The OAA is a series of tests that are aligned to the state of Ohio’s academic content standards. The content standards describe what students are expected to know at the end of each grade in the core academic areas of reading, writing, mathematics, science, and social studies, depending on the grade the student is in when the test is administered. This study will only consider the student results on the sections of reading (grades 3-6), science (grades 5 and 8), and social studies (grade 5 only). Each section of the OAA focuses on four specific content standards. The content standards addressed in the reading section of the OAA are Reading Process: Concepts of Print, Comprehension Strategies and Self-Monitoring Strategies, Reading Applications: Informational, Technical and Persuasive Text, Reading Applications: Literary Text, and Acquisition of Vocabulary. The science section of the OAA is composed of 4 reportable categories that address 6 content standards. The content standards addressed are Earth and Space Sciences, Life Sciences, Physical Sciences and Scientific Processes. The Scientific Processes section is divided into three areas and addresses the content standards of Scientific Inquiry, Science and Technology and Scientific Ways of Knowing. The content areas addressed in the social studies section of the OAA are Economics, Government and Citizenships Rights and Responsibilities, History, People in Society and Geography and Social Studies Skills and Methods.
Multiple-choice items and at least one constructed response assess all sections of the reading portion of the OAA, except the Acquisition of Vocabulary section. The Acquisition of Vocabulary section of the reading assessment is assessed with multiple-choice questions only. The four reportable categories of the science section of the OAA is assessed by multiple choice questions and at least one constructed response. The six standards of the science portion are assessed by at least one multiple-choice item and one extended response item over a testing cycle of four operational test forms. Each operational test form includes 6 field test items that are not included as part of the student’s score. Multiple-choice items and at least one constructed response assess the four content standards addressed on the social studies section of the OAA. The History standard and the Social Studies Skills and Methods standard of the OAA are assessed by short answer questions rather than extended response. The People in Societies and Geography, Economics and Government and Citizenship Rights and Responsibilities standards are assessed by means of one extended response and either one short answer or two additional multiple choice items. Results of each section of the test are reported using a scaled score for overall achievement as well as raw score points for each of the standards mentioned above. A description of each standard is listed in the Appendices (Appendix A Reading; Appendix B Science; Appendix C Social Studies).

Ninety five percent of all students who attend public schools are required to participate in state assessments. This mandate must be met by all public school districts receiving federal funds in the United States in order for individual schools within the district to continue receiving federal funding under NCLB (Linn, 2000; Yell, 2006). NCLB takes into consideration the fact that some students with disabilities attending public schools may have significant academic delays as compared to their normal hearing
peers, thus students with severe cognitive disabilities (mental retardation) are allowed to participate in alternate assessments. Although this is true, the criteria for participation in alternate assessment is quite stringent allowing only a certain number of students (1% per state) to take this type of alternative assessment (Cawthon, 2007; Elliott & Braden, 2000; Hill, 2001; Moores, 2005; Quenemoen, Rigney & Thurlow, 2002; Roeber, 2002; Thurlow et al, 1997).

**Performance Level Indicators**

The performance level indicators for the each portion of the OAA are Limited, Basic, Proficient, Accelerated and Advanced (Office of Assessment, 2006). Students must obtain a score of Proficient or better to pass the examination. On the third grade Reading portion of the OAT a performance level of “Limited” indicates that a student has not yet acquired the academic skills identified as acceptable at the “Basic” level (Office of Assessment, 2006). Students receiving scores at the “Basic” level are able to make limited use of reading comprehension strategies including inferencing, predicting, comparing and contrasting, summarizing and building meaning from text (Office of Assessment, 2006). Students performing at this level inconsistently answer inferential and evaluative questions. “Proficient” level performance indicates the ability to usually apply comprehension strategies to construct meaning and use their understanding of the elements of literature and the author’s use of language to develop an accurate understanding of the text (Office of Assessment, 2006). Students performing at the “Accelerated” level consistently apply comprehension strategies to develop a thorough understanding of materials read (Office of Assessment, 2006). These students are able to identify and describe various literary elements and respond accurately to inferential and evaluative questions. They are also able to relate what they have read to their own
personal experiences. Students performing at the “Advanced” level develop a thorough and cohesive understanding of materials read (Office of Assessment, 2006). These students are able to use text structures to interpret, evaluate and extend what they have read and consistently respond accurately to all types of questions about what was read. They are able to use critical reasoning skills to evaluate text and relate their understanding of textual information to other texts or situations.

The performance level indicators have different meanings at different grades. On the Reading portion of the fourth grade OAA a proficiency rating of “Advanced” indicates that a student goes beyond understanding what they read and are able to draw conclusions, make judgments about plot and character. A student who scores in the “Accelerated” range understands types of fiction such as fantasies and fables that contain more complex stories and characters. Students scoring in the “Proficient” range understand what they read, try to predict what will happen next and are able to make comparisons between characters, stories and settings. Students scoring at the “Proficient” level understand what they read as indicated by the ability to predict what will happen next in a story and the ability to make comparisons. Those who score in the “Basic” range understand some of what they read and are able to use limited strategies such as clues in the sentence to learn the meaning of new words. Lastly, those who score in the “Limited” range struggle with simple reading tasks such as reading instructions.

Fifth grade students who score in the “Advanced” range are able to go beyond simply understanding what they read as demonstrated by the ability to make good judgments about the author’s use of fact versus opinion. A rating of “Accelerated” indicates hat the student understands different types of media (plays, biographies, newspapers) and has the ability to summarize stated and unstated themes. Students who
achieve a score of “Proficient” understand what they read and attempt to explain how the
author’s choice of words creates the story’s mood and describes the story’s setting. A
score of “Basic” indicates that the student understands some of what is read and is able to
use strategies such as definitions and the author’s examples to determine the meaning of
new words. Those who score in the “Limited” range struggle with simple reading tasks.

On the Science portion of the fifth grade OAA students who score in the
“Advanced” range are able to apply science facts and recognize relationship, design
investigations, draw conclusions and apply knowledge to new situations. Those in the
“Accelerated” range are able to use science information to discuss patterns, make
reasonable predictions, develop plans to collect data and evaluate technological solutions.
A rating of “Proficient” indicates that the student knows science ideas and is able to use
them to make connections, plan and carry out investigations and use the results of the
investigation to draw logical conclusions. Students scoring in the “Basic” range
demonstrate that they know some science facts and may know how they are connected.
These students rely on simple ideas and facts to make obvious predictions. Those who
score in the “Limited” range know few science facts; have difficulty describing models or
relationships and struggle to plan science investigations.

In the area of Social Studies on the fifth grade OAA an “Advanced” rating
indicates that students are able to create detailed time lines, graphs, and maps; use
numerous sources; and analyze economic concepts, cultural patterns in North America,
and the framework of government. A rating of “Accelerated” indicates that students are
able to create time lines, graphs, and maps, and use various sources to compare cultures
of North America, explain the branches of government and apply basic economic
concepts. Students who score in the “Proficient” range are able to use time lines, graphs,
maps, and other sources to compare cultures of North America and understand the branches of government and basic economic concepts. Those who score in the “Basic” range are to use time lines, graphs, maps, and other sources with assistance. Lastly, students who score in the range of “Limited” cannot use time lines, graphs and maps without help, recognize some cultures of North America and are able to identify parts of government and simple economic concepts.

In grade 6, a performance level indicator of “Limited” indicates that the student is unable to perform simple reading tasks and has not yet acquired the skills identified at the “Basic” level (Office of Assessment, 2006). “Basic” level performance indicates that the student can generally use context clues and available resources to determine the meaning of unknown words (Office of Assessment, 2006). They are able to demonstrate partial understanding of literary and informational text (Office of Assessment, 2006). Students performing at the “Proficient” level are able to determine the meaning of unknown words and phrases by utilizing their fundamental knowledge of word structure, text structure and context clues (Office of Assessment, 2006). They are able to use the reading strategies of prediction, comparison and summarizing to demonstrate understanding of literary elements and informational features and structures. “Accelerated” performance indicates the use of reading strategies and application of context clues, word structure and text structure understanding to demonstrate a complete understanding of textual information, literary elements and informational features and structures (Office of Assessment, 2006). Students performing at the “Advanced” level are able to perform the same skills as identified at the “Accelerated” level as well as effectively communicate meaning and make sound judgments regarding informational and literary text (Office of Assessment, 2006).
Limited research has been performed regarding the development of the reading processes discussed above in D/HI students. The preponderance of research performed in these areas reflects normal development as knowledge of normal development of these skills offers the richest source of information. Though much research has been performed investigating the performance of children with language delays on assessments of reading processes, only a few of these studies will be discussed based upon their relevance to the discussion of the relationship between the language-based activities of reading and writing and the development of these skills in D/HI students. The normal development of the reading processes indicated above as assessed by the four academic content standards of the Reading portion of the OAA (Reading Process: Concepts of Print, Comprehension Strategies and Self-Monitoring Strategies, Reading Applications: Informational, Technical and Persuasive Text, Reading Applications: Literary Text, and Acquisition of Vocabulary) as well as the impact the skill of reading has on student performance in the content areas (science and social studies) will be the focus of this discussion.

*Reading Process: Concepts of Print, Comprehension Strategies and Self-Monitoring Strategies*

The Reading Process section of the OAA assesses students’ knowledge of three academic content standards; Concepts of Print, Comprehension Strategies, and Self-Monitoring Strategies. In reading process tasks, students are expected to perform many tasks related to the benchmark indicators that are included in the 3rd grade curriculum for all students educated in Ohio. These indicators require that students are able to demonstrate the ability to perform many tasks that include the ability to establish a purpose for reading (whether reading for entertainment, to gain information to or to
follow directions), to independently read books, to predict content, events and outcomes using textual information that can be supported with examples, to use strategies of prediction, comparing and contrasting, and making inferences to comprehend material read, to be able to re-tell stories sequentially, to summarize stories, articles or book chapters by organizing information with main ideas and supporting details, and to demonstrate comprehension by answering evaluative, literal and inferential questions (Office of Assessment, 2006). Content materials should be used to teach reading comprehension and vocabulary, infusing these concepts early into literacy instruction (Hall & Sabey, 2007). These tasks are assessed on the 3rd grade OAA by 6-10 multiple choice questions, 2-4 short answer questions and up to 2 extend response questions. Fourth and fifth grade students are assessed on the Reading portion of the OAA by 22-23 multiple-choice questions, 2-7 short answer and 2-4 extended response questions. Sixth grade students are assessed on these tasks by 5-10 multiple choice questions, a maximum of 5 short answer questions and a maximum of 2 extended response questions as well.

Story grammar, the predictable rule-governed method of joining words and sentences together to form longer linguistic units that form a cognitively based framework which aids in the generation, retelling, and comprehension of stories, serves as the foundation for performance expectations of students on the concepts of reading process as assessed in the OAA (Merritt & Liles, 1987). Story grammar, also referred to as story narratives, has been used extensively in research to study the reading processes of concepts of print, story retelling and summarization, reading comprehension and monitoring strategies of school aged children (Haberlandt, Berian & Sandson, 1980; Merritt & Liles, 1987; Roth & Speckman, 1986; Strong & Shaver, 1991). Stein & Glenn (1979), as reported in Merritt & Liles (1987), specified story grammar rules that include...
six story components and accompanying story relationships that link the story components to one another. The six story components combine together to comprise an episode, the intuitive behavioral sequence that incorporates self-monitoring of comprehension by employing strategies such as adjusting reading speed, skimming, looking back or scanning ahead (Merritt & Liles, 1987). Results of the studies by Haberlandt et al (1980), Merritt & Liles (1987), Roth & Speckman (1986) and Stein & Glenn (1979) revealed that children possessed the ability to comprehend and re-tell canonical stories by 6 years of age and could accurately produce and comprehend the six primary components of story grammar; setting information, the initiating event, the internal response of the characters involved, attempts to solve the problem, direct consequences of said attempt and the reaction of the characters to the events that have occurred by 9 years of age (Merritt & Liles, 1987).

The ability to comprehend and process language is highly correlated to the ability to read and comprehend printed material (Catts, Fey, Tomblin & Zhang, 2002; Catts & Kamhi, 2005). As such, early language skills have been connected to later reading achievement as language has been found to facilitate reading (Catts et al 2002; Catts & Kamhi, 2005; Young et al., 2002). An essential argument in regards to reading development is that there is an intimate relationship between language acquisition and the later development of literacy (Catts et al. 2002; Schirmer, 2000; Schirmer, Bailey & Schirmer-Lockman, 2004; Mayer, 2007). Reading comprehension is influenced by many sub-skills that include mode of acquisition (MoA) of word meanings, vocabulary acquisition, phonological awareness, syntax, and semantics (Catts & Kamhi, 2005; Paul, 2000; Schirmer, 2000; Torgerson, Wagner & Rashotte, 1995; Wauters et al., 2006). Early literacy skills such as morphology, print awareness, phonological awareness and
knowledge of alphabetical principles aid in the acquisition of fluid decoding skills thus in
order for one to become a proficient reader, a variety of strategies are utilized to construct
meaning from text (Adams, 1990; Gaustad & Kelly, 2004; Goodman, 1996; Paul, 2000;
Wauters et al., 2006). Merritt & Liles (1987) investigated the story comprehension, story
generation, and story re-telling ability of children between the ages of 9 and 11.4 years of
age by measuring the form of discourse known as story narratives. In their study, Merritt
& Liles (1987) compared the story grammar skills of language-impaired students to that
of students with typically developing language ability.

Although information was provided regarding the language development of the
children with delayed language, only the results of children with normal language
abilities will be discussed. It was revealed that students with typically developing
language were able to generate more of the six story grammar components than the
children with language delays (between subjects main effect for group $F = 3.97, p = .05$).
They further found that students with typically developing language abilities produced
more complete episodes in story generation tasks ($t = 2.29, p < 0.5$), produced more main
and subordinate clauses in story re-telling tasks ($F = 7.71, p = 0.5$) and significantly
answered more comprehension questions correctly (M=6.1) than the students with
language impairments (M=4.3). The study described above by Merritt & Liles (1987)
investigated the reading concepts of print, comprehension and self-monitoring strategies
by assessing the performance of students on both written and oral tasks. Results revealed
that though the verbal utterances were often longer than the written responses, the written
responses obtained demonstrated that typically developing students were able to produce
more sophisticated, grammatically correct responses that contained the pertinent
components of story grammar.
As previously stated, similar to reading, writing is also a language-based skill. Though there are no sections of the OAA that require oral responses, students are required to demonstrate their written abilities in the area of reading processes by completing short answer and extended response tasks. Specifically in the state of Ohio, students assessed by the OAA are required to demonstrate their comprehension of printed material by producing written responses that employ summarization skills, organization of writing with main ideas and supporting details, and writing strategies that include pre-planning and the use of self-evaluation skills to ensure sequential and grammatical accuracy. Similar to the results discussed above by Merritt & Liles (1987) regarding the differences between the verbal utterances and written responses of students, Gillam & Johnston (1992) found differences between the verbal and written ability in their study comparing spoken and written language relationships. Gillam & Johnston (1992) found that the speaking and writing ability of children between the ages of 9-12 becomes increasingly differentiated with written compositions being longer and more cohesive. Though spoken narratives contained more sentences and morphemes per t-unit (24.5 vs. 15.5), the written narratives were more complex and contained significantly better textual organization with a higher proportion of linked contextual, dyadic constituents (19.1 vs. 12.3) (Gillam & Johnston, 1992). Further, the writing ability of children was found to separate from their oral abilities as written texts begin to contain more subordinated structures, are better organized, and children start to plan before writing, utilizing self-evaluating strategies (Gillam & Johnston, 1992). Gillam & Johnston (1992) believe that the differences in spoken and written language are due to the unique conceptual, linguistic, and mechanical restraints imposed by written language. Thus exposure to
writing tasks at an early age is encouraged as a means to facilitate language development and improve student performance on reading process tasks.

*Reading Applications: Informational, Technical and Persuasive Text*

As discussed above in the Reading Process: Concepts of Print, Comprehension Strategies and Self-Monitoring Strategies section, language continues to develop as a child ages (Gillam & Johnston, 1992; Hadley, 1998; Merritt & Liles, 1987). Due to the relationship reading and writing have with language, it can be reasoned that both reading and writing skills will show the same progression as children advance through elementary to secondary school. Literate language skills such as those used in tasks related to expository text (i.e. persuasive, informational and technical writing) become particularly evident beyond the preschool years as student success in these areas relies on knowledge of text structure as well as sophisticated use of the language concepts of syntax, semantics and pragmatics (Nippold, Ward-Lonergan & Fanning, 2005). Early exposure to these concepts allows for greater skill attainment, thus the Reading Applications: Informational, Technical and Persuasive Text section of the OAT administered to third graders addresses these concepts by requiring that students are able to identify and list the central ideas and supporting details of informational, technical and persuasive text, select and summarize important information sorting key findings into categories regarding a specific topic, identify important information found in different sources and summarize the important findings (Ohio Department of Education, 2008 Correlation of Ohio’s K-12 Benchmarks and Grade-Level Indicators). This section of the OAA administered to sixth graders expands on the skills mentioned above by requiring that, in addition to the skills developed in the third grade, students demonstrate the ability to use text features such as chapter titles, headings and subheadings, identify and appropriately use parts of books
including the index, appendix and table of contents, develop clear and convincing essays, accurately identify the author’s argument to assess the adequacy and accuracy of details used, identify and understand the author’s purpose for writing (to entertain, persuade or inform) and to analyze information found in maps and charts, distinguish fact from opinion as well as examples of cause and effect, and offer multiple reasons for their views (Ohio Department of Education, 2008 Correlation of Ohio’s K-12 Benchmarks and Grade-Level Indicators).

The use of informational texts in elementary curriculum has received increasing attention as children’s use of informational text increases as students enter advanced grades (Hall & Sabey, 2007). Extensive exposure to informational texts in the early grades is recommended for future success in school as well as post-secondary endeavors (Hall & Sabey, 2007). Nippold et al (2005) investigated persuasive writing in sixty children (with a mean age of 11.9) and sixty adolescents (with a mean age of 17.3) by looking at their syntactic, semantic and pragmatic development. Syntactic development was reportedly marked by increased sentence length and subordinate clause usage (Nippold, et. al. 2005). The use of low frequency vocabulary words, including later developing connectors such as therefore and meanwhile was determined to mark the development of semantics. Pragmatics manifested in persuasive writing by the ability to assume a social perspective and anticipate counter arguments (Nippold et al, 2005). Results revealed that as students aged, their writing skills improved as a result of classroom instruction, frequent writing experiences, and constructive feedback from teachers (Nippold et al, 2005). Students who were provided with instruction from teachers and received modeling from adults were found to attain higher proficiency in these areas than students who did not (Nippold et al 2005). Nippold et al (2005) further
found that the qualitative aspects of students writing improved as students aged, due to increased knowledge of more complex syntactic structures, connective devices, and the incorporation of more literate words into their compositions. General productivity and mean length of utterance increased in relation to chronological age (Nippold et al, 2005). Relative clause production increased (from $M = 11.70$ to $16.64$) as a function of age as did the production of adverbial conjuncts (from $M = .30$ to $.77$), abstract nouns (from $M = 2.70$ to $5.71$) and meta-verbs (from $M = 1.29$ to $1.90$).

Understanding non-fiction is a critical skill needed by all students, as informational texts permeate the media through such examples as newspapers and magazines, and are constantly displayed in menus, on street signs, and highway billboards (Purcell-Gates, 2003). As least 96% of the information that appears on the internet is reportedly informational text (Hall & Sabey, 2007). Due to the importance of informational texts in later schooling and standardized test materials, it is important that students are introduced to informational texts at an early age. Persuasive writing has been found to provide students with rich opportunities to recognize critical literacy skills as the ability to write persuasively is highly valued in public schools (Nippold et al, 2005). Acquiring these skills at an early age has been found to improve students’ opportunity for success as college entrance exams typically contain a persuasive writing task (Kaplan Publishing, 2004). Further, persuasive writing is reportedly an important skill to master beyond the school setting due to the potential benefits of empowerment, aiding in the ability to articulate a position on important matters (Crowhurst, 1990).

**Reading Applications: Literary Text**

Expressive aspects of story telling apply whether material involves expository text (i.e. informational, technical or persuasive text) or literary text (i.e. fictional text and
biographical materials) (Hadley, 1998; Scott, 1988). Literary text is agent focused and has a temporally contingent structure (Scott, 1988). Expository text in contrast is neither agent focused nor temporally contingent (Scott, 1988). Literary text focuses on the ability to deal with fictional materials as well as different types of literature including fairy tales, folk tales, biographies and poems. Though biographical narratives are considered to be based on real life events, fictionalization is often added to enhance the story and engage readers (Ukrainetz et al, 2005). Fictional narratives are used extensively in instruction focused on the development of language and literacy skills and as a means to demonstrate knowledge of reading concepts. Literary text is promoted in early grades as student production of fictional narratives is a complex language and literacy skill that should be addressed by early academic content standards (Ukrainetz et al, 2005). Young children are able to construct stories that evoke humor, suspense, mystery and other emotions as demonstrated by their behaviors in dramatic play activities (Scott, 1988). These activities provide children with early opportunities to experiment with the artful and expressive aspects of literature.

The Reading Applications: Literary Text section of the OAA addresses students’ ability to compare and contrast the plots of different types of stories by using details from the stories to describe story elements including characters, theme and setting. According to the standards developed by the Ohio Department of Education (2008a), school districts will develop strategic readers capable of explaining, analyzing and critiquing literally texts that represent a deep understanding of a variety of authors, cultures and eras. All students are expected to develop an understanding of literature by learning to apply the reading process to various genres of literature, including fables, folk tales, short stories, novels, poetry and drama, demonstrating their comprehension by describing and
discussing the elements of literature (e.g., setting, character and plot), analyzing the author's use of language (e.g., word choice and figurative language), comparing and contrasting texts, inferring theme and meaning and responding to text in critical and creative ways (ODE, 2008a). Specifically in Ohio, third grade students learn to recognize and describe similarities and differences of plot across literary works, use concrete details from text to describe characters and settings, sequentially retell plot, identify and explain the defining characteristics of literary forms and genres, explain author’s intention and use of figurative language, identify methods used to engage readers, and identify implied and stated themes. Sixth grade students learn to analyze techniques used by the author to describe characters, including the thoughts, words and actions of the narrator and other characters, identify features of setting and explain their importance in literary text, explain first, third and omniscient points of view, explain how voice affects text, identify recurring themes, patterns and symbols found in the literature of different eras and cultures, explain the defining characteristics of literary forms and genres including poetry, drama, myths, and non-fiction, and distinguish how the author establishes mood and meaning through word choice and figurative language.

Similar to the six story components specified the discussion of story grammar: setting information, the initiating event, the internal response of the characters involved, attempts to solve the problem, direct consequences of said attempt and the reaction of the characters, a fully formed narrative has six distinct components also: opening appendage, orientation, complicating action, evaluation, resolution and closing appendage, with the complicating action and resolution serving as the “backbone” of the narrative (Peterson & McCabe as referenced in Ukrainetz et al, 2005). The opening and closing appendages serve as introducers, signaling the reader that the story is beginning or coming to a close.
Orientations are considered evaluative in nature, providing background information including setting statements and providing details on character relationships, motivating and circumstances. Evaluations provide information regarding the feelings of the narrator about events that have occurred in the narrative. Ukrainetz et al (2005) examined the expressive role of narrative and personal narrative by documenting changes in the features of elaboration from children across the elementary grades from ages 5-12. Thirteen types of expressive elaboration were considered, organized into the categories of appendage, orientation and evaluation. The appendage category included introducers (i.e. one day, once upon a time) and themes (i.e. bad day, late to school), the orientation category included character names and relationships, and the evaluation category included modifiers (i.e. just, so, too), expressions (i.e. as fast as, by the time) and internal state words (i.e. disappointed, decided, miserable) (Ukrainetz et al, 2005).

Student groups were formed with 5-6 year olds, 7-9 year olds and 10-12 year olds being grouped together. In the examination of appendages, significant increases were noted from the younger to older age groups. Introducers and themes were most common among each group, increasing from 41% and 60% for the 5-6 year olds, to 52% and 91% for the 7-9 year olds, to 58% and 95% for the 10-12 year olds (Ukrainetz et al, 2005). Orientations overall were present for in the narratives of 50% of the 5-6 year olds, increasing to more than 90% in the narratives of the 10-12 year olds (Ukrainetz et al, 2005). A clear increase with age was also noted in the use of character names and character relations, increasing from 20% for the 5-6 year olds, to 55% for the 6-7 year olds, to 82% for the 10-12 year olds (Peterson & McCabe as referenced in Ukrainetz et al, 2005). Evaluations were present in 73% of the narratives of the 5-6 year olds, 96% of the narratives of 7-9 year olds, and 98% of the narratives produced by 10-12 year olds.
Modifiers were the most commonly present type of evaluation used, present in 60% of the narratives produced by the 5-6 year olds and 90% of the narratives of 7-9 and 10-12 year olds (Peterson & McCabe as referenced in Ukrainetz et al, 2005). The use of internal state words increased from 20% to 50% to 73% while the use of expressions showed a noticeable increase between the older age clusters increasing from 21-50% (Ukrainetz et al, 2005). Expressive elaboration as demonstrated by the use of appendages, orientations and evaluations was common across all age groups, showing developmental changes in presence across the age groups (Ukrainetz et al, 2005). These results indicate the importance of literary text in the development of reading applications as fictional narratives are better contexts for observing developmental changes (Ukrainetz et al, 2005).

Acquisition of Vocabulary

Acquisition of vocabulary (AV) is considered to be a critical component of reading comprehension, requiring word recognition skills and the ability to gain meaning from the words and materials that are read. Research demonstrates a connection between vocabulary instruction and reading comprehension (National Reading Panel, 2000). Researchers found that preschool students experiencing difficulties with vocabulary continued to have difficulty with reading, phonological processes and overall comprehension in later grades (Stothard et al, 1998). Catts et al (2002) conducted a study examining the relationship between early language / vocabulary deficits and later reading performance by tracking students from kindergarten through the fourth grade. Students whose difficulties persisted beyond kindergarten were found to be at greater risk for later reading difficulties (Catts, et. al.,2002). Early acquired words are typically learned via
spoken language. As literacy increases, words are acquired through print. Language and word learning are typically delayed in pre-lingually deafened individuals, thus individuals with significant hearing impairments tend to perform poorer on AV tasks (Auer & Bernstein, 2008). D/HI students generally acquire vocabulary via speech reading, print materials or the use of an English based manual sign system. Individual differences with spoken and printed vocabulary tasks have been demonstrated to influence the speed and ease of word recognition and retrieval tasks. Auer & Bernstein (2008) performed a study investigating the age at which words were subjectively estimated to have been acquired by D/HI and normal hearing individuals. One hundred participants (50 D/HI, 50 normal hearing) were presented one hundred and seventy five words from the Peabody Picture Vocabulary Test Revised (PPVT-R) and asked to estimate the age of acquisition of those words as well as how they thought the word had been acquired; either spoken, printed or signed.

Acquisition of Vocabulary is defined by the Ohio Department of Education as the ongoing process of developing an extensive knowledge of words and word meanings (ODE, 2008a). A typical AV activity for a third grade student would require that the student determine the meaning of words by looking at the words themselves and sentences around new words, correctly reading common words (e.g., ant, leaf, pillow) by using previous knowledge about parts of words (e.g., can’t, lovely, helpful) to understand whole words. Age of acquisition of vocabulary was found to be linked to the speed and accuracy with which words were recognized under experimental paradigms where words with an early age of acquisition (before grade 3) were associated with faster more accurate performance and recognition on vocabulary tasks (Auer & Bernstein, 2008). Auer and Bernstein (2008) also found the mean age of beginning acquisition of
vocabulary for D/HI individuals to be around 10 years of age, while the beginning acquisition of vocabulary for normal hearing individuals was found to occur around 8.5 years of age. A slight difference was noted in word recognition where D/HI individuals reported fewer words known (90%, 158 out of 175) as compared to normal hearing individuals (94%, 164 out of 175) (Auer & Bernstein, 2008). D/HI individuals reported learning more words through print, spoken language then sign language (45%, 38% and 17% respectively) while normal hearing individuals reported more words learned through spoken language and print (70% and 30% respectively) (Auer & Bernstein, 2008). Words with early age of acquisition ratings were reported as learned through speech. As the age of acquisition of words increased, the percentage of words rated as learned through print increased. Auer and Bernstein (2008) attributed the increase in reliance on reading for vocabulary for both the D/HI and normal hearing participants as related to increased reading skills, thus words acquired through the print mode of acquisition became more dominant than words acquired through spoken language alone.

Literacy in the Content Areas

The ability to read and comprehend printed material has a tremendous impact on students’ performance in the content areas of science and social studies. Students encounter multiple representations of content and a vast range of textual forms both inside and outside of school (Harlin, 2007; Spencer & Guillame, 2006; Wilson, 2008). Understanding, critiquing and creating both scientific and civic texts requires that students have developed fundamental skills in the concepts of reading assessed on the Ohio Achievement Test including acquisition of vocabulary, concepts of print and comprehension strategies (Jones, 2007). Research states that vocabulary instruction, in particular, has the greatest impact on students’ ability to comprehend the content
presented in science and social studies as children who are familiar with the meaning of most words they encounter have greater comprehension of the materials they have read (Flint & Brozo, 2008; Spencer & Guillame, 2006). Children with lower vocabularies were found to have much difficulty understanding written language and learning new words (Spencer & Guillame, 2006).

Chapin (2006) found that the achievement gap in the content areas of science and social studies begins as early as kindergarten for African American students. In his study, Chapin (2006) investigated the relationship between student’s social studies and science knowledge to their ethnicity. General knowledge assessments as part of the Early Childhood Longitudinal Study were completed by 13,820 students at the beginning of kindergarten and again at the end of the first grade (Chapin, 2006). Students’ conceptual understanding, knowledge of the scientific method and ability to test inferences based on the life and physical sciences were assessed on the general science assessment. The social studies section assessed students’ ability to recount key events in American history, read maps and their general knowledge of rules and laws related to government.

Overall results revealed substantial racial differences in student performance by the time the students reached the fourth grade with White, Non-Hispanic students outperforming their minority peers (Chapin, 2006; Weiss et al, 2002). Though all racial groups scored higher on the assessment at the end of the first grade, Black children were found to score lower (1 SD) than all other ethnic groups on both assessments (Chapin, 2006). Chapin (2006) asserts that these results reveal the need for policies mandating early acquisition of social studies and science knowledge at an early age, preferably prior to students entering kindergarten.
Despite the fact that the achievement gap between the academic performance of Black, Non-Hispanic and White, Non-Hispanic students exists across all content areas, student knowledge in the areas of science and social studies has received much less attention than student knowledge in the areas of reading and math (Chapin, 2006). Initially reading and math were the only content areas assessed under NCLB as testing in the areas of science and social studies were not mandated (Chapin, 2006). When the content areas of science and social studies were added to the list of mandated tests, teachers quickly realized that the entire testing structure is set up around reading and literacy instruction and that their performance in reading hugely determines their performance in the other content areas (Jones, 2007; Spencer & Guillame, 2006). Dismal results in science and social studies highlighted the literacy struggles of the Nation’s students and led the push for the infusion of literacy in all content areas (Jones, 2007). While it is understood that all teachers are not reading teachers it became clear that integration of reading and content instruction is necessary for students to achieve academic success across all areas (Jones, 2007).

As students progress from elementary to high school there is a distinct shift from reading instruction to specialized, content-driven instruction (Jones, 2007). Students are expected to have mastered certain content standards in the areas of Science and Math in the elementary grades in order to be able to grasp the concepts introduced at the high school level. The academic skills students attain in the areas addressed by the content standards of Reading Process, Reading Applications and Acquisition of Vocabulary section of are vital for comprehension and independence in reading different types of materials. In order for students to be successful across the curriculum, the reading skills discussed above must be incorporated into the science curriculum as well.
The specific concepts of science and social studies that students are expected to know in the elementary grades and that are assessed on the OAA are described below.

Assessment of Science

The science section of the OAA addresses the content standards of Earth and Space Sciences, Life Sciences, Physical Sciences and Scientific Processes. In the Earth and Space Sciences section of the OAA, students are expected to demonstrate a high level of understanding and interaction with printed materials (Office of Curriculum, Instruction and Assessment, 2005; Ohio Department of Education, 2009; Patz, 2006). Students are required to demonstrate an understanding of the compositions of the universe, solar system and Earth as well as demonstrate an understanding of Earth’s systems and processes that shape the Earth and the Earth’s history. Students are also required to demonstrate an awareness of how the concepts and principles of energy, matter, motion and forces explain Earth systems, the solar system and the universe. In addition, students are expected to establish an understanding of the historical perspectives, scientific approaches and emerging scientific issues associated with Earth and space sciences.

The Life Sciences portion of the OAA requires that students acquire the necessary knowledge regarding how living systems function and interact with the physical environment (Office of Curriculum, Instruction and Assessment 2005; Ohio Department of Education, 2009). This knowledge includes an understanding of the cyclic nature of matter and flow of energy in living systems and the characteristics, structure and function of cells, organisms and living systems. Students are challenged to develop a deeper understanding of the principles of heredity, biological evolution and the diversity and interdependence of life as well as demonstrate an understanding of the different historical
perspectives, scientific approaches and emerging scientific issues associated with the life sciences.

The Physical Sciences section of the OAA assesses students’ knowledge of the composition of physical systems, concepts and principles that describe and predict physical interactions and events in the natural world. Students are expected to demonstrate an understanding of structure and properties of matter and energy, materials, objects, nature and chemical reactions. Concepts regarding motion and the forces affecting motion, the conservation of matter and the transfer and conservation of energy are covered in this section of the OAA. The historical perspectives, scientific approaches and emerging scientific issues associated with the physical sciences are addressed as well.

In the Scientific Processes: Inquiry, Technology and Ways of Knowing section, students should be able to recognize that science and technology are interconnected and be able to assess the benefits, risks and costs of incorporating science and technology (Office of Curriculum, Instruction and Assessment, 2005; Ohio Department of Education, 2009). Students build scientific and technological knowledge as well as the skills required to design and construct devices. They develop processes to solve problems and understand that problems may be solved in different ways. Scientific inquiry requires that students use the processes of scientific inquiry to ask valid questions and to gather and analyze information. Students must be able to develop hypotheses and make predictions. In addition they are required to develop plans of action to create and evaluate a variety of conclusions as well as demonstrate the ability to communicate their findings to others (ODE, 2009).
Ways of Knowing involves students gaining awareness that the current body of scientific knowledge is based in evidence, predictive, logical, subject to modification and limited to the natural world (Office of Curriculum, Instruction and Assessment, 2005; Ohio Department of Education, 2009). Students must demonstrate an understanding that scientific knowledge grows and advances as new evidence is discovered to support or modify existing theories, as well as to encourage the development of new theories. Students must demonstrate the ability to reflect on ethical scientific practices and demonstrate an understanding of how the current body of scientific knowledge reflects historical and cultural contributions that provide a reliable and comprehensive understanding of the natural world (Ohio Department of Education, 2009).

Assessment of Social Studies

The content areas addressed in the social studies section of the OAA are Economics, Government and Citizenships Rights and Responsibilities. The Economics section requires that students use economic reasoning skills and knowledge of major economic concepts, issues and systems in order to make informed choices as producers, consumers, savers, investors, workers and citizens in an interdependent world (Office of Curriculum, Instruction and Assessment, 2005; Ohio Department of Education, 2008b). The Government section assesses students’ knowledge of the purposes, structures and processes of political systems at local, state, national and international levels. Structures of power and authority are covered in relation to their ability to provide order, maintain stability and promote the general welfare. The Citizenship Rights and Responsibilities section requires that students demonstrate knowledge of the rights and responsibilities of citizenship in order to examine and evaluate civic ideals and to participate in community life and the American democratic system (Office of Curriculum, Instruction and

In the People in Society and Geography section, students must use knowledge of perspectives, practices and products of cultural, ethnic and social groups to analyze the impact of their commonality and diversity within local, national, regional and global settings (ODE, 2008b). Geography requires that students use knowledge of geographical locations, patterns and processes to show the interrelationship between the physical environment and human activity and to explain the interactions that occur in an increasingly interdependent world. The last section, Social Studies Skills and Methods requires that students collect, organize, evaluate and synthesize information from multiple sources to draw logical conclusions (Office of Curriculum, 2005). Students are to then communicate this information using appropriate social studies terminology in oral, written or multimedia form and apply what they have learned to societal issues in simulated or real-world settings.

Reading and Language

Due to the nature of significant hearing impairments and Deafness, oral language skills are not easily acquired. As such, D/HI students often present with language delays. Thus it is important to describe the relationship between language and reading. The studies referenced above focused on the reading ability of typically developing students and in some instances compared their performance to that of normal hearing students with language delays. There is much evidence supporting the correlational relationship between reading and language due to the high incidence of language delay and reading
difficulty co-occurring within children (Catts et al. 2002; Catts & Kamhi, 2005; Lewis, Freebairn & Taylor; Pinter & Patterson, 1916; Stothard et al, 1998; Young et al., 2002). Specifically, it has been determined that students with a history of oral language impairments tend to struggle with later reading tasks of comprehension, story re-telling and organization of information (Flax et al, 2003). Catts et al (2002) conducted a longitudinal study investigating the reading outcomes of normal hearing students with deficits in language from kindergarten to the fourth grade. Kindergarteners with language impairments were found to score lower on all measures of reading comprehension at the fourth grade level, consistently scoring one standard deviation below the mean (standard score < 85) on reading tasks. These same kindergartners presented with significant reading impairments in the fourth grade such that they met the eligibility criteria to receive educational services as a student with disabilities (Catts et al, 2002). The findings of this study indicate the effect language has on the reading ability of early readers as reading related tasks as reading comprehension continues to present difficulty into the intermediate grades.

Simkin & Conti-Ramsden (2006) examined the reading abilities of fourth grade students with documented expressive and expressive-receptive oral language impairments. The results indicated that on measures of word reading and reading comprehension, students with expressive-receptive Speech and Language Impairments (SLI) scored the lowest on reading measures with 67% and 73% of the expressive group having difficulty with word reading and reading comprehension, respectively; and 88% of the expressive-receptive group having difficulty with both word reading and reading comprehension (Simkin & Conti-Ramsden, 2006). Another study investigated the reading outcomes of preschool students with a history of speech sound disorders using
performance on phonology, syntax, and semantics to predict later reading ability in third through fourth grade (Lewis et al., 2000). As suspected, lower performance in the areas of phonology, syntax, and semantics were found to be the best predictors of poor reading skills further substantiating the high incidence of language impairment and reading difficulty occurring simultaneously.

As suggested by the above research, it is evident that the development of reading skills is negatively impacted when language impairments are present (Ball & Blachman, 1988; Bernhardt & Major 2005; Catts et al. 2002; Catts & Kamhi, 2005; Flax et al. 2003; Simkin & Conti-Ramsden, 2006; Stothard et al., 1998; Whitmire, 2005). Reading is a complex language-based process that is especially difficult for Deaf or hearing-impaired students who have not acquired the English language. Although it is believed that the emergent reading skills of D/HI students reflect the same developmental sequence as that of hearing children and D/HI children are generally on par with hearing children in the earliest stages of literacy development, by virtue of their hearing impairment D/HI students have often performed lower than their hearing peers on tasks of reading ability (Mayer, 2007; Paul, 2000; Williams, 2004). Many D/HI students have deficits in reading resulting from poor oral / face-to-face language development and an incomplete spoken language system (Mayer, 2007).

The demands placed upon D/HI students when attempting to read a speech-based system such as the English language has been shown to negatively affect their ability to learn to read (Mayer, 2007; Paul, 2000). As such, D/HI children whose first language is often not English are challenged to become fluent readers of a language they may not have yet attained (Mayer, 2007). Integrating prior knowledge, morphology, using syntax and grammar, and attending to the visual aspects of words are strategies that are
unconsciously employed systematically for reading success (Catts & Kamhi, 2005; Gaustad & Kelly, 2004; Paul, 2000; Schirmer, 2000; Torgenson et al., 1994; Wauters et al., 2006; Weaver, 1998). Early readers learn to use these strategies effectively through experience and some would argue through direct instruction as the construct of phonological awareness is auditory identification of sound-based segments, a skill that typically develops in normal hearing children before the third grade (Griffith & Olson, 1992; Musselman, 2000). According to Webster (1987) the reading ability of Deaf students peaks at a fourth grade level because comprehension of text beyond this level relies heavily upon the ability to infer meaning; a task that consistently presents much difficulty for Deaf students. Given the strong correlation between phonological awareness and early reading and spelling achievement, it stands to reason that this weak foundation might account, in part, for the educational challenges D/HI students encounter in developing age-appropriate literacy skills that transfer across the content areas.

Reading ability of D/HI students

Deaf/Hearing Impaired children have been found to score lower than their normal hearing peers on standardized measures of academic achievement. Specifically in the area of reading, D/HI students consistently perform poorer than their normal hearing peers on measures of reading comprehension with the average D/HI high school graduate scoring at a third to fourth grade reading level (Karchmer & Mitchell, 2003; Miller, 2005; Miller 2006; Wauters et al, 2006. D/HI students are often unable to utilize auditory aspect of decoding, limiting their ability to decode the text they encounter.

Early studies dating back to the late 1960s -1970s provide data regarding the lower reading scores of D/HI students as compared to normal hearing peers with notable deficiencies in vocabulary, syntax and the ability to make inferences from decoded text.
In 1966, Furth conducted a study to determine the reading level of Deaf students who had obtained their high school diploma. The results of this study revealed that only 8% of the students' sampled possessed reading ability above a fourth grade level. A similar study was conducted six years later in 1972 at Gallaudet University. This study reported a mean grade equivalency of 4.3 for students’ aged 19. Another study interestingly conducted in 1977, six years after the Gallaudet study, yet again revealed similar results with just a 2 month increase in the reading ability of students aged 20, with reading equivalency scores rising to 4.5 (Trybus & Karchmer, 1977). Though the above referenced studies are dated, it is important to note that recent studies continue to reveal essentially the same results, indicating that the reading performance of D/HI students consistently remains significantly below that of their normal hearing peers. As reported by Gaustad et al., 2002 in Gaustad & Kelly, 2004, Deaf college students were found to have the same fundamental reading abilities as middle school hearing students ranging from a level of 7.3 to 8.7. The morphological knowledge, word segmentation skills, and word analysis ability of the D/HI college students tested was found to be highly correlated with reading achievement, paralleling the development of these skills in typically developing normal hearing middle school students (Gaustad & Kelly, 2004).

The normal hearing middle school students were found to demonstrate continued growth in the area of using morphological skills to aid in decoding whereas the morphological skills of D/HI college students appeared to plateau (Gaustad & Kelly, 2004). Furthermore, the performance of the hearing middle school students on specific morphological tasks surpassed the performance of the Deaf college students on those same tasks. For meaning association tasks involving derivational affixes and word segmentation tasks, the hearing middle school students performed comparatively better,
of decoding are reported to be the most common used by successful readers (Gaustad & Kelly, 2004).

The results of the study discussed above indicate that the D/HI students have less developed morphological skills which negatively impact their overall reading performance, as severe to profound hearing losses are known to significantly impair students’ ability to use phonics strategies for decoding (Gaustad & Kelly, 2004).

Wauters et al. (2006) examined the effect of mode of acquisition (MoA) of words (either perceptual or linguistic) of Deaf students on a standardized multiple choice reading comprehension test. The results revealed that Deaf students scored lower than hearing students when the mean MoA of items increased to the third and fourth grade levels. Thus for third grade readers, MoA was found to influence reading comprehension when test items shifted from words acquired mainly through perception to words acquired through a combination of perceptual and linguistic information (Wauters et al. 2006).

Though the study by Gaustad et al. (2002) showed a slight increase in reading level from a fourth grade level as documented by Furth in 1966 to seventh grade three months (7.3), the fact remains that D/HI students continue to demonstrate reading ability that is at least 6-7 years below that of their normal hearing peers (Miller 2005; Miller 2006).
CHAPTER III

METHODS

This chapter discusses the data sets used in this study and how the data were analyzed to answer the hypotheses formulated for this study.

Data Sets

Students assessed in the state of Ohio attend school in one of the four types of districts recognized by the state; city school districts, exempted village school districts, local school districts or joint vocational school districts. These districts are further grouped into nine distinct categories, numbered 0-8, based on certain demographic characteristics. Districts in Group 0 are described as being extremely small and either geographically isolated (islands) or having special circumstances. Districts in Group 1 are classified as Rural/agricultural – small student population, high poverty, low income. Students attending schools in this group live in rural agricultural areas that tend to be located in the Appalachian area of Ohio. As a group they have higher-than-average poverty, the lowest average median income level, and the lowest percent of population with college degrees as compared to all of the other groups. Students attending Districts in Group 2 are described as Rural/agricultural – small student population, low poverty, low to moderate median income. Students attending schools in this grouping live in small, very rural areas outside of Appalachia. The adult population in this group is similar to that of Group 1 in terms of education level, but their median income level is higher and their poverty rates are much lower. Students from districts in Group 3 are characterized as Rural/Small Town – moderate to high median income. Students in this
group live in small towns located in rural areas of the state outside of Appalachia. The districts tend to have median income levels similar to suburban districts but with lower rates of both college attendance and managerial/professional occupations among adults. Their poverty percentage is also below average (ODE, Office of Assessment, 2005).

Districts in Group 4 are categorized as Urban – low median income, high poverty. This category includes students living in urban (i.e. high population density) districts that encompass small or medium size towns and cities. They are characterized by low median incomes and very high poverty rates. Districts in Group 5 are categorized as “Major Urban – very high poverty”. This group of districts includes students living in all of the six largest core cities and other urban districts that encompass major cities. Population densities are very high. The districts all have very high poverty rates and typically have a very high percentage of minority students. Districts in Group 6 are categorized as “Urban/Suburban – high median income”. Students live in areas that typically surround major urban centers. While their poverty levels range from low to above average, they are more generally characterized as communities with high median incomes and high percentages of college graduates and professional, administrative careers. Group 7 is categorized as “Urban/Suburban – very high median income, very low poverty”, and encompasses students living in areas that surround major urban centers. Group 7 is distinguished from Group 6 in that students in this area come from families that have very high-income levels and almost no poverty. A very high percentage of the adult population has a college degree, and a similarly high percentage of their adults have professional, administrative careers. The last group, Group 8 is used to classify the Joint Vocational School Districts. Joint vocational School districts are districts that combine resources to form schools with a technical based curriculum. Students attending Joint
Vocational School Districts are generally high school age or above. Because the Ohio Achievement Assessment tests students in the elementary and middle school grades, information from these districts is not included in this study. The chart below indicates the number of districts and their total enrollment for the years of assessment indicated in this study (ODE, Office of Curriculum, Instruction and Assessment, 2005).

Table 1: Number of school districts in Ohio and total enrollment of students.

<table>
<thead>
<tr>
<th>School Year</th>
<th>Total Enrollment</th>
<th>Number of Districts</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009-2010</td>
<td>1,744,970</td>
<td>956</td>
</tr>
<tr>
<td>2008-2009</td>
<td>1,752,190</td>
<td>941</td>
</tr>
<tr>
<td>2007-2008</td>
<td>1,751,511</td>
<td>919</td>
</tr>
<tr>
<td>2006-2007</td>
<td>1,755,588</td>
<td>878</td>
</tr>
<tr>
<td>2005-2006</td>
<td>1,772,930</td>
<td>876</td>
</tr>
<tr>
<td>2004-2005</td>
<td>1,781,491</td>
<td>849</td>
</tr>
</tbody>
</table>

The “mandatory testing” component of NCLB does not begin until the 3rd grade. Achievement data of students who were in the 3rd grade during the 2004-2005 academic school year were used for this study because these students have been educated under the rules of NCLB for the entirety of their education in public schools. Several attempts were made to obtain individual student data. Emails were sent and telephone calls made to the data collection center at the Ohio Department of Education as well as to individual school districts. Due to the difficulty encountered in obtaining individual student data, Ohio Achievement Assessment data from the academic years of 2004-2005 to 2009-2010 were gathered from the Ohio Department of Education’s website. These data represent assessment scores from all students tested in the state of Ohio.

The sample used for this study represents a diverse population of students receiving public education in the state of Ohio that includes students attending residential programs, urban, suburban and rural school districts as well as specialized programs for
the D/HI. Assessments were administered by individual school districts across the state all inclusive of urban, suburban and rural school districts. The assessments were scored by the Ohio Department of Education and posted on their iLRC (interactive Local Report Card) website.

The interactive Local Report Card is the online application where the state of Ohio stores assessment data. Prior to being posted on the ODE website, the data indicated for each school district in the state of Ohio was manipulated by ODE to reflect data pertaining primarily to regular public school districts. The data driven by other entities such as community schools and joint vocational schools were removed from the database by the Ohio Department of Education to limit the analysis to public school districts. Per ODE, data of non-public entities were removed in an effort to not distort the figures and allow for viable comparisons of inter-district numbers as non-public entities are not obligated to provide special education services that regular public school districts have to provide to their students. In rare cases, certain data elements pertaining to joint vocational schools or community schools had to be kept in the mix in order to allow the statistics presented to serve their purposes.

Within the Report Card is a tool titled Power User Reports. This tool allows users to retrieve data according to the specifications set forth by the user. A customizable report was generated using the Power User Reports tool. “Test Results” was selected from the Reports Home Page. Under the section of Test Results, two areas were explored; Proficiency Levels (State), and Tested Student Counts (State). Data in each section was disaggregated by School Year, Disability and Race. This information was drilled down to only show data for Black and White Non-Hispanic students who were either general education students or students receiving special education services under
the eligibility category of D/HI in the content areas of Reading, Science and Social Studies.

The data used in this study are a collection of the assessment scores of all normal hearing and D/HI Black and White Non-Hispanic students receiving education in a public school in the state of Ohio and were administered the OAA during the academic years of 2004-2005, 2005-2006, 2006-2007, 2007-2008, 2008-2009, and 2009-2010. The school years selected were chosen because the 2004-2005 school year was the first year that students were tested under NCLB. It is important to note that overall, the number of D/HI students tested in the state of Ohio is significantly lower than the number of normal hearing students tested (Table 2). This information is consistent with national data indicating that low incidence disabilities such as D/HI are generally about 1% of the total student population. In addition, although there is a slight fluctuation in the total number of students tested in the 2006-2007 school year as compared to the 2009-2010 school year, this fluctuation is not significant and indicates that the students tested were likely many of the same students.

The following years document the test results of this group of third graders as they progressed through the grades until grade 8, the last year that the OAA is administered. Data were selected from grades 3 - 8 in the content area of Reading for the 2004-2005 to 2009-2010 school years; grades 5 and 8 the content area of Science, and grade 5 in the content area of Social Studies. The tables below indicate the number of tested students scoring in each proficiency level.

<table>
<thead>
<tr>
<th>Table 2: Total number of students tested in each content area during the 2004-2010 school years.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>READING</strong></td>
</tr>
<tr>
<td>Total Students Tested 2004-2005 / Grade 3</td>
</tr>
</tbody>
</table>
Total Students Tested 2005-2006 / Grade 4 | 17,912 | 85,250 | 37 | 154  
Total Students Tested 2006-2007 / Grade 5 | 17,435 | 73,943 | 7 | 21  
Total Students Tested 2007-2008 / Grade 6 | 16,773 | 84,358 | 28 | 167  
Total Students Tested 2008-2009 / Grade 7 | 16,896 | 86,701 | 20 | 154  
Total Students Tested 2009-2010 / Grade 8 | 16,577 | 87,288 | 31 | 142  

**SCIENCE**  
Total Students Tested 2006-2007 / Grade 5 | 14,639 | 83,959 | 30 | 134  
Total Students Tested 2009-2010 / Grade 8 | 16,552 | 87,157 | 31 | 141  

**SOCIAL STUDIES**  
Total Students Tested 2006-2007 / Grade 5 | 14,639 | 83,959 | 30 | 134  


Table 3: Number of students scoring in each level of proficiency per content area.

### 2004-2005 3rd Grade READING

<table>
<thead>
<tr>
<th>Level of Proficiency</th>
<th>NHB</th>
<th>NHW</th>
<th>D/HIB</th>
<th>D/HIW</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADV</td>
<td>2977</td>
<td>34164</td>
<td>0</td>
<td>16</td>
</tr>
<tr>
<td>ACC</td>
<td>4041</td>
<td>23924</td>
<td>4</td>
<td>37</td>
</tr>
<tr>
<td>PRO</td>
<td>4892</td>
<td>17656</td>
<td>6</td>
<td>43</td>
</tr>
<tr>
<td>BAS</td>
<td>3480</td>
<td>7768</td>
<td>4</td>
<td>24</td>
</tr>
<tr>
<td>LIM</td>
<td>3944</td>
<td>4678</td>
<td>16</td>
<td>35</td>
</tr>
</tbody>
</table>

### 2005-2006 4th Grade READING

<table>
<thead>
<tr>
<th>Level of Proficiency</th>
<th>NHB</th>
<th>NHW</th>
<th>D/HIB</th>
<th>D/HIW</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADV</td>
<td>304</td>
<td>6734</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>ACC</td>
<td>2239</td>
<td>26769</td>
<td>1</td>
<td>15</td>
</tr>
<tr>
<td>PRO</td>
<td>7810</td>
<td>40665</td>
<td>4</td>
<td>70</td>
</tr>
<tr>
<td>BAS</td>
<td>3475</td>
<td>7331</td>
<td>10</td>
<td>21</td>
</tr>
<tr>
<td>LIM</td>
<td>4084</td>
<td>3751</td>
<td>18</td>
<td>42</td>
</tr>
</tbody>
</table>

### 2006-2007 5th Grade READING

<table>
<thead>
<tr>
<th>Level of Proficiency</th>
<th>NHB</th>
<th>NHW</th>
<th>D/HIB</th>
<th>D/HIW</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADV</td>
<td>488</td>
<td>1244</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>ACC</td>
<td>1429</td>
<td>19858</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>PRO</td>
<td>8997</td>
<td>44489</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>BAS</td>
<td>2964</td>
<td>5284</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>LIM</td>
<td>3557</td>
<td>3068</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

### 2007-2008 6th Grade READING

<table>
<thead>
<tr>
<th>Level of Proficiency</th>
<th>NHB</th>
<th>NHW</th>
<th>D/HIB</th>
<th>D/HIW</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADV</td>
<td>580</td>
<td>12968</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>ACC</td>
<td>2095</td>
<td>26731</td>
<td>0</td>
<td>18</td>
</tr>
<tr>
<td>PRO</td>
<td>7903</td>
<td>35986</td>
<td>7</td>
<td>80</td>
</tr>
<tr>
<td>BAS</td>
<td>4301</td>
<td>7128</td>
<td>7</td>
<td>37</td>
</tr>
<tr>
<td>LIM</td>
<td>1894</td>
<td>1545</td>
<td>14</td>
<td>28</td>
</tr>
</tbody>
</table>

### 2008-2009 7th Grade READING

<table>
<thead>
<tr>
<th>Level of Proficiency</th>
<th>NHB</th>
<th>NHW</th>
<th>D/HIB</th>
<th>D/HIW</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADV</td>
<td>473</td>
<td>14059</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>ACC</td>
<td>2095</td>
<td>26731</td>
<td>0</td>
<td>18</td>
</tr>
<tr>
<td>PRO</td>
<td>7333</td>
<td>35931</td>
<td>4</td>
<td>59</td>
</tr>
<tr>
<td>BAS</td>
<td>3869</td>
<td>7290</td>
<td>10</td>
<td>32</td>
</tr>
</tbody>
</table>
Data Analysis

The Ohio Department of Education assigns an overall scale score to students on each test, ranging from 249-431, which allows student scores to be categorized as Advanced, Accelerated, Proficient, Basic, and Limited. The percent of Black, Non-Hispanic students in each proficiency category was compared to the percent of White, Non-Hispanic students in each proficiency category to determine if a significant difference existed. In addition, the performance data from the disability category of D/HI as a whole was examined each school year from 2004-2005 to 2009-2010 to determine if there were any changes in academic performance overtime. Microsoft Excel was used to analyze trend lines for scoring within a particular proficiency level. Group comparisons
were made using two-tailed t-tests with the a priori significance level set at $p=.05$ for all comparisons.
CHAPTER IV

RESULTS

The results of this study are presented in four sections. The first section presents the OAA results of the Black and White normal hearing students and D/HI students between the years of 2004-2010 in the content area of Reading (Figures 1-13). This section also compares the results of normal hearing students to the results of the D/HI on all administrations of the OAA from the 2004-2005 school year through the 2009-2010 school year, grades 3 – 8. The second section provides the OAA results of the same group of students in the content area of Science for the 2007-2008 and 2009-2010 school years (Figures 14-17). Section three presents the results from the 2006-2007 OAA in the content area of Social Studies (Figures 18-19). Lastly, section four presents the results of analyses regarding the pass /fail rate of the students taking the OAA since the implementation of NCLB (Figures 20-21).

Reading

This section presents results of the analyses responding to research questions 1 and 2 presented in Chapter I. A probability level of .05 was considered statistically significant on all measures. The first and second research questions are specified below.

Research Question 1

Is there a difference between the scores achieved in each level of proficiency in the content area of Reading on the Ohio Achievement Assessment by White Non-Hispanic, normal hearing and D/HI students and the scores achieved by Black Non-Hispanic normal hearing and D/HI students?
The data above in Figures 1 and 2 show the percent of normal hearing and D/HI students scoring Advanced on the Reading portion of the OAA in each tested grade. Analysis revealed a statistically significant difference in the percent of normal hearing White students scoring Advanced than normal hearing Black students ($t_{(10)} = -2.91$, $p = .02$). The null hypothesis is rejected. Analysis did not show a significant difference between the percent of White D/HI students scoring in this level as compared to the Black D/HI students ($t_{(10)} = -.94$, $p = .3$). The null hypothesis is accepted.
Both the White and Black students scored higher during their 3rd grade year with a decline in results during the fourth grade. Results appear to remain relatively stable from the 4th to 7th grade with a slight increase in scores during the 8th grade year. Although their performance improves in the 8th grade year, the percent scoring Advanced does not return to the original percentage achieved during the first year of test administration.

For the D/HI group, the White students scored above Black peers in the 3rd grade but their performance declined for the next five school years. Particularly in the 4th, 5th and 8th grades, the percent of Black students scoring advanced exceeded the percent of White students. The performance of the Black students improved during the 4th grade year but it declined steadily during the 5th, 6th and 7th grades with improvement in the 8th grade year.

Figure 3: Percent of normal hearing students scoring Accelerated in the content area of Reading from grades 3-8
The data above in Figures 3 and 4 show the percent of normal hearing and D/HI students scoring Accelerated on the Reading portion of the OAA in each tested grade. Analysis showed a significant difference in the percent of normal hearing White students scoring Accelerated as compared to Black students scoring in this area \((t_{(10)} = -6.35, p = .03)\) The null hypothesis is rejected. Analysis did not show a statistical difference between the percent of D/HI White students scoring in this level as compared to the D/HI Black students \((t_{(10)} = -1.55, p = .15)\). The null hypothesis is accepted.

More White normal hearing students scored Accelerated during each tested grade with a decline in both the White and Black group during the 5th grade year. The Black students experienced a drop in performance for both the 4th and 5th grade years and another decline in the 7th grade. The White student experienced a decline during the 5th and 7th grade years. The D/HI group experienced a decline in the percent scoring Accelerated during the 4th grade year for both the Black and White students. The White student scoring in this area declined slightly during the 6th grade and continued to
improve for the 7th and 8th grade years. The Black students experienced growth in the percent scoring in this area during the 5th, 6th and 8th grade years with a decline during the 7th grade year.

Figure 5: Percent of normal hearing students scoring Proficient in the content area of Reading from grades 3-8

Figure 6: Percent of D/HI students scoring Proficient in the content area of Reading from grades 3-8
The data above in Figures 5 and 6 show the percent of normal hearing and D/HI students scoring Proficient on the Reading portion of the OAA in each tested grade. Analysis did not show a statistical difference between the percent of normal hearing White students scoring in this level as compared to the normal hearing Black students ($t_{(10)} = 0.52, p = .61$) or between the Black and White D/HI students scoring in this area ($t_{(10)} = -2.09, p = .06$) as both groups performed at a similar level. The null hypothesis is accepted for both groups, however the results for the D/HI were approaching significant.

For the D/HI group, the percent of White students scoring in this level of proficiency is greater than the percent of Black students scoring in this level during the 4th and 6th grade years. Both groups experienced a huge decline in the 5th grade year with no students scoring in this level of proficiency however there was an issue with data statewide during this year due to errors with the assessment. Results during this year may not be valid.

![NH Basic graph](image-url)

*Figure 7: Percent of normal hearing students scoring Basic in the content area of Reading from grades 3-8*
The data above in Figures 7 and 8 show the percent of normal hearing and D/HI students scoring Basic on the Reading portion of the OAA in each tested grade. It is important to note that this is the first time in the data where the Black students score higher than the White students for both the normal hearing and D/HI groups. Analysis revealed a statistically significant difference between the percent of normal hearing Black students scoring in this level as compared to the normal hearing White students \( (t_{(10)} = 2.7, p = .04) \). The null hypothesis is rejected. Analysis did not show a statistically significant difference in the percent scoring in this level for the D/HI group \( (t_{(10)} = 0.72, p = .48) \). The null hypothesis is accepted for this group.

The performance of the normal hearing White students remained relatively consistent for each year of test administration while the performance of the Black students declined in the 5th grade year, rising in the 6th grade year. For the D/HI group, with the exception of the 5th grade year, the performance of the Black students remained
relatively stable. Again, the results recorded by the state of Ohio during the 5th grade year may not be valid due to an issue with data statewide.

The performance of the White students increased during the 6th grade year and remained stable through the 8th grade.

![NH Limited](image)

**Figure 9:** Percent of normal hearing students scoring Limited in the content area of Reading from grades 3-8

![D/HI Limited](image)

**Figure 10:** Percent of D/HI students scoring Limited in the content area of reading from grades 3-8
The data above in Figures 9 and 10 show the percent of normal hearing and D/HI students scoring Limited on the Reading portion of the OAA in each tested grade. Similar to the data for the level of Basic, there are more Black students than White students scoring in this area. For the D/HI group as a whole, more students scored in this level proficiency than any other level. Analysis showed a statistically significant difference between the percent of normal hearing Black students scoring in this level as compared to their normal hearing White peers $t_{(10)} = 5.59$, $p = .001$. The null hypothesis is rejected. There was not a significant difference between the Black and White D/HI Black students scoring in this level $t_{(10)} = 1.958$, $p = .09$. The null hypothesis is accepted.

The data for the normal hearing White students indicate fewer White students scoring this level of proficiency with relatively stable performance over the years. The Black normal hearing students experienced a decline in the number of students scoring in this level during the 6th and 8th grade years. The data for the D/HI group follows a similar pattern for both the White and Black students. Both had declines in the 5th and 8th grade years with improvements during the 6th and 7th grade years. Again, the results recorded by the state of Ohio during the 5th grade year may not be valid due to an issue with data statewide.

*Research Question 2*

Are the trends present in the content area of Reading on the Ohio Achievement Assessment for Black Non-Hispanic and White Non-Hispanic normal hearing students also present in the data for Black Non-Hispanic and White Non-Hispanic D/HI students?
Figure 11: Percent of normal hearing White students scoring in all levels of proficiency in the content area of Reading from grades 3-8

Figure 12: Percent of normal hearing Black students scoring in all levels of proficiency in the content area of Reading from grades 3-8
Some trends present in the content area of Reading on the Ohio Achievement Assessment for the normal hearing students were present in the data of the D/HI students as can be seen in Figures 13, 14. Both the normal hearing Black students and the Black D/HI students scored Limited and the fewest number of students in each category scored Advanced and Accelerated. Also, the majority of the White normal hearing and White D/HI students scored proficient. The fewest normal hearing White students scored Limited and the fewest White D/HI students scored Advanced and Accelerated. The
second highest scoring area of the normal hearing White students was Accelerated. The majority of the Black normal hearing students scored proficient with the fewest students scoring Advanced and Accelerated.

For each administration of Reading on the OAA between the years of 2004-5 to 2009-10, the majority of the Black D/HI students tested during each administration of the OAA scored Limited with the exception of the 2006-2007 school year when the majority of the students tested scored Advanced. The fewest number of Black D/HI students scored Advanced and Accelerated. Fewer Black D/HI students scored Advanced during the 2004-2005 school year, Accelerated during the 2005-2006 school year, Proficient / Basic / Limited during the 2006-2007 school year, Advanced / Accelerated during both the 2007-2008 and 2008-2009 school years and Accelerated / Basic during the 2009-2010 school year. Again, the results recorded by the state of Ohio during the 5th grade year may not be valid due to an issue with data statewide.

The majority of the White D/HI students scored Proficient and the fewest students scored Advanced and Accelerated. Fewer students scored Advanced during the 2004-2005, 2005-2006, 2007-2008, 2008-2009 and 2009-2010 school years. The 2006-2007 school year was an exception for this group of students as well with the majority of students scoring Accelerated and the fewest number of students scoring Proficient / Basic / Limited in that order.

Science

This section presents results of the analyses responding to research questions 3 and 4 presented in Chapter I. A probability level of .05 was considered statistically significant on all measures. The third research question is specified below.
Research Question 3

Is there a difference between the scores achieved in each level of proficiency in the content area of Science on the Ohio Achievement Assessment that was administered during the academic years of 2006-2007 and 2009-2010 by White Non-Hispanic, normal hearing and D/HI students and the scores achieved by Black Non-Hispanic normal hearing and D/HI students?

Research Question 4

Are the trends present in the content area of Science on the Ohio Achievement Assessment that was administered during the academic years of 2006-2007 and 2009-2010 for Black Non-Hispanic and White Non-Hispanic normal hearing students also present in the data for Black Non-Hispanic and White Non-Hispanic D/HI students?

Figure 15: Percent of normal hearing 5th grade students scoring in each level of proficiency in the content area of Science.
Figure 16: Percent of D/HI 5th grade students scoring in each level of proficiency in the content area of Science.

Figure 17: Percent of normal hearing 8th grade students scoring in each level of proficiency in the content area of Science.
Information shown in Figures 15-18 did not show a statistically significant difference between the percent of normal hearing (Grade 5 $t_{(8)} = -0.045$, $p = .96$, Grade 8 $t_{(8)} = 0$, $p = 1$) or D/HI (Grade 5 $t_{(8)} = -.22$, $p = .82$, Grade 8 $t_{(8)} = 0$, $p = 1$) Black and White students scoring in either category. The null hypothesis is accepted for each grade in both groups.

During the 2006-2007 school year the majority of the Black normal hearing students tested scored in the level of Basic while the majority of the White normal hearing students scored in the level of Accelerated. This remained stable during the 2009-2010 school year for the normal hearing Black student however the normal hearing White students declined and scored in the level of Proficient during the 2009-2010 school year. It is important to note that the performance of the Black and White D/HI students is similar for both years tested. The majority of both groups of D/HI students (Black and White) scored in the level of Basic during the 2006-2007 school year and the fewest scoring Limited. The majority of both groups scored Basic and the fewest scored Accelerated during the 2009-2010 school year.

Figure 18: Percent of D/HI 8th grade students scoring in each level of proficiency in the content area of Science.
During the 2009-2010 school year, the fewest number of normal hearing Black students scored in the level of Advanced. The fewest number of White normal hearing students scored in the Limited level. The fewest number of D/HI Black and White student scored in the area of Accelerated. It is important to note that the largest percentage of Black normal hearing and D/HI students scored in the level of Basic on each administration of the OAA. The trends present for the normal hearing Black students in the content area of Science are present in the data of the D/HI Black students with most students scoring Basic.

Social Studies

This section presents results of the analyses responding to research questions 5 and 6 presented in Chapter I. A probability level of .05 was considered statistically significant on all measures. Research questions five and six are specified below.

Research Question 5

Is there a difference between the scores achieved in each level of proficiency in the content area of Social Studies on the Ohio Achievement Assessment that was administered during the 2006-2007 school year by White Non-Hispanic, normal hearing and D/HI students and the scores achieved by Black Non-Hispanic normal hearing and D/HI students?

Research Question 6

Are the trends present in the content area of Social Studies on the Ohio Achievement Assessment that was administered during the 2006-2007 school year for Black Non-Hispanic and White Non-Hispanic normal hearing students also present in the data for Black Non-Hispanic and White Non-Hispanic D/HI students?
Figures 19 and 20 show assessment results for Social Studies. Data were very limited in this area as Social Studies was only tested during the 2006-2007 school year (5th grade) and did not show statistically significant differences for either group of students (normal hearing $t_{(8)}=-1.41, p = .20$; D/HI $t_{(8)} = -0.415, p=0.6$) however with additional data (years) it is possible that a greater difference would appear in the normal
hearing category between Black and White students as the current difference is approaching significance. The null hypothesis is accepted for both groups.

Trends present in the data of the normal hearing students was present in the data of the D/HI students with the fewest students tested scoring Advanced and Limited. The majority of the Black normal hearing students tested scored in the level of Basic while the majority of the White normal hearing students scored in the level of Accelerated. The majority of both groups of D/HI students (Black and White) scored in the level of Basic. Both groups of students (normal hearing and D/HI) had the fewest number of students scoring Advanced and Limited. Trends present in the data for the normal hearing group were present with the D/HI group in that both groups had the fewest percent of students scoring Advanced and the highest percent of students scoring Limited.

Pass / Fail

This section presents results of the analysis responding to research questions 7 and 8 presented in Chapter I. A probability level of .05 was considered statistically significant on all measures. These final research questions are specified below.

Research Question 7

Did the percentage of Black and White Non-Hispanic normal hearing students and D/HI students passing or failing the OAA change during implementation of NCLB?

Research Question 8

Was there an achievement gap within the disability category of D/HI based on overall student performance on the OAA administered between the academic years of 2004-2005 and 2009-2010?
Analysis as summarized in Figures 21 and 22 reveal statistical significance in the percent of normal hearing Black students failing passing / failing the OAA ($t_{(10)} = -3.73$, $p = .01$) with more Black students failing than passing the OAA. The null hypothesis is rejected. Statistical significance was also revealed in the percent of Black D/HI students passing / failing the OAA ($t_{(10)} = -2.66$, $p = 0.04$) with more students failing than passing the OAA. The null hypothesis is rejected. Statistical significance was not present in either group of White students passing / failing the OAA (normal hearing $t_{(10)} = -54.32$, $p = 1.22$; D/HI $t_{(10)} = -1.54$, $p = 0.146$). The null hypothesis is accepted for both groups. Again, the
results recorded by the state of Ohio during the 5th grade year may not be valid due to an issue with data statewide.

These data indicates the presence of an achievement gap within the disability sub-group of D/HI, similar to that of the normal hearing students with the White students having the highest percent of students passing the OAA and the lowest percent of students failing the OAA. Both groups of normal hearing students had lower percentages of students failing the OAA than the D/HI groups. The performance of the White D/HI students remained relatively constant over the years. There was little fluctuation in their academic performance from year to year with similar rates of pass and fail for the OAA over the years. For each year of the OAA, a higher percent of Black D/HI students failed the assessment. This group of students had the highest fail rate of all students tested.
CHAPTER V
DISCUSSION

This chapter presents a summary of the results along with a discussion of these results.

OAA Reading

Statistical significance was found in the percent of normal hearing White students who scored Advanced and Accelerated. Students scoring Advanced must attain a scale score of 432-497 and students scoring Accelerated must attain a scale score of 415-431. These students demonstrated the ability to effectively and consistently determine word meanings, and understand information in grade appropriate text.

Although statistical differences were not noted in the percent of students scoring Proficient, a larger number of White D/HI students scored in this level as compared to the Black D/HI students particularly during the 2007-2008 (grade 6) and 2005-2006 (grade 8) school years. Students scoring in this level attained a score of 400-414 and demonstrated the ability to determine word meanings and understand information in grade appropriate text.

Statistical significance was revealed in the percent of normal hearing Black students scoring Basic. It is interesting to note that the performance of the Black students and the White students somewhat flip where the performance of the Black students increases in the lower levels and the performance of the White students increases in the higher levels of performance. Students scoring in this level attained a score of 385-399 indicating that they need help to understand word meanings and information in grade appropriate text. There was not a statistically significant difference between the performances of the Black and White D/HI students in this level.
Statistical significance was also found in the percent of Black normal hearing students scoring Limited as compared to White normal hearing students. Students scoring Limited attained a score of 256-384. These students are characterized as having significant struggles with understanding word meanings and information in grade appropriate text.

Some trends present for the normal hearing Black students were also present for the Black D/HI students in that the majority of the Black students in each group scored in the Limited category and the fewest number of students scored Advanced and Accelerated. Also, the majority of the White normal hearing and White D/HI students scored proficient. The fewest normal hearing White students scored Limited and the fewest White D/HI students scored Advanced and Accelerated.

OAA Science

Statistical significance was not found for either the normal hearing or the D/HI group. During both administrations of the Science portion of the OAA in the 2006-2007 school year and the 2009-2010 school year the majority of the Black normal hearing and D/HI students tested scored Basic. The fewest percent of Black normal hearing students scored Advanced and Accelerated and the fewest percent of Black D/HI students scored Accelerated.

The highest scoring level for the White normal hearing students during the 2006-2007 school year was Accelerated and the lowest scoring level was Advanced and Limited. The highest scoring level for the White normal hearing students during the 2009-2010 school year was Proficient and the lowest level was Limited. The scores of the White D/HI students was the same as the scores for the Black D/HI students with more students scoring Basic and fewer scoring Accelerated.
Trends present for the Black normal hearing students were present in the data of both groups of D/HI students with most students scoring Basic.

**OAA Social Studies**

Data did not reveal statistically significant differences for either the normal hearing or the D/HI students. Both the Black and White normal hearing students had the highest percentage of students scoring Proficient and the lowest percentage of students scoring Advanced and Accelerated. This pattern was similar for the D/HI students with both the Black and White normal hearing groups having the lowest percentage of students scoring Advanced.

**Pass / Fail**

Data revealed statistical significance in the percent of Black normal hearing and D/HI students failing the OAA. More Black Non-Hispanic students failed the assessment overall as compared to their White Non-Hispanic peers. These data indicate the presence of an achievement gap within the disability category of D/HI. Data did not reveal any change in student performance on the OAA since implementation of NCLB. With the exception of the 5th grade year where errors were found by the state on assessment, results remained relatively stable for all groups.

**Summary and Discussion**

Few if any studies have examined the academic performance of minority and non-minority students within the subgroups that makes up the category of students with disabilities. As such, the focus of this study was to examine the scores of students identified as receiving special education services under the specific disability category of D/HI as measured on the Reading, Science and Social Studies components of the Ohio Achievement Test. This research was conducted to determine if students with disabilities
are being left behind, as the majority of initiatives espoused by NCLB are geared towards improving the performance of general education students, not students with disabilities. Across the nation, students with disabilities perform worse than their general education peers and are not achieving at a level commensurate with their general education peers in any content area. Though students with disabilities are mentioned in the Accountability section of NCLB, none of the initiatives focus specifically on improving the teaching ability of intervention specialists or reducing potential academic achievement gaps among students with disabilities. An additional goal of this research was to compare the achievement of D/HI students to that of their normal hearing general education peers and to determine if trends present in the data of the normal hearing students were present in the data of the D/HI students. Data in the content areas of Reading, Science and Social Studies on the Ohio Achievement Assessment administered during the 2004-2005, 2005-2006, 2006-2007, 2007-2008, 2008-2009, and 2009-2010 school years was examined to make these determinations.

Over 1,700,000 students were tested in the state of Ohio each school year (04-05, 05-06, 06-07, 07-08, 08-09, 09-10). Of the students tested, approximately 107,000 were normal hearing, non-disabled and approximately 185 were D/HI. All students tested were administered the OAA by their districts of service and took all portions of the test that were required during the grade tested. The results of all assessments were sent to the Ohio Department of Education for scoring. Raw scores were converted to scaled scores specific to each grade level and each content area. An overall scaled score ranging from 249-431 was assigned to each student based on his or her performance on each assessment. In the content area of Reading this score indicates the students performance on Acquisition of Vocabulary, Reading Process, Informational Text and Literary Text. In
the content area of Science this score indicates the students performance on Life
Sciences, Physical Sciences and Scientific Processes. In the content area of Social
Studies this score indicates the students performance on economics, Government and
Citizenship Rights and Responsibilities.

These results were then categorized as Advanced, Accelerated, Proficient, Basic
and Limited. The percent of Black and White normal hearing, non-disabled and D/HI
students scoring in each category in the content areas of Reading, Science and Social
Studies were analyzed to determine differences and trends. Six years of data were
analyzed in the content area of Reading (grades 3, 4, 5, 6, 7 and 8), two years of data
were analyzed for Science (grades 5 and 8), and one year of data were analyzed for
Social Studies (grade 5). These results were then grouped into a pass / fail category where
all students scoring Advanced, Accelerated and Proficient were identified as the pass
group and all students scoring in the categories of Limited and Basic were identified as
the fail group.

Results of the analyses indicate that significant differences existed between the
performance of Black and White student on the OAA overall. Significant differences
were also noted in the percent of students scoring in certain levels in the content area of
Reading. Although no significant differences were noted in the content areas of Science
and Social Studies, some trends that were present for the normal hearing students were
present for the D/HI students as well.

Despite the data reporting mechanisms and accountability measures of NCLB and
the national attention given to the achievement gap, the existence of gaps in the
achievement of students with disabilities based on racial or ethnic criteria remains
unknown. To date, few studies have explored the existence of an achievement gap within
disability subgroups. The findings from this study are reflective of previous studies (Gonzalez et al., 2006; Noguera, 2003; Oberman & Symonds, 2005) that have reported lower standardized scores for African American (Black) students. As demonstrated in the current study, not only do the normal hearing Black students have poorer academic performance than their White peers, the Black D/Hi students also had lower academic performance overall on the Ohio Achievement Assessment. The results of this study not only confirm the existence of the achievement gap between Black and White students but also the existence of an achievement gap within the disability category of D/Hi. No Child Left Behind has apparently not improved the academic performance of all students in Ohio and will not reach its goal of 100% student passing assessments by the year 2014.

Although NCLB expired in 2008 a revised bill has yet to be passed. A blueprint for reauthorization of the bill was released in 2010 calling for reforms in four major areas: improving teacher and principal effectiveness, providing information to families and educators to help them evaluate and improve student learning, implementing college and career ready standards, and providing intensive support and effective interventions to improve student learning and achievement (U.S. Department of Education, 2013). Extension of this framework includes a key priority titled “Equity and Opportunity for All Students” with a sub heading titled “Meeting the needs of diverse learners” (U.S. Department of Education, 2013) that specifically mentions students with disabilities. This piece of legislation states that schools must support all students by providing appropriate instruction and access to challenging curriculum. It is promising to see that these issues are mentioned however there is no description on how this will be implemented at the school level or monitored.
Frequently in schools students with disabilities do not have the same access to the general education curriculum as their general education peers. Intervention specialists often use supplemental materials to educate students with disabilities rather than referring to and modifying the general education curriculum. This is problematic for many reasons, with the primary reason being that all high stakes assessments assess students on information provided in the general education curriculum. Intervention specialists need access to the same curricular information as general education teachers. Further, emphasis needs to be given to preparation of teachers to equip them to better address the needs of diverse learners. If students with disabilities do not have access to general curricular materials and are not being taught the same standards or exposed to the same academic rigor as their general education peers, the achievement gap between these two groups will continue.

Many factors such as curriculum, academic rigor, teacher perceptions, school resources, and socioeconomic status have been identified as contributors to the disparity between the academic performances of Black and White students (Cook & Evans, 2000; Davis 2003; Dee, 2003; Gonzalez, 2001; Jencks & Phillips, 1998; Roscigno, 2000; Taylor, 2003). To address teacher perception, educators have embraced initiatives such as Culturally Responsive Practices and have provided professional development to teachers on this topic. The premise behind Culturally Responsive Practices is for educators to not ignore the differences of their students but to be cognizant of those differences and responsive to the challenges their differences may bring. Although this is an excellent initiative, much is lost in translation as many believe that being culturally responsive means being cognizant of the needs of English learners including Hispanic, Asian and African populations. Consequently, the needs of Black Non-Hispanic students
have been ignored. The results of this study as well as the other studies referred to indicate that this is not true and that greater attention is needed on this issue as our Black students continue to perform below their White peers.

The ability to comprehend and process language is also highly correlated to the ability to read and comprehend printed material and as such, is a contributor to student performance on achievement assessments (Catts et al, 2002; Catts & Kamhi, 2005). Early language skills have been connected to later reading achievement as language has been found to facilitate reading (Catts et al 2002; Catts & Kamhi, 2005; Young et al., 2002). It appears that the early literacy skills needed in order for one to become a proficient reader such as knowledge of morphology, print awareness, phonological awareness and knowledge of alphabetical principles aid in the acquisition of fluid decoding skills are lacking for the African American learners as well as the D/HI students. Betts (2008) found that reading comprehension was the chief predictor of success on statewide assessments and that student performance on measures of receptive, expressive and higher-level language skills could be used to help determine student success. Instructional strategies should be implemented consistently to improve reading comprehension and overall reading ability of minority and disabled learners and for strategies and interventions to be put in place to assist these groups of students with acquiring the literacy skills necessary to have academic success.

Students experiencing difficulty on the reading assessments also experience difficulty on assessments in the areas of science and social studies. Chapin (2006) found that the achievement gap in the content areas of science and social studies begins as early as kindergarten for African American students. The current research echoes previous studies in that it reveals substantial racial differences in student performance with White,
Non-Hispanic students out performing their minority peers (Chapin, 2006; Weiss et al, 2002). Chapin (2006) asserts that these results reveal the need for policies mandating acquisition of social studies and science knowledge at an early age, preferably prior to students entering kindergarten. There continues to be a need for educational policies mandating not only acquisition of science and social studies knowledge at an early age but also for mandating language arts and reading across the curriculum. Though not a federal mandate, the so-called Common Core State Standards have been embraced by all but five states in an effort o help prepare students for college and career.

The Common Core State Standards were developed to provide a blueprint for what students should learn at each grade in the areas of English Language Arts and Math. The Common Core State Standards for English Language Arts and Literacy in History, Social Studies, Science and Technical Subjects address the issue of literacy with its heavy focus on academic language and cross curricular content. There are three primary shifts in literacy instruction with the Common Core. These shifts are: 1) Building knowledge through content-rich nonfiction,;2) Reading, writing and speaking grounded in evidence from both literary and informational text, and 3) Regular practice with complex teat and academic language (Student Achievement Partners, 2013). The literacy requirements of the Standards were developed in order to help students read, write, speak, listen and use language effectively in multiple disciplines.

Conclusions

Although The No Child Left Behind Act (NCLB) was signed into law in 2002 with the aim of “closing the achievement gap with flexibility, accountability and choice” (NCLB, 2002), the results of the current study reveal that ten years later, the achievement gap has not been closed in Ohio. Major reforms were enacted to hold schools
accountable for accomplishing this task yet we have not seen the impact on academic progress that was promised as White non-disabled students in Ohio continue to outperform both their minority and disabled peers on academic assessments. Furthermore, the results of this study indicate that White disabled students also fare better than their minority peers on academic assessments revealing an achievement gap within a disability sub-group.

Research has shown that significant differences exist between the academic performance of Black, Non-Hispanic and White, Non-Hispanic general education students. The major findings show that, on average, White, Non-Hispanic students tend to outperform Black, Non-Hispanic students on reading related tasks and that Black, Non-Hispanic students are more often identified as poor or struggling readers as compared to their non-minority peers. Results from this study support these findings showing that White, Non-Hispanic students score higher than Black Non-Hispanic students on all tests, based on overall performance, at all grade levels (third through eighth). The results of this study also show that White, Non-Hispanic D/ HI students outperform their Black, Non-Hispanic peers.

This study looked at the academic performance of students in the state of Ohio. Recently in the state of Ohio, Governor Kasich passed Senate Bill 316. One of the changes that this education bill sets forth for school aged children is the Third Grade Reading Guarantee. This Bill states that starting with the 2013-2014 school year, third grade students must reach a certain level of proficiency on the state reading tests or they will be retained in the third grade. Based on the fact that minority students are most likely to fail the reading assessment, many will be retained in the third grade. Once again, many students, not just minority and disabled ones, will be left behind.
If schools are to prepare students to be competitive in a global economy and to compete with their international peers, a more balanced approach to literacy instruction is needed. Policy makers and educators need to work together to ensure that schools are using proven research strategies with integrity and to ensure that both general education students and students with disabilities have access to quality instruction.

Limitations of the Study

It is understood that using a more cohesive multivariate design would have allowed for multiple comparisons and would have reduced the likelihood of a Type I error as well as simplified the design in general. However, due to the limitations of the data set in regards to not having access to individual test scores, it was not possible to run a more complex multivariate design in the software. Thus the decision was made to break down each comparison into an individual t-test. I acknowledge that t-tests do not have sufficient power to reach statistical significance but it is hypothesized that with aggregated individual data, these same comparisons would show agreement with my findings.

This study also did not account for factors such as attendance rates or retention. As the number of days with out instruction increases, test performance decreases. Having been retained is also known to have ill effects on academic performance. Another limitation of this study is knowledge of where the D/HI students were educated (Deaf education programs, traditional school, school for the Deaf, etc.) Specifics regarding the least restrictive environment of D/HI students are unknown as well. As such, caution must be used in generalizing the results of this study to other geographic areas.
Implications for Future Research

Across the nation, students with disabilities continue to be the lowest performing sub-group of all tested students. Districts across the nation are unable to make Adequate Yearly Progress based on the performance of their students with disabilities. This phenomenon is perplexing, as students with disabilities should be exposed to the same general education curriculum and standards as their non-disabled peers. In addition, students with disabilities have individualized education programs and receive accommodations that are designed to provide specialized services to help them achieve academically. However based on the results of this study, the performance of students with disabilities continues to be overlooked in Ohio.

Future research should explore the academic performance of students in other disability subgroups to determine how pervasive the achievement gap really is. In addition research on achievement levels between minority and non-minority students in all disability categories (SLD, ED, Au, CD, etc.) should be examined as well. Once this has been confirmed, it will be necessary to apply strategies focused on improving the education of all students and providing access to the general education curriculum to students with disabilities. Such strategies include monitoring the implementation of professional development by general education teachers and intervention specialists, proper implementation of culturally responsive practices and the use of proven research based protocols such as Universal Design for Learning which provides guidelines and structures for improving the educational opportunities for all.
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&TopicID=1699&TopicRelationID=1696.


APPENDIX A

Six Priorities of NCLB

<table>
<thead>
<tr>
<th>Priority</th>
<th>Description</th>
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<tbody>
<tr>
<td>Priority 1</td>
<td>Adequate yearly progress (AYP)</td>
</tr>
<tr>
<td>Priority 2</td>
<td>Highly qualified teachers and paraprofessionals (HQT)</td>
</tr>
<tr>
<td>Priority 3</td>
<td>Assessment</td>
</tr>
<tr>
<td>Priority 4</td>
<td>Parental choice</td>
</tr>
<tr>
<td>Priority 5</td>
<td>Greater freedom for states and communities</td>
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<tr>
<td>Priority 6</td>
<td>Flexibility of funds</td>
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</table>

APPENDIX B

Ten Titles of NCLB

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<thead>
<tr>
<th>Title</th>
<th>Description</th>
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<tbody>
<tr>
<td>Title I</td>
<td>Improving the Academic Achievement of the Disadvantaged</td>
</tr>
<tr>
<td>Title II</td>
<td>Preparing, Training, and Recruiting High Quality Teachers and Principals</td>
</tr>
<tr>
<td>Title III</td>
<td>Language Instruction for Limited English proficient and Immigrant Students</td>
</tr>
<tr>
<td>Title IV</td>
<td>21st Century Schools</td>
</tr>
<tr>
<td>Title V</td>
<td>Promoting informed parental Choice and Innovative Programs</td>
</tr>
<tr>
<td>Title VI</td>
<td>Flexibility and Accountability</td>
</tr>
<tr>
<td>Title VII</td>
<td>Indian, Native Hawaiian, and Alaska Native Education</td>
</tr>
<tr>
<td>Title VIII</td>
<td>Impact aid Program</td>
</tr>
<tr>
<td>Title IX</td>
<td>General Provisions</td>
</tr>
<tr>
<td>Title X</td>
<td>Repeals, Redesignations, and Amendments to Other Statutes</td>
</tr>
</tbody>
</table>
## APPENDIX C

### Ohio Testing

<table>
<thead>
<tr>
<th>Type of Test</th>
<th>Grade of Administration</th>
<th>Content Areas Assessed</th>
</tr>
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<tbody>
<tr>
<td>OAT</td>
<td>3</td>
<td>Reading and Math</td>
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<tr>
<td></td>
<td>4</td>
<td>Reading, Math and Writing</td>
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<td></td>
<td>5</td>
<td>Reading, Math, Science, Social Studies</td>
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<td>6</td>
<td>Reading, Math</td>
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<td>Reading, Math, Science, Social Studies</td>
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<td>OGT</td>
<td>10</td>
<td>Reading, Math, Writing, Science, Social Studies</td>
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## APPENDIX D

### 2007-2008 AYP Targets for Reading in Ohio

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<thead>
<tr>
<th>Grade Band</th>
<th>Grade</th>
<th>Reading</th>
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<tbody>
<tr>
<td>Elementary School</td>
<td>Grade 3</td>
<td>71.2%</td>
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<tr>
<td></td>
<td>Grade 4</td>
<td>68.3%</td>
</tr>
<tr>
<td></td>
<td>Grade 5</td>
<td>68.3%</td>
</tr>
<tr>
<td>Middle School</td>
<td>Grade 6</td>
<td>75.8%</td>
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<tr>
<td></td>
<td>Grade 7</td>
<td>68.6%</td>
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<tr>
<td></td>
<td>Grade 8</td>
<td>73.8%</td>
</tr>
<tr>
<td>High School</td>
<td>Grade 10</td>
<td>71.8%</td>
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</table>
APPENDIX E

Description of Reading Standards

<table>
<thead>
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<th>Category</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Acquisition of Vocabulary</td>
<td>Students determine the meaning of words by looking at the words themselves and sentences around the new words, correctly reading common words (e.g., ant, leaf, pillow) using previous knowledge about parts of words (e.g., can’t, lovely, helpful) to understand whole words.</td>
</tr>
<tr>
<td>Informational Text</td>
<td>Students use text features (e.g., titles, index, pictures) to understand informational texts (e.g., maps, instructions, non-fiction), drawing conclusions from information in charts, graphs and diagrams.</td>
</tr>
<tr>
<td>Literary Text</td>
<td>Students compare and contrast the plots of different stories using details from stories to describe characters and setting and can retell what happens. They also explain the features of different types of literature (e.g., fairy tales, folk tales, and poems).</td>
</tr>
<tr>
<td>Reading Process</td>
<td>Students read books by themselves and use reading strategies to help understand what they read, summarizing stories, articles or book chapters by putting information in the right order and by including main ideas and important details.</td>
</tr>
</tbody>
</table>
APPENDIX F

Description of Science Standards

| Earth and Space Sciences | Students demonstrate an understanding about how Earth systems and processes interact in the geosphere resulting in the habitability of Earth, demonstrating an understanding of the compositions of the universe, solar system and Earth. In addition, students understand the properties and the interconnected nature of Earth’s systems and processes that shape the Earth and the Earth’s history. Students also demonstrate an understanding of how the concepts and principles of energy, matter, motion and forces explain Earth systems, the solar system and the universe. They grasp an understanding of the historical perspectives, scientific approaches and emerging scientific issues associated with Earth and space sciences. |
| Life Sciences | Students demonstrate an understanding of how living systems function and how they interact with the physical environment. This includes an understanding of the cycling of matter and flow of energy in living systems, as well as an understanding of the characteristics, structure and function of cells, organisms and living systems. Students also develop a deeper understanding of the principles of heredity, biological evolution and the diversity and interdependence of life. Students demonstrate an understanding of different historical perspectives, scientific approaches and emerging scientific issues associated with the life sciences. |
| Physical Sciences | Students demonstrate an understanding of the composition of physical systems, concepts and principles that describe and predict physical interactions and events in the natural world. Students demonstrate an understanding of structure and properties of matter, the properties of materials and objects, chemical reactions, the conservation of matter, nature, transfer and conservation of energy, motion and the forces affecting motion, the nature of waves and interactions of matter and energy, the historical perspectives, scientific approaches and emerging scientific issues associated with the physical sciences. |
| Scientific Processes: Inquiry, Technology and Ways of Knowing | Technology: Students recognize that science and technology are interconnected and that using technology involves assessment of benefits, risks and costs. Students build scientific and technological knowledge as well as the skill required to design and construct devices. The develop processes to solve problems and understand that problems may be solved in different ways.  
Inquiry: Students develop scientific habits of mind as they use the processes of scientific inquiry to ask valid questions and to gather and analyze information. They understand how to develop hypotheses and make predictions. They are able to reflect on scientific practices as they develop plans of action to create and evaluate a variety of conclusions. Students are able to demonstrate the ability to communicate their findings to others.  
Ways of Knowing: Students realize that the current body of scientific knowledge must be based in evidence, be predictive, logical, subject to modification and limited to the natural world. Students demonstrate an |
understanding that scientific knowledge grows and advances as new evidence is discovered to support or modify existing theories, as well as to encourage the development of new theories. Students are able to reflect on ethical scientific practices and demonstrate an understanding of how the current body of scientific knowledge reflects the historical and cultural contributions of women and men who provide us with a more reliable and comprehensive understanding of the natural world.
Description of Social Studies Standards

| Economics, Government and Citizenship Rights and Responsibilities | Economics: Students use economic reasoning skills and knowledge of major economic concepts, issues and systems in order to make informed choices as producers, consumers, savers, investors, workers and citizens in an interdependent world.  
Government: Students use knowledge of the purposes, structures and processes of political systems at the local, state, national and international structures of power and authority to provide order, maintain stability and promote the general welfare.  
Citizenship Rights and Responsibilities: students use knowledge of the rights and responsibilities of citizenship in order to examine and evaluate civic ideals and to participate in community life and the American democratic system. |
| History | Students use materials drawn from the diversity of human experience to analyze and interpret significant events, patterns and themes in the history of Ohio, the United States and the world. |
| People in Societies and Geography | People in Societies: Students use knowledge of perspectives, practices and products of cultural, ethnic and social groups to analyze the impact of their commonality and diversity within local, national, regional and global settings.  
Geography: Students use knowledge of geographical locations, patterns and processes to show the interrelationship between the physical environment and human activity and to explain the interactions that occur in an increasingly interdependent world. |
| Social Studies Skills and Methods | Students collect, organize, evaluate and synthesize information from multiple sources to draw logical conclusions. Students communicate this information using appropriate social studies terminology in oral, written or multimedia form and apply what they have learned to societal issues in simulated or real-world settings. |