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A Comparison of Inclusion and Pullout Programs on Student Achievement for Students with
Disabilities

A dissertation

presented to

the faculty of the Department of Educational Leadership and Policy Analysis

East Tennessee State University

Johnson City, Tennessee

In partial fulfillment

of the requirements for the degree

Doctor of Education in Educational Leadership

by

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December 2012

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Keywords: special education, student achievement, special education placement, inclusion

ABSTRACT

A Comparison of Inclusion and Pullout Programs on Student Achievement for Students with Disabilities

by

J. Matthew Hurt

Students with disabilities have traditionally achieved to a lesser degree than have their nondisabled peers. Since the 1950s the federal government has enacted laws to provide free, appropriate public education to students with disabilities. In the first decade of the 21st Century the government has produced legislation requiring schools to be responsible for improving instruction for students with disabilities. One of the major trends in accomplishing this task is a move toward inclusive education. This study determined the relationships of assessment type (Standards of Learning (SOL) assessments versus Virginia Grade Level Alternative (VGLA) assessments) and models of service delivery (general education inclusion classes versus special education pullout classes) for students with disabilities in grades 3 through 8 on student achievement in 4 counties in Southwest Virginia.

Similar studies have been conducted with varying results noted. The review of the literature includes 18 studies that compared the achievement of students with disabilities who were instructed in the general education classroom with the achievement of students with disabilities who were instructed in the special education classroom. Significant differences were noted in 11 of the reviewed studies.

The data were analyzed using chi-square analysis and pairwise comparisons. The findings indicate that there is a relationship between instructional delivery method (inclusion or pullout)

and proficiency in reading and math. Students who were educated in the inclusion classrooms tended to have a higher incidence of pass proficient ratings and students in the pullout classrooms tended to have a higher incidence of pass advanced ratings. The findings also indicate that there is a relationship between assessment method (SOL assessment or VGLA) and proficiency in reading and math. Students who were assessed via the SOL assessment tended to have a higher incidence of pass proficient ratings and students who were assessed via the VGLA assessment tended to have a higher incidence of pass advanced ratings.

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DEDICATION

This dissertation is dedicated to my family. My wonderful wife Rebecca has supported me through all of my endeavors and this process was no different. It is hoped that this work will provide my daughter Carly Ann with an appropriate example in order to allow her to realize that she can accomplish anything.

ACKNOWLEDGEMENTS

I would like to express my appreciation to the faculty of the ELPA department, the chair of my committee Dr. Lampley, the members of my cohort, my coworkers, and most importantly my family. These people were instrumental in providing the support and encouragement I needed to be able to complete this process.

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CHAPTER 1

INTRODUCTION

After the changes in the Elementary and Secondary Education Act of 2001 the achievement of students with disabilities became more important to educators. New federal mandates require schools and school districts to be accountable for effectively educating every student regardless of race, socioeconomic status, limited English proficiency, or disability (NCLB, 2002). Students with disabilities in southwest Virginia have been educated in special education classrooms for many years. Usually these classrooms centered instruction on areas of disability for particular students. This practice caused students to lag behind their peers in the general curriculum because the time used for remediation in the area of disability did not allow adequate time for teaching course content.

Much has been written about the ethical and moral considerations of inclusion of students with disabilities into the general education setting. This researcher refrained from such issues. The focus of this study is the instructional delivery method that provides the best learner outcomes on state mandated achievement tests.

The impetus for inclusion of students with disabilities into general education classrooms can be tracked back through years of court cases and federal education laws. Some authors cite the education civil rights case of *Brown v. Board of Education* (1954) in which the Supreme Court ruled that students should not be segregated into different educational settings due to race as the foundation for the need to educate students with disabilities in the same classrooms as their nondisabled peers (Villa & Thousand, 1995). Beginning with the Elementary and Secondary Education Act Amendments of 1965 the federal government became involved with the education of students with disabilities. In the years following the language of federal

legislation became more directive including the Education for All Handicapped Children Act (EAHCA) of 1975, which guaranteed all students with disabilities the right to a free, appropriate, public education. In 1989 the Supreme Court ruled in *Daniel R.R. v. State of Texas Board of Education* that schools must carefully consider the placement of students with disabilities and ensure that each child is placed in a setting that is balanced by his or her specific needs and the benefits of the general educational setting. This court case ended the legitimacy of placing all students with disabilities into self-contained special education settings (Parents United Together, 2012).

The No Child Left Behind Act of 2001 (2002) created an accountability system that required schools, school divisions, and states to close the achievement gap between different subgroups of students (including students with disabilities) and the general student population (Parents United Together, 2012). This legislation placed a spotlight on the achievement of students with disabilities. Because students with disabilities have traditionally underperformed their nondisabled peers on standardized tests, educators across the country began searching for solutions that would help close the achievement gap.

The Virginia Department of Education reported on the 2011-2012 Commonwealth Report Card that 88% of all students passed state SOL assessments compared to a 67% pass rate in the students with disabilities subgroup. Similarly in math, 87% of all students passed SOL assessments compared to 66% of students with disabilities. These pass rates are based on 2010-2011 data and reflect about 10 years of growth in the achievement of the students with disabilities subgroup. For comparison, Table 1 exhibits the differences in achievement between all students and students with disabilities in the year 2000.

Table 1

Achievement Gaps Between All Students and Students with Disabilities in Virginia in 2000

Assessment	All Students	Students with Disabilities
Grade Three Reading	63%	33%
Grade Three Math	74%	48%
Grade Five Reading	72%	41%
Grade Five Math	67%	33%
Grade Eight Reading	74%	34%
Grade Eight Math	65%	27%
Grade Eleven Reading	81%	40%
Algebra I	68%	33%
Algebra II	58%	38%
Geometry	68%	43%

Note. Data from Virginia Department of Education (2012c).

Many studies have been conducted to determine whether general education inclusion or special education pullout is more educationally effective. This study reviewed 24 studies conducted between 1995 and 2007. Of those studies 10 found that the inclusion classroom was more effective, seven reported no difference, one reported special education pullout was more effective, and the final six studied which instructional strategies were most effective in regular education inclusion classrooms.

Statement of the Purpose

The purpose of this ex post facto quantitative study was to determine if there were differences in the SOL test or VGLA scores between students with disabilities in two different instructional settings (inclusion or pullout).

Remediating students with disabilities in special education classrooms at the loss of teaching grade level content began to cause problems with the onset of Virginia's Standards of Learning (SOL) testing program. The students lacked basic requirements of grade level content instruction in many instances and testing gave testament to that fact. Administrators and teachers found that it was unlikely, though not impossible, for a student with an Individual Educational Plan (IEP) to pass a Standards of Learning test.

When the SOL program began many school systems elected to opt out their students with disabilities from testing in order to maintain state accreditation. However, the No Child Left Behind Act (2002) requires that 95% of each subgroup be tested. This requirement forced schools and school districts to be accountable for providing adequate instruction to students with disabilities; failure to educate this subgroup could no longer be hidden.

Requirements of the No Child Left Behind Act (NCLB, 2002) include that by the 2013-2014 school year all students must pass state assessments and all seniors must graduate with at least a standard diploma. At the time of this study students with disabilities in the state of Virginia had three distinct diploma options. First, students with disabilities had the option of earning a standard or advanced studies diploma, which required that the student earn 22 or 24 credits respectively at the high school level, six of which had to be verified credits. A verified credit shows that a student has taken and passed the course as well as the End of Course SOL test that accompanies the course. The second option was a modified standard diploma, which required that a student earn 21 credits at the high school level and pass the eighth grade level Reading and Math SOL tests. The third option was a certificate of completion, which stated that the student attended school and completed his or her program. Under No Child Left Behind,

students who opt for the second or third graduation option are considered dropouts (NCLB, 2002).

In the state of Virginia test scores of students with disabilities were far behind the average of all students. According to the Virginia School Report Card (Virginia Department of Education, 2005a; 2005b), students with disabilities passed 56% of their Reading and Language Arts SOL tests in the 2004-2005 school year, whereas the state average for all students was an 81% pass rate. Similarly, only 61% of students with disabilities passed their Math SOL test compared to 84% of all students. These differences caused several divisions to fail to meet Adequate Yearly Progress, which is a requirement of No Child Left Behind (2002). In Virginia in 2005, 7% of the schools were accredited with warning (Virginia Department of Education, 2005a, 2005b).

Research Questions

In order to accomplish the purpose of this study, the following eight research questions provided the focus for examination of data.

1. Is there a significant relationship between the instructional delivery method (inclusion or pullout) and the math proficiency rating (pass advanced, pass proficient, fail) for students with disabilities?
2. Is there a significant relationship between the instructional delivery method (inclusion or pullout) and the reading proficiency rating (pass advanced, pass proficient, fail) for students with disabilities?
3. Is there a significant relationship between the assessment method (SOL test or VGLA) and the math proficiency rating (pass advanced, pass proficient, fail) for students with disabilities who were instructed in a pullout program?

4. Is there a significant relationship between the assessment method (SOL test or VGLA) and the reading proficiency rating (pass advanced, pass proficient, fail) for students with disabilities who were instructed in a pullout program?
5. Is there a significant relationship between the assessment method (SOL test or VGLA) and math proficiency rating (pass advanced, pass proficient, fail) for students with disabilities who were instructed in an inclusive program?
6. Is there a significant relationship between the assessment method (SOL test or VGLA) and reading proficiency rating (pass advanced, pass proficient, fail) for students with disabilities who were instructed in an inclusive program?
7. Is there a significant relationship between the instructional delivery method (inclusion or pullout) and the math proficiency rating (pass advanced, pass proficient, fail) for students with disabilities who took the SOL test?
8. Is there a significant relationship between the instructional delivery method (inclusion or pullout) and the reading proficiency rating (pass advanced, pass proficient, fail) for students with disabilities who took the SOL test?

Significance of the Study

The most significant aspect of this study was to add to the body of research that pertains to the educational placement of students with disabilities and the achievement implications that ensue. Many studies have tried to ascertain the most effective placement for students with disabilities with mixed results. This study will provide predictors of possible achievement of students with disabilities based on educational placement.

The second level of significance is related to schools in Southwest Virginia. Most schools and school districts in the area struggle to offer proficient academic achievement to students with

disabilities. If proficiency cannot be accomplished, state and federal sanctions will surely follow. At the time of this study some schools in the area faced these sanctions because of low subgroup test scores for students with disabilities.

Definition of Terms

Child with a Disability - Virginia regulations that govern special education define a child with a disability as a child who was:

evaluated in accordance with the provisions of this chapter as having an intellectual disability, a hearing impairment (including deafness), a speech or language impairment, a visual impairment (including blindness), a serious emotional disability (referred to in this part as “emotional disability”), an orthopedic impairment, autism, traumatic brain injury, an other health impairment, a specific learning disability, deaf-blindness, or multiple disabilities who, by reason thereof, needs special education and related services. This also includes developmental delay if the local educational agency recognizes this category as a disability in accordance with 8VAC20-81-80 M.3. If it is determined through an appropriate evaluation that a child has one of the disabilities identified but only needs a related service and not special education, the child is not a child with a disability under this part. If the related service required by the child is considered special education rather than a related service under Virginia standards, the child would be determined to be a child with a disability. (Virginia Department of Education, 2011a, Sec1:2)

General Educational Setting - The general education setting is the setting in which nondisabled students are educated.

Inclusion - Inclusion is the act of providing educational services to students with disabilities in a general educational setting (McCullough, 2008).

Special Education Setting - A special education setting features the removal of students with disabilities from the general education setting in order to provide them with specific special education services. The special education setting does not provide educational opportunities for student with disabilities in the company of students without disabilities (McCullough, 2008).

Standards of Learning (SOL) Tests - The criterion referenced tests that schools in Virginia administer to children in grades 3-8 and at the conclusion of 11 high school courses. These tests are based on Virginia's Standards of Learning (SOL), which are the objectives that students in Virginia are expected to master (Virginia Department of Education, 2012b).

Virginia Grade Level Alternative - Like the Standards of Learning (SOL) tests, the Virginia Grade Level Assessment (VGLA) is part of the Virginia assessment system. However, VGLAs are an alternative to SOL tests for students with disabilities who cannot access the assessment system through SOL tests. VGLAs are portfolio-based assessments, which measure a student's individual achievement on grade level Standards of Learning Objectives (Commonwealth of Virginia, Department of Education, 2012).

Limitations and Delimitations

The major limitation of this study was that the only independent variable was the method of instructional delivery. Other variables that could affect the results of this study include individual teacher quality, parent expectations for student achievement, and the socioeconomic status of individual students. This study is confined to the general classroom placement of students with disabilities, the instructional strategies employed, the model of inclusion used, and teacher training programs in Wise, Scott, Dickenson, and Lee counties of southwest Virginia.

The population included all students with disabilities in the four county school districts who participated in SOL or VGLA testing during the 2009-2010 school year in grades 3-8 (Virginia Department of Education, 2009). In total, 1,131 students who participated in Math assessments and 1,137 students who participated in Reading assessments were included in the population. The results may not be generalizable to other populations.

Overview of the Study

This study was designed to determine if there were differences in the SOL test or VGLA scores between students with disabilities in two different instructional settings (inclusion or pullout). Chapter 1 includes the rationale for the study. Chapter 2 reviews the literature on the subject. Chapter 3 provides the methodology this study used to answer the eight research questions. Chapter 4 includes an analysis of the study data and Chapter 5 provides a summary, conclusions, implications for practice, and recommendations for further research.

CHAPTER 2

LITERATURE REVIEW

The purpose of this ex post facto quantitative study was to determine if there were differences in the SOL test or VGLA scores between students with disabilities in two different instructional settings (inclusion or pullout). This chapter reviews the literature on the subject of inclusion. Six topics are discussed:

1. The historical context of special education in the United States;
2. Inclusion and pullout settings;
3. Different methods of providing educational services for students with disabilities in the general education classroom;
4. Arguments for inclusion;
5. Past research on the effects of special educational placement on learner outcomes;
and
6. Alignment of the VGLA assessment to that of the SOL assessment and the Virginia Standards of Learning.

Historical Perspective

The lineage of current special education doctrine can be traced back to the United States Supreme Court case of *Brown v. Board of Education* in 1954. In 1951, 13 parents filed suit against the Topeka Board of Education in United States District Court calling for the school board to reverse its policy of segregating students into different schools based on race. The Topeka School Board argued that they were providing separate but equal education. During this landmark decision the United States Supreme Court unanimously ruled that the segregation of students based on race was unconstitutional. Years later the same argument would be used by

proponents of students with disabilities to demand these students be served in the general education classroom (Villa & Thousand, 1995).

The Elementary and Secondary Education Act (ESEA) of 1965 (PL 89-10) was initially enacted to promote achievement among low-income students through formula grants to states; the initial law did not, however, specifically address students with disabilities (Rees, 1999). In the years following this legislation, several amendments were made that specifically addressed the needs of students with disabilities. In the ESEA Amendments of 1965 (PL 89-313), state institutions and state operated schools were authorized to use federal funding to help educate students with disabilities. The ESEA Amendments of 1966 (PL 89-750) allowed federal funds to be used for the education of students with disabilities at the local school level rather than just state operated schools and programs. Two years later, the ESEA Amendments of 1968 (PL 90-247) established a set of programs to improve and expand special education services to students with disabilities. The ESEA Amendments of 1970 (PL 91-230), also known as the Education of the Handicapped Act (EHA, 1975) created a new section of the federal grant program known as Title VI, which is still in effect as the special education section of the ESEA grant (Parents United Together, 2012). EHA provided federal funding to colleges to train special education teachers and to regional resource centers to provide technical assistance to schools for students with disabilities. The law was later amended to require all schools that received federal funds to provide services for students in this subgroup (Katsiyannis, Yell, & Bradley, 2001).

The Education for All Handicapped Children Act (EAHCA) of 1975 (PL 94-142) mandated that all students with disabilities be provided a free appropriate education. Prior to 1975, Congress reported that almost two million students with disabilities did not receive any

educational services and 3,000,000 students with disabilities did not receive appropriate educational services (Katsiyannis et al., 2001).

The Education for All Handicapped Children Act (1975) provided four areas of rights for students with disabilities. 1) EAHCA provided that all students with disabilities would receive a free appropriate public education (FAPE). 2) The rights of students with disabilities and their parents were protected under the law. 3) The law contained provisions to help state and local educational agencies offer services to students with disabilities. 4) The final purpose of EAHCA was to assess the efficacy of providing services for the students (Education for All Handicapped Children Act, 1975).

PL 98-199, The Education of the Handicapped Act Amendments of 1983, established a program to ensure students with disabilities would be able to transition into work after they finished their formal schooling. It also provided parent training and information services. This act provided resources for research in early intervention and early childhood special education services. Three years later the Education of the Handicapped Act Amendments of 1986 (PL 99-457) required that states and public local education agencies provide early intervention services to preschool age children (Parents United Together, 2012).

Daniel R.R. v. State of Texas Board of Education (1989) established three questions that IEP teams must consider when deciding placement of a student with disabilities:

1. Could the student in question receive educational and non educational benefits from a placement in the general curriculum?
2. Will the student's placement provide a balance of special education and regular education benefits?

3. What are the effects of the placement of the student with disabilities on other children in the class?

The Individuals with Disabilities Education Act Amendments (IDEA) of 1990, PL 101-467, forced schools to provide students with disabilities educational services in general education classrooms whenever possible. A milestone in providing students with disabilities a higher quality education came with the Individuals with Disabilities Education Act Amendments (IDEA) of 1997. The amendments required states to assess the academic progress of students identified as disabled. Since this provision the achievement of students with disabilities gained greater importance. The amendments of 1997 paved the way for improvement in the education of students with disabilities (Thurlow, 2002).

The No Child Left Behind Act of 2001 (NCLB, 2002) officially prohibited public education from excusing substandard performance by students with disabilities. The act created four subgroups for achievement reporting (students with disabilities, limited English proficient, low socioeconomic status, and minorities). The act requires that 95% of all students with disabilities be tested on state assessment and that students with disabilities as a subgroup must meet benchmark pass rates that will rise each school year until 2013-2014. By that time all students will be expected to meet the minimum standards of education set forth in state requirements (Virginia Department of Education, 2003).

Inclusion and Pullout

Federal law dictated that,

To the maximum extent appropriate, children with disabilities, including children in public or private institutions or other care facilities, are educated with children who are not disabled, and special classes, separate schooling, or other removal of children with disabilities from the regular educational environment occurs only when the nature or severity of the disability of a child is such that education in regular classes with the use of supplementary aids and services cannot be achieved satisfactorily. (IDEA, 2004, p. 31)

This was not always the case. In a statement to Congress in 2002 the US Department of Education reported that during the 1984-1985 school year of children with disabilities aged 6 through 21 approximately 24.6% were educated in a general education classroom 79% or more of the school day. During the 1999-2000 school year, this percent rose from 24.6 to 47.3 of students with disabilities. According to this information the instruction students with disabilities received in the general education classroom was on the rise.

McLeskey, Henry, and Axelrod (1999) reported on the placement of students with disabilities over a period of 6 years. From the 1988-1989 school year to the 1994-1995 school year, the cumulative placement rate of students with learning disabilities in the general educational setting rose 150%. It is important to note that the overall student with learning disabilities population increased more than 20% over the 20-year period prior to 2000 while the entire student population grew only 6%.

Idol (1997) defined inclusion as providing all educational services to students with disabilities in a general educational setting. This included general curriculum instruction as well as special education and related services. Keefe and Davis (1998) expanded the definition, adding that inclusion also meant that children with disabilities should be educated in their neighborhood schools. In an inclusive setting students with disabilities would not be segregated from their nondisabled peers. This provided the least restrictive setting for any student with disabilities.

Inclusion changed the roles in the education of students with disabilities. Ferguson and Ralph (1996) wrote there was a shift toward uniting the parallel systems of special education and general education in order for both to work collaboratively toward a common goal, providing a quality education to students with disabilities. The authors also noted this presented a major

change for both types of teacher but that it was especially problematic for special education teachers because they lost their classrooms and, thus, their traditional identity in the exchange (Ferguson & Ralph, 1996).

King (2003) posited that the inclusive classroom in many schools was a midpoint between the special education classroom and the general education classroom. In this instance the classroom contained both disabled and nondisabled students. The general curriculum was taught but with special supports in place for students with disabilities. In these schools there might be only one or two classrooms considered inclusive for a given grade level.

Different models of staffing inclusion existed in the classroom. One model was collaborative or coteaching. In this model a general education teacher was paired with a special education teacher (Amerman & Fleres, 2003). In the collaborative model teachers shared equal responsibilities for the classroom from discipline and instructional delivery to planning and grading. Amerman and Fleres (2003) pointed out that even though the special education teacher was the educational specialist and the general education teacher was the content specialist the special education teacher must be knowledgeable about the curriculum.

In another model of the inclusive classroom general education teachers bore the brunt of providing services to students with disabilities (Schulte, Osborne, & Erchul, 1998). In that model the curriculum could be modified to meet the needs of students with disabilities. Likewise, testing modifications could be made according to a student's IEP. The role of the special education teacher in this model became that of case manager handling the paperwork associated with special education, consulting with the general education teacher to ascertain the needs of the child, and providing support in instructing the students with disabilities (Schulte et al., 1998).

The more traditional representation of special education was the pullout model. In this form of special education students with disabilities were educated in a special education setting apart from their nondisabled peers. McLeskey et al. (1999) defined the varying degrees of pullout: 1) The resource room was a setting in which students received special education instruction from 21% to 60% of the school day; 2) A separate class was a setting in which students received special education instruction for more than 60% of the school day; and 3) A separate school was a setting apart from the home school that could be a day school, a residential placement, or a homebound or hospital placement that a student would attend for more than 50% of the school day.

As there were arguments for inclusion, there were also those who argued for the pullout placement of students with disabilities. Rea, McLaughlin, and Walther-Thomas (2003) stated that often the general education classroom could not meet the specialized needs of students with disabilities. Further, school administrators promoted inclusion only as a cost saving measure because one special education teacher could service a larger caseload in this model and there would be need for fewer classrooms.

Klinger, Vaughn, Hughes, Schumm, and Elbau (1998) pointed out that IDEA provided for pullout programs as an optional placement for students with disabilities providing there was an available continuum of services to provide for each student with disabilities. The authors noted that some students with disabilities who were placed in the general education classrooms made only slight progress in reading despite much training and professional development invested in the general education teachers in this area.

Albrecht and Joles (2003) wrote that if students could progress in the general education setting, they would not be disabled. The authors wrote that expecting a student with disabilities

to participate in the same curriculum and be tested using the same standardized tests as their nondisabled peers was, in fact, discrimination in the education of students with disabilities called for specialized services not otherwise available in the general curriculum.

Arguments for Inclusion

Although a historical basis of special education pertaining to the topic of inclusion was founded, it still left unanswered why there was such a push for students with disabilities to receive their education in a setting with nondisabled peers. In this review of the literature several laws have been cited that provide a legal basis for including students with disabilities in the general curriculum. However, there are other points of view.

One of the first arguments for allowing students with disabilities to participate in the general curriculum came from a court case about equal educational opportunities. *Brown v. Board of Education of Topeka* (1954) gave credence to the cause of inclusion for students with disabilities.

Another argument in favor of allowing students with disabilities to be educated with their nondisabled peers was that of social interaction. Many have noted that both groups benefit from this practice. Geisthardt and Munsch (1996) posited that students with disabilities needed social interaction with nondisabled peers to develop friendships, leadership skills, and social competency. These skills offered students with disabilities the tools they needed to function socially both in school and in the community (Geisthardt & Munsch, 1996).

The trend to foster diversity in schools was also a factor in allowing students with disabilities to be educated with their nondisabled peers. Normally, when considering diversity issues one usually thinks of race, gender, and religion; however, disabilities also created differences among students. Separate services for students with disabilities provided a context to

exclude students who were culturally and linguistically on the fringe of mainstream society (Patton, 1998; President's Commission on Excellence in Special Education, 2002; Pugach & Seidl, 1995). Researchers noted that students with disabilities were frequently eligible to receive special educational services due to their diverse conditions. Banks and Banks (2001) wrote that schools needed a multicultural value system that caused no group to be privileged over another. Nieto (1992) also echoed the idea that diverse groups could benefit one another in an educational setting. He noted that schools must foster diversity in order to create new learning interaction. In addition was the realization that special education had not been entirely effective. The President's Commission on Excellence in Special Education (2002) made several negative comments on the prior state of special education in the country. The report stated that students with disabilities were twice as likely to drop out of high school as were nondisabled students. Proportionally, fewer students with disabilities were enrolled in higher education.

The final argument for including students with disabilities with their nondisabled peers in the general education classroom was that of student achievement. The No Child Left Behind Act of 2001 (2002) mandates that students with disabilities achieve educational proficiency at the same rate as students without disabilities.

The Virginia Department of Education (2007) annually publishes a *Special Education Performance Report*. Among other indicators the document reports the percentage of students with disabilities who were removed from a regular education setting for less than 21% of the day as well as those removed from the general education setting more than 60% of the day. The Virginia Department of Education set a goal to comply with IDEA by reducing the number of children removed from the general education classroom (Virginia Department of Education, 2007).

Studies on Educational Placement

There have been many studies on the efficacy of different special educational placements and teaching strategies on student achievement. Of 24 studies reviewed that were conducted between 1995 and 2007, 10 found that providing inclusive classroom settings to students with learning disabilities increased student achievement (Battista, 1999; Brewton, 2005; Brown-Abdelmageed, 2007; Emmendorfer, 2004; Hall, 1997; Johnson, 2007; Miller, 2003; Rauch, 2002; Ritter, 1999; Siegel, 2007). Seven studies of the 24 reported no difference in the academic achievement of students with disabilities in the inclusive or special education resource setting (Beam, 2005; Berman, 2000; Eskin, 1999; Gale, 2005; Nichols, 1996; Popp, 2001; Redmon, 2007). One meta-analysis noted a negative result in academic achievement for students with disabilities in an inclusive setting compared to their peers in a special education setting (Zigmond et al., 1995). And the final six studies were designed to discover instructional strategies used in inclusive classrooms (Bayer, 2003; Jones, 2005; Nott, 1999; Smith, 2005; Webb-Kidd, 1996; West 1999).

Of the 10 studies that noted a positive correlation between providing services to students with disabilities in the general education setting and student achievement, there were 3,524 students comprising the collective sample size. The sample size for individual studies ranged from five students in Miller's (2003) study to 1,560 students in Brewton's (2005) study. Brewton compared the math achievement of students without disabilities who were taught in inclusive classrooms and concluded that nondisabled students in the inclusive classrooms outscored their peers in the general education classroom. Brewton (2005) concluded that the differences were the result of a second collaborative teacher in the inclusive classroom that allowed for small group instruction and more individualized instruction.

Emmendorfer (2004) reviewed the scores of different groups of children on the Missouri Assessment Program (MAP). The groups compared in this study included third and seventh grade students during the 1999-2000 school year in southeast Missouri, including students with learning disabilities in inclusive programs, students with learning disabilities in special education settings, and students without learning disabilities. Emmendorfer determined if there was a difference between the MAP test scores of students with disabilities and the scores of nondisabled students in third and seventh grade. The researcher compared the achievement of students with learning disabilities who were placed in varying degrees of pullout and inclusion. Students were categorized based on the amount of time each day they did not participate in the general curriculum, from 0-20% of the school day, from 21%-59% of the school day, and more than 60% of the school day. Emmendorfer found that students with disabilities who were in the general education classes more often scored higher on state assessments than students with disabilities who were in the general education classroom less often. However, there was a significant difference between the test scores of disabled and nondisabled students with the second group posting higher scores.

Miller (2003) directly compared the academic achievement of students with disabilities who were taught in a general educational setting versus those taught in a traditional self-contained setting. He used the Woodcock-Johnson Revised and Woodcock-Johnson III test scores of achievement from the students' initial placement in special education and the scores from the same children in the sixth grade. Miller reported that children who received instruction in the general education classroom consistently outperformed their peers who received their instruction in the special education classroom in both Broad Reading and Broad Math. Additionally, the scores of students who received instruction in a special education setting

actually regressed in Broad Writing, Broad Reading, and Broad Math. The Broad Writing scores of students in an inclusive setting also declined but not to the extent of those students who were educated in the special educational setting.

Hall (1997) studied the relationship between the number of hours a student with learning disabilities spent in the general education classroom and the academic achievement of those students. The achievement of 89 students with disabilities was tracked for 3 years. Hall tried to control for demographic differences that might affect the outcome of the variable - hours in general education classes. There were no significant differences among the demographic variables during some years whereas there were significant differences in socioeconomic status and school sites. As far as academic achievement was concerned those students with a higher IQ and more hours in the general education classroom outperformed students in reading and math with lower IQs and less time in the general education classroom.

Johnson (2007) tracked the academic performance of 27 students with learning disabilities in grades seven and eight for 2 years to determine the impact of inclusion on student achievement. The researcher found a significant positive correlation between the time spent in the general education classroom and standardized test scores. Conversely, there was a significant negative correlation in the time spent in the resource classroom and standardized test scores.

Ritter (1999) focused on fifth graders' achievement in traditional pullout classrooms and in inclusive settings. The researcher collected data for 160 different students, 40 each in the core areas of math and reading for pullout students, and 40 each in the core areas of math and reading for inclusion students. Ritter found a statistically significant difference in the achievement of students in the two placement options with those students in the inclusion classroom outperforming their peers in the pullout classroom.

In 2007 Brown-Abdelmageed measured the academic achievement in language arts of students with disabilities. The sample consisted of 465 students from two adjoining states; scores were compared longitudinally, examining individual student achievement increases from one year to the next. The results revealed that students with disabilities who were served in the inclusion classrooms scored higher than those students with disabilities who were served in the pullout program. Brown-Abdelmageed noted this trend was also true throughout the study period of 2004-2006. Additionally, it was suggested that additional resource support should be provided for those students enrolled in inclusion programs.

Siegel (2007) studied 1,090 students with various disabilities in grades 7 through 12 from six different schools to determine if student placement affected student achievement in reading and math as measured by the state standardized achievement testing. It is interesting to note that all schools included in the sample were *under review* according to the rules of No Child Left Behind (2002), which meant that those schools were underperforming. Siegel (2007) divided the sample of students by the amount of time they received specialized instruction outside the general education classroom: Placement A) Less than 21% of the school day, Placement B) Between 21% and 60% of the school day, and Placement C) More than 60% of the school day. There was a statistical difference between the placement A and placement C groups. The findings indicate that students who were included more in the general education curriculum outperformed those who were included less in the general education curriculum. Placement A students outperformed placement B students, and placement B students outperformed placement C students.

Rauch (2002) studied the effects of special education placements on academic achievement for 36 students with emotional disabilities. In this study the researcher compared

pretest and posttest scores of children who were enrolled either in a segregated special education classroom or partially in the general education setting on the Wechsler Individual Achievement Test. Baseline scores of both groups showed there was no significant difference before treatments were applied. Twelve months later when achievement tests were re administered, statistical analysis showed no significant difference in the scores. Therefore, the achievement of students in the partially integrated group was no better than that of students in the segregated group.

Battista (1999) conducted a study to determine the academic impact of inclusion on sixth graders. Forty-three students with disabilities participated in the study with 32 placed in an inclusive setting. The Wechsler Individual Achievement Test measured academic achievement. Battista found that students with disabilities progressed equally well in reading whether placed in the resource room or in an inclusive setting. However, there was a significant difference in mathematical reasoning achievement between the two groups with students in the inclusive setting outperforming their peers in the resource room setting.

Eight studies with population samples totaling 773 students showed no difference in the achievement of students with disabilities concerning educational placement whether in the general education classroom or in the special education resource room; Eskin (1999) had the smallest sample size at 14, while Popp (2001) had the largest with 319.

Of particular interest to this dissertation research, Beam (2005) examined inclusion versus pullout in the elementary grades and the effects of these models on Virginia's SOL test results, on discipline for students with learning disabilities, and on the overall cost of the programs. Because only grades three and five participated in the SOL testing program at that time, the sample included 69 students with learning disabilities from one school division. The

data were obtained from the 2002-2003 school year. Beam defined inclusion as an educational model in which students with disabilities received educational services in a general education setting. Pullout was defined as a self-contained special education setting generally consisting of a small group of children with similar needs. Beam's findings indicated no significant difference in test scores or discipline infractions for students who were educated in an inclusive setting or students who were educated in a pullout setting. Beam (2005) noted this outcome was due to the small sample size; the researcher theorized that a larger sample might have produced greater differences.

Popp (2001) conducted a study specific to the Virginia Standards of Learning (SOL) test. The study involved test results from 319 students with specific learning disabilities. One research question of particular interest determined whether there was a difference in the SOL scores of third and fifth graders with specific learning disabilities in a co taught general education setting versus those who received educational services in pullout resource rooms. Also of interest, the study determined the instructional strategies used and to what extent in co taught classrooms. Popp defined a co taught educational setting as one in which a general education teacher planned and delivered instruction in conjunction with a special education teacher in a general education setting. A resource setting was defined as a means by which students with disabilities were removed from the general education setting in order to receive services to meet IEP goals and objectives. Popp reported that there were no statistical differences between either the pass rates or the scaled scores in reading and math for students who were educated in the co taught classrooms or in the resource room. As well, there were no differences in instructional strategies employed in the general classroom with or without co teaching (Popp, 2001).

Gale (2005) compared the effects of special education placement on the academic achievement of middle school students with specific learning disabilities. The sample consisted of 67 students some of whom received their instruction in the general education setting and others who received pullout services. Results of the study indicated no significant differences between the two groups on the SOL test. Gale suggested that finding no significant difference may have been due to the small sample size and that a larger sample might provide more power and better results. The manner in which different schools administered their special education programs might also provide insight into the inconclusive nature of this study. Gale (2005) noted that some schools used collaborative teaching and common planning times for general education teachers and special education teachers, whereas others did not.

Not all research on including students with disabilities in a general education curriculum was as positive for student outcomes as those discussed previously. Zigmond et al. (1995) reported on three multi-year studies conducted to ascertain the achievement of students with learning disabilities in inclusive settings. Researchers at the University of Pittsburgh conducted the first study reviewed by Zigmond et al. In this project four schools participated in 1 year of in-service training and planning prior to the implementation of the inclusion program. The principals, general education teachers, and special education teachers, along with faculty from the University of Pittsburgh participated in teams and worked collaboratively throughout the planning process. After the implementation of this program, students with learning disabilities were provided services exclusively in a general education setting. In addition, special education services were offered to students outside the general education classroom but not during core instructional times. These changes allowed special education staff to support general education teachers in providing instruction to the students with learning disabilities. Results of this study

showed that 55% of the students with learning disabilities experienced real growth in the area of reading according to the Basic Academic Skills Samples.

The second study reviewed by Zigmond et al. (1995) was conducted by the University of Washington. In this study the university teamed with one school during the summer prior to implementation and helped the faculty plan the changes that would lead to its inclusion program. After implementation weekly development meetings were held to support the staff throughout the change. A year later pullout special education services were reintroduced in phonics instruction for approximately 20 minutes each day. The result of this program was that 38% of the students showed progress in reading according to the Basic Academic Skills Samples.

The final study that Zigmond et al. (1995) reviewed was conducted by researchers at Vanderbilt University. In this project the university researchers teamed with one urban middle school to implement a special education inclusion program. Six planning sessions and two planning workshops were conducted over 2 days. During implementation the pullout program was eventually phased out and students with learning disabilities were gradually introduced into the general education classroom, although the project was never intended to eliminate the pullout classrooms. Findings from this study show that 57% of the children with learning disabilities attained progress in reading according to the results of the Basic Academic Skills Samples.

Redmon (2007) examined 3 years of data for 107 students in grades three through six. Academic achievement was measured for reading and math through the results of the Tennessee standardized tests. Statistical analysis revealed no significant difference between the reading and math scores of students with disabilities who received instruction in an inclusive setting and those students with disabilities who received instruction in a special education setting. However, a significant difference was evidenced in the reading scores of students in the inclusive

classroom who received additional resource help. Students who received extra resource help scored lower than those who did not. Redmon hypothesized the reason for this occurrence might have been that the students who received extra resource help had much weaker skills from the outset.

In 1999 Eskin studied the effects of educational placement options on the academic achievement of middle school students with learning disabilities. The population consisted of 14 students. Seven of the students were in the general education setting in at least four to five mainstreamed classes and seven were in the pullout setting. This study centered on instruction provided by the general education teacher supported by the special education teacher through direct consultation. Eskin (1999) found no significant difference in the academic achievement of the two groups studied. She opined that had the population of the study been larger, there may have been some difference.

Nichols (1996) compared the achievement of 40 elementary aged students with learning disabilities. Some of the participants were educated in the general education classroom and others received services in the special education resource room. No statistically significant differences were found in the Nichols study.

Using the statistical analysis of the Stanford Achievement Test-9, Berman (2000) studied 51 seventh and eighth grade students with learning disabilities instructed in an inclusive classroom and a non inclusive special education classroom. Berman defined inclusion as a means by which students with disabilities had their educational needs met by providing special services in the general education setting. Non inclusion classrooms were defined as special education settings such as a resource room in which students with disabilities were removed from the general education setting in order to receive specific educational services. The results of

Berman's study yielded no significant difference in the academic achievement of students who were served in the inclusive and non inclusive classroom settings. The researcher stated that the small sample size may have affected the outcome of the study. In addition, Berman (2000) noted that a limitation of his study might have been the particular models of inclusion implemented.

Six studies ascertained which instructional strategies were used for students with disabilities both in the general education setting and in the special education setting. These studies were conducted from 1996 through 2005. The studies are described here.

Webb-Kidd (1996) showed a relationship between teacher training in inclusion best practices and student achievement. In the study 50 high school teachers from 30 different high schools participated in 8 weeks of training that focused on cooperative team teaching and non cooperative team teaching best practices for the inclusion of students with disabilities in the general education classroom. The best practices included curriculum-based assessment, cooperative learning, direct instruction, peer tutoring, and learning styles. The findings indicated that students with disabilities tended to have higher achievement if their teachers participated in the cooperative team teaching best practices training.

Jones (2005) conducted a qualitative study on the implementation of an inclusion program at a middle school in Georgia. In this study the researcher's goal was to assess the effectiveness of instructional delivery for students with learning disabilities. The implementation was well planned and included team building and professional development. The study used questionnaires and focus groups to gather data with the results noting the implementation of the inclusion program as successful. Specifically, participants remarked that the greatest impact of the inclusion program was the positive effect it had on growth in the areas of academics and social interactions for children with disabilities. A negative result from the study observed was

some degree of discord among general education teachers and special education teachers who were working together. Some of the general education teachers were uncomfortable having students with disabilities in their classroom because they were insecure in their own understanding of their responsibility regarding IDEA.

West (1999) conducted a qualitative study to determine which instructional practices were used in high performing schools that had instituted inclusion. The most common practices encountered in this study were whole group instruction, peer tutoring, hands-on activities, cooperative learning groups, homework, procedures and routines, and strong classroom management. West concluded that the practices that best-supported students with disabilities in the general classroom setting also best-supported students without disabilities.

Much like West (1999), Bayer (2003) conducted a qualitative study to determine what strategies general education teachers were using to educate students with disabilities in the general education classroom and how those teachers used student assessment to gauge the effectiveness of their instruction. Some of the instructional strategies used were large group instruction, cooperative groupings, flexible grouping by skill need, teaching skills in advance, thinking cognitively, dialoguing, and using differentiated instruction. Assessments that guided the direction of the classroom instruction included homework assignments, quizzes, classroom assignments, and chapter tests.

In 2005 Smith reported the results of an action plan devised to decrease the achievement gap between students with disabilities and students without disabilities. This was to be accomplished by incorporating the general education curriculum into the resource classroom rather than the normal reversal. At the conclusion of the project students with disabilities made

some practical gains over their nondisabled peers, although there were no significant differences reported.

Nott (1999) determined the effectiveness of educational programming to provide services for students with learning disabilities. The sample size was 383 students with learning disabilities. This study was conducted in the Citrus County, Florida school district, which provided a continuum of services ranging from full inclusion to self-contained placements in the special education resource room. Results indicated that the students in this study made significant academic gains. These findings may have echoed other researchers who noted no significance from a small sample. Although Nott's study did not specifically address the debate of inclusion versus pullout, he showed that a continuum of services could provide educational programming that specifically benefited students with learning disabilities.

Landrum (2008) evaluated special education inclusion services in the middle school setting. The sample for this study was approximately 2,000 students with disabilities over a 3 year term at middle schools in a single school district. The results of the study evidenced that inclusive practices were more effective each year since the implementation of the inclusion program.

In an executive position paper McCullough (2008) reported that, along with implementing a comprehensive, data driven system of improving instruction, and integrating all students into an inclusive setting increased student achievement. This recommendation was made after examining the mathematics performance of eighth grade students with disabilities over the course of 5 years in four Delaware middle schools.

Alignment Study

In 2007 Abrams and McMillan published an analysis of the Virginia Standards of Learning (SOL) tests and the Virginia Grade Level Alternative Assessments (VGLA). The analysis centered on the aspects of categorical concurrence, depth-of-knowledge consistency, range of knowledge correspondence, and balance of representation, all of which were developed initially by Norman Webb (Abrams & McMillan, 2007).

The results revealed that the reading and math SOL tests were well aligned to the Standards of Learning in general but that there was some lack of correspondence between the two concerning depth of knowledge. In general the questions on the SOL tests were written on a lower level depth of knowledge in certain instances than the Standards of Learning (Abrams & McMillan, 2007).

The Abrams and McMillan (2007) study indicated there was better alignment in general between the Standards of Learning and the VGLA, particularly in math. No depth of knowledge issues existed as those associated with the SOL tests. However, the reading VGLAs exhibited some depth of knowledge issues. Overall, this study indicated a significant alignment with both the SOL tests and the VGLAs with the Standards of Learning. Both assessments were considered a valid assessment of the Virginia Standards of Learning (Abrams & McMillan, 2007).

Summary

This chapter contained a review of the literature relevant to the placement of students with disabilities and the related educational benefit of such placement. The literature on this subject does not clearly support either inclusion or pullout services for students with disabilities as the most effective educational placement. Chapter 3 contains the methodology used for this study.

CHAPTER 3

RESEARCH METHODS

The purpose of this ex post facto quantitative study was to determine if there were differences in the SOL test or VGLA scores between students with disabilities in two different instructional settings (inclusion or pullout). This chapter describes the methodology used to collect and analyze the data used to test the eight research questions.

This study was quantitative in design. The Division Director of Testing from each of the four school divisions gathered a Student Data Extract from the Pearson testing website for his or her school division. These data included the assessment type (VGLA or SOL) and the demographics of each student. Because only students with disabilities in grades three through eight were included in this study, only those data were used. The data were then included in the survey, which the division director of testing sent to the school principal in each division. The principal at each school indicated whether the included student received his or her instruction in an inclusive setting or in the special education pullout program. From the results of the survey the data entry for each student was coded as either pullout or inclusive. The division director of testing then deleted all information that could identify a student, a school, or a school division and sent that sanitized data to the researcher. IBM-SPSS version 18.0 was used to conduct the analyses with an alpha level of 0.05.

Research Questions and Null Hypotheses

There are eight research questions addressed in this study, the following represents the null hypotheses.

Research Question 1: Is there a significant relationship between the instructional delivery method (inclusion or pullout) and the math proficiency rating (pass advanced, pass proficient, fail) for students with disabilities?

Ho₁: There is no significant relationship between the instructional delivery method (inclusion or pullout) and the math proficiency rating (pass advanced, pass proficient, fail) for students with disabilities.

Research Question 2: Is there a significant relationship between the instructional delivery method (inclusion or pullout) and the reading proficiency rating (pass advanced, pass proficient, fail) for students with disabilities?

Ho₂: There is no significant relationship between the instructional delivery method (inclusion or pullout) and the reading proficiency rating (pass advanced, pass proficient, fail) for students with disabilities.

Research Question 3: Is there a significant relationship between the assessment method (SOL test or VGLA) and the math proficiency rating (pass advanced, pass proficient, fail) for students with disabilities who were instructed in a pullout program?

Ho₃: There is no significant relationship between the assessment method (SOL test or VGLA) and the math proficiency rating (pass advanced, pass proficient, fail) for students with disabilities who were instructed in a pullout program.

Research Question 4: Is there a significant relationship between the assessment method (SOL test or VGLA) and the reading proficiency rating (pass advanced, pass proficient, fail) for students with disabilities who were instructed in a pullout program?

Ho4₁: There is no significant relationship between the assessment method (SOL test or VGLA) and the reading proficiency rating (pass advanced, pass proficient, fail) for students with disabilities who were instructed in a pullout program.

Research Question 5: Is there a significant relationship between the assessment method (SOL test or VGLA) and the math proficiency rating (pass advanced, pass proficient, fail) for students with disabilities who were instructed in an inclusive program?

Ho5₁: There is no significant relationship between the assessment method (SOL test or VGLA) and the math proficiency rating (pass advanced, pass proficient, fail) for students with disabilities who were instructed in an inclusive program.

Research Question 6: Is there a significant relationship between the assessment method (SOL test or VGLA) and the reading proficiency rating (pass advanced, pass proficient, fail) for students with disabilities who were instructed in an inclusive program?

Ho6₁: There is no significant relationship between the assessment method (SOL test or VGLA) and the reading proficiency rating (pass advanced, pass proficient, fail) for students with disabilities who were instructed in an inclusive program.

Research Question 7: Is there a significant relationship between the instructional delivery method (inclusion or pullout) and the math proficiency rating (pass advanced, pass proficient, fail) for students with disabilities who took the SOL test?

Ho7₁: There is no significant relationship between the instructional delivery method (inclusion or pullout) and the math proficiency rating (pass advanced, pass proficient, fail) for students with disabilities who took the SOL test.

Research Question 8: Is there a significant relationship between the instructional delivery method (inclusion or pullout) and the reading proficiency rating (pass advanced, pass proficient, fail) for students with disabilities who took the SOL test?

Ho8₁: There is no significant relationship between the instructional delivery method (inclusion or pullout) and the reading proficiency rating (pass advanced, pass proficient, fail) for students with disabilities who took the SOL test.

Instrumentation

Students in Virginia are required to participate in the Virginia Standards of Learning (SOL) testing program. This program consists of three assessment options for students with disabilities in grades three through eight. For this study Standards of Learning (SOL) tests as well as the Virginia Grade Level Assessment (VGLA) tests were used. The third assessment option, the Virginia Alternate Assessment Program (VAAP), was not used in this study because it is limited to 1% of the overall student population and is designed to assess students who are significantly mentally impaired. These instruments test the proficiency of Virginia students on the adopted curriculum. The Content Review Committee examines Virginia's SOL test questions. Each question is field tested prior to inclusion in the adopted testing program. To ensure validity and reliability, traditional item statistics, Rasch item statistics, and Differential Item Functioning are used (Stapleton, 1999). These tests are administered in strict observance of standardized testing procedures.

Population

The population of this study included all students with disabilities in the county school districts of Wise, Scott, Dickenson, and Lee who participated in SOL or VGLA testing during the 2009-2010 school year in grades 3-8 (Virginia Department of Education, 2009). There were

1,131 students who participated in Math assessments and 1,137 students who participated in Reading assessments were included in the population.

Data Collection

The data obtained during this study were confidential. Standardized test scores of specific students are confidential; therefore, no identifying information about any student was recorded. In order to ensure confidentiality no identifying information was collected concerning students, schools, or school divisions.

The data were obtained from the Pearson Access - Virginia (2009) website by the division director of testing from each school division. Pearson is the testing contractor for the state of Virginia and is responsible for maintaining the data warehouse for all student performance information. The data were downloaded in the form of a comma-separated values file and then converted to a Microsoft Excel 2007 document to import into IBM-SPSS.

For this study a survey was administered to school personnel by the division director of testing for each school division to determine the educational placement of each student in the math and language arts content areas. The results of the survey were used to code each student's instructional delivery method as either pullout or inclusive.

Data Analysis

A chi-square analysis was conducted on each of the eight research questions. The results of these analyses are included in Chapter 4. The chi-square analysis is appropriate when variables have two or more categories. The variable of interest in this study is the level of proficiency of which there are three levels; pass advanced, pass proficient, and fail. The chi-square analyses assessed whether there are significant differences between the actual levels of proficiency (Green & Salkind, 2003).

Summary

Chapter 3 contains information on the design and population of the study as well as data collection and analysis procedures. Chapter 4 includes the results of this study.

CHAPTER 4

ANALYSIS OF DATA

The purpose of this chapter is to present the data analysis of this study. The information is divided into sections relative to each research question. A chi-square analysis was conducted for each of the eight research questions with results from the analysis of the 2009-2010 Standards of Learning (SOL) assessments and the 2009-2010 Virginia Grade Level Alternative (VGLA) assessment data.

General Distributions

The data gathered for this study came from each of the four school divisions and consisted of assessment data from the 2009-2010 school year in math and reading for both the SOL and VGLA assessments for students with disabilities in grades three through eight. Also coded into this data was the educational delivery method for each student, either inclusion or pullout (S. Chadwell, Lee County Director of Testing (personal communication, September 1, 2010); M. Mullins, Dickenson County Director of Federal Programs (personal communication, September 3, 2010); T. Quillen, Scott County Supervisor of Elementary Education and Testing (personal communication, August 13, 2010); M. Hurt Wise County Director of Curriculum and Instruction (personal communication, July 27, 2010). The data consisted of 2,268 assessments with almost equal percentages in math (49.87%) and reading (50.13%). Students placed in general education inclusion classrooms accounted for 1,317 assessments (58.07%) and students in special education pullout classrooms accounted for 951 assessments (41.93%). In the math content area 59.95% of the students received their instruction in inclusion programs and 40.05% of the students were placed in pullout programs. In reading 56.20% of students were placed in

inclusion programs, and 43.80% of students were placed in pullout programs. Of all assessments included in this research 75.18% were SOL tests and 24.82% were VGLAs. SOL tests were administered to 87.02% of the students in inclusion classrooms and 58.78% of students in pullout classrooms. Students in the inclusion classrooms accounted for 67.21% of all SOL tests, and students in the pullout classrooms accounted for 32.79% of the SOL.

Table 2 displays the number and percentage of students assessed in math by each method (SOL test or VGLA) and by instructional delivery method (inclusion or pullout). Table 3 breaks down the number and percentage of students assessed in reading by each method (SOL test or VGLA) and by instructional delivery method (inclusion or pullout).

Table 2

Number and Percentage of Student Assessment Type and Instructional Delivery Method for Math

Math	Inclusion		Pullout	
	(N = 678)	59.95%	(N = 453)	40.05%
SOL (N = 830)	556	66.99%	274	33.01%
VGLA (N = 301)	122	40.53%	179	59.47%

Table 3

Number and Percentage of Student Assessment Type and Instructional Delivery Method for Reading

Reading	Inclusion		Pullout	
	(N = 639)	56.20%	(N = 498)	43.80%
SOL (N = 875)	590	67.43%	285	32.57%
VGLA (N = 262)	49	18.70%	213	81.30%

Research Question 1

Is there a significant relationship between the instructional delivery method (inclusion or pullout) and the math proficiency rating (pass advanced, pass proficient, fail) for students with disabilities?

Ho₁: There is no significant relationship between the instructional delivery method (inclusion or pullout) and the math proficiency rating (pass advanced, pass proficient, fail) for students with disabilities.

A chi-square analysis was conducted to evaluate if there was a relationship between the math proficiency ratings of student achievement scores for students who received their instruction in the general education inclusion classroom and the special education pullout classroom. The two variables were the three proficiency ratings (pass advanced, pass proficient, fail) and the instructional delivery method (inclusion or pullout) for the students. Proficiency ratings and instructional delivery method were found to be significantly related (Pearson χ^2 (2, N = 1131) = 26.01, $p < .001$, Cramér's $V = .15$). Therefore the null hypothesis was rejected. Students in special education pullout classrooms tended to have a higher incidence of pass advanced ratings, a lower incidence of pass proficient ratings, and most importantly a lower incidence of fail ratings. As shown in Table 4, 27.88% of those students who received their

instruction in the inclusion classroom failed compared to 20.53% of students in the pullout classrooms.

Table 4

Comparison of Math Proficiency in the General Education Inclusion Classroom and the Special Education Pullout Classroom

Math	Pass Advanced		Pass Proficient		Fail	
	(<i>N</i> = 400)	35.37%	(<i>N</i> = 449)	39.70%	(<i>N</i> = 282)	24.93%
Inclusion (<i>N</i> = 678)	200	29.50%	289	42.63%	189	27.88%
Pullout (<i>N</i> = 453)	200	44.15%	160	35.32%	93	20.53%

Follow-up pairwise comparisons were conducted to evaluate the differences in the distributions of proficiency results among students in the inclusion and pullout classrooms. The Bonferroni Method was used to control for Type I error at the .05 level across all three comparisons. As shown in Table 5, the pairwise differences in the rates of pass advanced and pass proficient were significant. Students educated in the pullout classroom were 1.50 (44.15%/29.50%) times more likely to earn an advanced score. Students educated in the inclusion classroom were 1.21 (42.60%/35.32%) times more likely to earn a pass proficient score.

Table 5

Results for the Pairwise Comparisons Using the Bonferroni Method

Math	χ^2	<i>p</i> (Alpha)	Cramér's <i>V</i>
Pass Advanced vs. Pass Proficient	17.87	< .001 (.17)	.15
Pass Advanced vs. Fail	19.56	< .001 (.17)	.17
Pass Proficient vs. Fail	.54	.46 (.17)	.03

Research Question 2

Is there a significant relationship between the instructional delivery method (inclusion or pullout) and the reading proficiency rating (pass advanced, pass proficient, fail) for students with disabilities?

Ho₂₁: There is no significant relationship between the instructional delivery method (inclusion or pullout) and the reading proficiency rating (pass advanced, pass proficient, fail) for students with disabilities.

A chi-square analysis was conducted to evaluate if there was a difference in the reading proficiency ratings of student achievement scores for students who received their instruction in the general education inclusion classroom and the special education pullout classroom. The two variables were the three proficiency ratings (pass advanced, pass proficient, fail) and the instructional delivery method (inclusion or pullout) for the students. Proficiency ratings and instructional delivery method were found to be significantly related (Pearson χ^2 (2, $N = 1137$) = 33.61, $p < .001$, Cramér's $V = .17$). Therefore the null hypothesis was rejected. Students in special education pullout classrooms tended to have a higher incidence of pass advanced ratings, a lower incidence of pass proficient ratings, and most importantly a lower incidence of fail ratings. As shown in Table 6, 26.60% of those students who received their instruction in the inclusion classroom failed compared to 21.08% of students in the pullout classrooms.

Table 6

Comparison of Reading Proficiency in the General Education Inclusion Classroom and the Special Education Pullout Classroom

Reading	Pass Advanced		Pass Proficient		Fail	
	(<i>N</i> = 325)	28.58%	(<i>N</i> = 537)	47.23%	(<i>N</i> = 275)	24.19%
Inclusion (<i>N</i> = 639)	139	21.75%	330	51.64%	170	26.60%
Pullout (<i>N</i> = 498)	186	37.35%	207	41.57%	105	21.08%

Follow-up pairwise comparisons were conducted to evaluate the differences in the distributions of proficiency results among students in the inclusion and pullout classrooms. The Bonferroni Method was used to control for Type I error at the .05 level across all three comparisons. As shown in Table 7, the pairwise differences in the rates of pass advanced and pass proficient were significant. Students educated in the pullout classroom were 1.72 (37.35%/21.75%) times more likely to earn an advanced score. Students educated in the inclusion classroom were 1.24 (51.64%/41.57%) times more likely to earn a pass proficient score.

Table 7

Results for the Pairwise Comparisons Using the Bonferroni Method

Math	χ^2	<i>p</i> (Alpha)	Cramér's <i>V</i>
Pass Advanced vs. Pass Proficient	28.49	< .001 (.17)	.18
Pass Advanced vs. Fail	21.64	< .001 (.17)	.19
Pass Proficient vs. Fail	.01	.91 (.17)	<.01

Research Question 3

Is there a significant relationship between the assessment method (SOL test or VGLA) and the math proficiency rating (pass advanced, pass proficient, fail) for students with disabilities who were instructed in a pullout program?

Ho₃₁: There is no significant relationship between the assessment method (SOL test or VGLA) and the math proficiency rating (pass advanced, pass proficient, fail) for students with disabilities who were instructed in a pullout program.

A chi-square analysis was conducted to evaluate if there was a difference in the math proficiency ratings of student achievement scores for students who received their instruction in a special education pullout classroom who were administered the SOL test or the VGLA. The two variables were the three proficiency ratings (pass advanced, pass proficient, fail) and the type of assessment (SOL test or VGLA) administered to the students. Proficiency ratings and the type of assessment were found to be significantly related (Pearson $\chi^2 (2, N= 453) = 151.63, p < .001$, Cramér's $V = .58$). Therefore the null hypothesis was rejected. Students who were assessed by the VGLA tended to have a higher incidence of pass advanced ratings, a lower incidence of pass proficient ratings, and most importantly a lower incidence of fail ratings. As shown in Table 8, 31.39% of students failed the SOL test compared to 3.91% of those students who failed the VGLA.

Table 8

Comparison of Math Proficiency in the Special Education Pullout Classroom on the SOL Test and VGLA

Math Pullout Classroom	Pass Advanced		Pass Proficient		Fail	
	(<i>N</i> = 200)	44.15%	(<i>N</i> = 160)	35.32%	(<i>N</i> = 93)	20.53%
SOL (<i>N</i> = 274)	58	21.17%	130	47.45%	86	31.39%
VGLA (<i>N</i> = 179)	142	79.33%	30	16.76%	7	3.91%

Follow-up pairwise comparisons were conducted to evaluate the differences in the distributions of proficiency results among students in the pullout program assessed via the SOL test versus the VGLA in math. The Bonferroni Method was used to control for Type I error at the .05 level across all three comparisons. As shown in Table 9, the pairwise differences in the rates of pass advanced and pass proficient were significant. Students assessed via the VGLA were 3.75 (79.33%/21.17%) times more likely to earn an advanced score. Students assessed via the SOL were 2.83 (47.45%/16.76%) times more likely to earn a pass proficient score.

Table 9

Results for the Pairwise Comparisons Using the Bonferroni Method

Math	χ^2	<i>p</i> (Alpha)	Cramér's <i>V</i>
Pass Advanced vs. Pass Proficient	97.26	< .001 (.17)	.52
Pass Advanced vs. Fail	102.33	< .001 (.17)	.591
Pass Proficient vs. Fail	5.93	.02 (.17)	.153

Research Question 4

Is there a significant relationship between the assessment method (SOL test or VGLA) and the reading proficiency rating (pass advanced, pass proficient, fail) for students with disabilities who were instructed in a pullout program?

Ho₄₁: There is no significant relationship between the assessment method (SOL test or VGLA) and the reading proficiency rating (pass advanced, pass proficient, fail) for students with disabilities who were instructed in a pullout program.

A chi-square analysis was conducted to evaluate if there was a difference in the reading proficiency ratings of student achievement scores for students who received their instruction in a special education pullout program who were administered the SOL test or the VGLA. The two variables were the three proficiency ratings (pass advanced, pass proficient, fail) and the type of assessment (SOL test or VGLA) administered to the students. Proficiency ratings and the type of assessment were found to be significantly related (Pearson $\chi^2(2, N = 498) = 184.14, p < .001$, Cramér's $V = .61$). Therefore the null hypothesis was rejected. Students who were assessed by the VGLA tended to have a higher incidence of pass advanced ratings, a lower incidence of pass proficient ratings, and most importantly a lower incidence of fail ratings. As shown in Table 10, 30.18% of students failed the SOL test compared to 8.92% of those students who failed the VGLA.

Table 10

Comparison of Reading Proficiency in the Special Education Pullout Classroom on the SOL Test and VGLA

Reading Pullout Classroom	Pass Advanced		Pass Proficient		Fail	
	(<i>N</i> = 186)	37.35%	(<i>N</i> = 207)	41.57%	(<i>N</i> = 105)	21.08%
SOL (<i>N</i> = 285)	34	11.93%	165	57.89%	86	30.18%
VGLA (<i>N</i> = 213)	152	71.36%	42	19.72%	19	8.92%

Follow-up pairwise comparisons were conducted to evaluate the differences in the distributions of proficiency results among students in the pullout program assessed via the SOL test versus the VGLA in reading. The Bonferroni Method was used to control for Type I error at the .05 level across all three comparisons. As shown in Table 11, the pairwise differences in the rates of pass advanced and pass proficient were significant. Students assessed via the VGLA were 5.98 (71.36%/11.93%) times more likely to earn an advanced score. Students assessed via the SOL were 2.93 (57.89%/19.72%) times more likely to earn a pass proficient score.

Table 11

Results for the Pairwise Comparisons Using the Bonferroni Method

Math	χ^2	<i>p</i> (Alpha)	Cramér's <i>V</i>
Pass Advanced vs. Pass Proficient	147.91	< .001 (.17)	.61
Pass Advanced vs. Fail	112.12	< .001 (.17)	.621
Pass Proficient vs. Fail	.21	.64 (.17)	.03

Research Question 5

Is there a significant relationship between the assessment method (SOL test or VGLA) and the math proficiency rating (pass advanced, pass proficient, fail) for students with disabilities who were instructed in an inclusive program?

Ho5₁: There is no significant relationship between the assessment method (SOL test or VGLA) and the math proficiency rating (pass advanced, pass proficient, fail) for students with disabilities who were instructed in an inclusive program.

A chi-square analysis was conducted to evaluate if there was a difference in the math proficiency ratings of student achievement scores for students who received their instruction in a general education inclusion classroom who were administered the SOL test or the VGLA. The two variables were the three proficiency ratings (pass advanced, pass proficient, fail) and the type of assessment (SOL test or VGLA) administered to the students. Proficiency ratings and the type of assessment were found to be significantly related (Pearson $\chi^2 (2, N = 678) = 27.52, p < .001$, Cramér's $V = .20$). Therefore the null hypothesis was rejected. Students who were assessed by the VGLA tended to have a higher incidence of pass advanced ratings, a lower incidence of pass proficient ratings, and most importantly a lower incidence of fail ratings. As shown in Table 12, 30.58% of students failed the SOL test compared to 15.57% of those students who failed the VGLA.

Table 12

Comparison of Math Proficiency in the General Education Inclusion Classroom on the SOL Test and VGLA

Math Inclusion Classroom	Pass Advanced		Pass Proficient		Fail	
	(<i>N</i> = 200)	29.50%	(<i>N</i> = 289)	42.63%	(<i>N</i> = 189)	27.88%
SOL (<i>N</i> = 285)	141	25.36%	245	44.06%	170	30.58%
VGLA (<i>N</i> = 213)	59	48.36%	44	36.07%	19	15.57%

Follow-up pairwise comparisons were conducted to evaluate the differences in the distributions of proficiency results among students in the inclusion program assessed via the SOL test versus the VGLA in math. The Bonferroni Method was used to control for Type I error at the .05 level across all three comparisons. As shown in Table 13, the pairwise differences in the rates of pass advanced and pass proficient were significant. Students assessed via the VGLA were 1.91 (48.36%/25.36%) times more likely to earn an advanced score. Students assessed via the SOL were 1.22 (44.06%/36.07%) times more likely to earn a pass proficient score.

Table 13

Results for the Pairwise Comparisons Using the Bonferroni Method

Math	χ^2	<i>p</i> (Alpha)	Cramér's <i>V</i>
Pass Advanced vs. Pass Proficient	14.49	< .001 (.17)	.17
Pass Advanced vs. Fail	22.92	< .001 (.17)	.243
Pass Proficient vs. Fail	2.67	.10 (.17)	.08

Research Question 6

Is there a significant relationship between the assessment method (SOL test or VGLA) and the reading proficiency rating (pass advanced, pass proficient, fail) for students with disabilities who were instructed in an inclusive program?

Ho₆₁: There is no significant relationship between the assessment method (SOL test or VGLA) and the reading proficiency rating (pass advanced, pass proficient, fail) for students with disabilities who were instructed in an inclusive program.

A chi-square analysis was conducted to evaluate if there was a difference in the reading proficiency ratings of student achievement scores for students who received their instruction in a general education inclusion classroom who were administered the SOL test or the VGLA. The two variables were the three proficiency ratings (pass advanced, pass proficient, fail) and the type of assessment (SOL test or VGLA) administered to the students. Proficiency ratings and the type of assessment were found to be significantly related (Pearson $\chi^2 (2, N = 639) = 90.65, p < .001$, Cramér's $V = .38$). Therefore the null hypothesis was rejected. Students who were assessed by the VGLA tended to have a higher incidence of pass advanced ratings, a lower incidence of pass proficient ratings, and most importantly a lower incidence of fail ratings. As shown in Table 14, 28.47% of students failed the SOL test compared to 4.08% of those students who failed the VGLA.

Table 14

Comparison of Reading Proficiency in the General Education Inclusion Classroom on the SOL Test and VGLA

Reading Inclusion Classroom	Pass Advanced		Pass Proficient		Fail	
	(N = 139)	21.75%	(N = 330)	51.64%	(N = 170)	26.60%
SOL (N = 590)	102	17.29%	320	54.24%	168	28.47%
VGLA (N = 49)	37	75.51%	10	20.41%	2	4.08%

Follow-up pairwise comparisons were conducted to evaluate the differences in the distributions of proficiency results among students in the inclusion program assessed via the SOL test versus the VGLA in reading. The Bonferroni Method was used to control for Type I error at the .05 level across all three comparisons. As shown in Table 15, the pairwise differences in the rates of pass advanced and pass proficient were significant. Students assessed via the VGLA were 4.37 (75.51%/17.29%) times more likely to earn an advanced score. Students assessed via the SOL were 2.66 (54.24%/20.41%) times more likely to earn a pass proficient score.

Table 15

Results for the Pairwise Comparisons Using the Bonferroni Method

Math	χ^2	p (Alpha)	Cramér's V
Pass Advanced vs. Pass Proficient	60.35	< .001 (.17)	.36
Pass Advanced vs. Fail	44.89	< .001 (.17)	.38
Pass Proficient vs. Fail	1.65	.20 (.17)	.06

Research Question 7

Is there a significant relationship between the instructional delivery method (inclusion or pullout) and the math proficiency rating (pass advanced, pass proficient, fail) for students with disabilities who took the SOL test?

Ho7₁: There is no significant relationship between the instructional delivery method (inclusion or pullout) and the math proficiency rating (pass advanced, pass proficient, fail) for students with disabilities who took the SOL test.

A chi-square analysis was conducted to evaluate if there was a difference in the math proficiency ratings of student SOL achievement scores for students who received their instruction in the general education inclusion classroom and the special education pullout classroom. The two variables were the three proficiency ratings (pass advanced, pass proficient, fail) and the instructional delivery method (inclusion or pullout) for the students. Proficiency ratings and instructional delivery method were not found to be significantly related (Pearson $\chi^2(2, N = 830) = 1.85, p = .397$, Cramér's $V = .05$). Therefore the null hypothesis was retained. Students in inclusion classrooms and special education pullout classrooms tended to have similar levels of achievement in math. As shown in Table 16, 30.58% of students who received their instruction in the inclusion classroom failed compared to 31.39% of those students in the pullout classes.

Table 16

Comparison of SOL Math Proficiency in the General Education Inclusion Classroom and the Special Education Pullout Classroom

Math SOL	Pass Advanced		Pass Proficient		Fail	
	(<i>N</i> = 199)	23.98%	(<i>N</i> = 375)	45.18%	(<i>N</i> = 256)	30.84%
Inclusion (<i>N</i> = 556)	141	25.36%	245	44.06%	170	30.58%
Pullout (<i>N</i> = 274)	58	21.17%	130	47.45%	86	31.39%

Research Question 8

Is there a significant relationship between the instructional delivery method (inclusion or pullout) and the reading proficiency rating (pass advanced, pass proficient, fail) for students with disabilities who took the SOL test?

Ho8₁: There is no significant relationship between the instructional delivery method (inclusion or pullout) and the reading proficiency rating (pass advanced, pass proficient, fail) for students with disabilities who took the SOL test.

A chi-square analysis was conducted to evaluate if there was a difference in the reading proficiency ratings of student SOL achievement scores for students who received their instruction in the general education inclusion classroom and the special education pullout classroom. The two variables were the three proficiency ratings (pass advanced, pass proficient, fail) and the instructional delivery method (inclusion or pullout) for the students. Proficiency ratings and instructional delivery method were not found to be significantly related (Pearson χ^2 (2, *N* = 875) = 4.21, *p* = .122, Cramér's *V* = .12). Therefore the null hypothesis was retained. Students in inclusion classrooms and special education pullout classrooms tended to have similar levels of achievement in reading. As shown in Table 17, 28.47% of students who received their

instruction in the inclusion classroom failed compared to 30.18% of those students in the pullout classes.

Table 17

Comparison of SOL Reading Proficiency in the General Education Inclusion Classroom and the Special Education Pullout Classroom

Reading SOL	Pass Advanced		Pass Proficient		Fail	
	(N = 136)	15.5%	(N = 485)	55.4%	(N = 254)	29.0%
Inclusion (N = 556)	102	17.29%	320	54.24%	168	28.47%
Pullout (N = 274)	34	11.93%	165	57.89%	86	30.18%

Summary

Chapter 4 presented the descriptive and comparative analysis for data collected from the 2009 SOL and VGLA state assessment results for students with disabilities in Dickenson County, Lee County, Scott County, and Wise County. The data were analyzed using chi-square analysis and pairwise comparisons. The findings indicate that there is a relationship between instructional delivery method (inclusion or pullout) and proficiency in reading and math. The findings also indicate that there is a relationship between assessment method (SOL test or VGLA) and proficiency in reading and math. The summary, conclusions, recommendations for practice, and recommendations for further study based on the findings of the research data are presented in Chapter 5.

CHAPTER 5

SUMMARY, CONCLUSIONS, IMPLICATIONS FOR PRACTICE, AND RECOMMENDATIONS FOR FURTHER RESEARCH

Since signed into law the No Child Left Behind Act (NCLB, 2002) has forced schools and school divisions to address the achievement gap of students with disabilities. Prior to this law subgroups were not included in accountability measures in Virginia; only the overall pass rates of all students was included. NCLB changed that because schools, school divisions, and states became accountable for not only overall student achievement but also for student achievement within subgroups of students such as students with disabilities.

Virginia Grade Level Alternative Assessment

During the course of this study, the Virginia General Assembly addressed the topic of the Virginia Grade Level Alternative Assessment (VGLA). Many legislators indicated a concern that so many students with disabilities were being evaluated with this assessment, and that the pass rates for VGLAs were significantly higher across the state than the SOL pass rates for students with disabilities. School divisions across the state have used the VGLA to assess their students with varying degrees from near zero to 50% (Code of Virginia, 2009). The Virginia General Assembly voted in 2009 to include phrasing in state law that would require school division superintendents to annually certify that students who qualified were the only students to participate in the VGLA. Prior to that law school divisions were not required to provide any documentation regarding the participation of students in the VGLA (Code of Virginia, 2009). Soon after the Virginia Department of Education announced that the VGLA would be phased out in Math and Reading as soon as the Virginia Modified Achievement Standards Test (VMAST) could be implemented. The VMAST was not designed as a direct replacement for the VGLA, as

the participation guidelines for the two are different. The 2010-2011 school year was the last administration of the VGLA in Math, and the 2011-2012 school year was the last administration of the VGLA in Reading (Virginia Department of Education, 2011c).

The findings of this study illustrate one of the concerns of the VGLA that schools can demonstrate student achievement to higher rates using the VGLA rather than the SOL test. Schools that struggle with closing the achievement gap between students with disabilities and nondisabled students have certainly taken advantage of VGLAs to help avoid the consequences of not meeting Adequate Yearly Progress. Because of the phase out of the VGLA, the implications of this study with regard to that specific topic are limited. To that end, the results of the SOL tests dominate the content of this chapter.

Summary of Findings

Table 18 shows the distribution of students by educational placement. The distribution was similar for math (49.87%) and reading (50.13%). The inclusion classes had 56.20% of the students in reading instruction and 59.95% in math instruction with the remaining students receiving instruction in the pullout program. The distribution of students in the SOL and VGLA assessments were similar for math and reading; 76.96% of the students took the SOL test in reading and 73.39% in math. The biggest difference was found in the assessment type in each of the educational settings. In math, 82.01% of students in the inclusion classroom took the SOL while only 60.49% of the students in the pullout classroom took the SOL test. In reading the differences were more pronounced with 92.33% of students in the inclusion classroom assessed via the SOL compared to 57.23% in the pullout classroom.

Table 18

Placement and Assessments of Students

Instructional Delivery Method	Total Students		Inclusion		Pullout	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
Math	1,131	49.87%	678	59.9%	453	40.1%
Reading	1,137	50.13%	639	56.2%	498	43.8%
SOL Math	830	73.39%	556	82.0%	274	60.5%
VGLA Math	301	26.61%	122	18.0%	179	39.5%
SOL Reading	875	76.96%	590	92.3%	285	57.2%
VGLA Reading	262	23.04%	49	7.7%	213	42.8%

There were statistically significant differences in the proficiencies of students based on educational placement in reading and math where SOL proficiencies and VGLA proficiencies were considered together. However, when SOL proficiencies were considered in isolation, there were no significant differences in the proficiencies of students between the placement options of inclusion and special education pullout.

For research question 1 a chi-square analysis was conducted to determine if there was a significant difference in the instructional delivery method (inclusion or pullout) and math proficiency ratings (pass advanced, pass proficient, fail). The results indicate a statistically significant difference in the math proficiency ratings between the two instructional delivery methods. While the Cramér’s *V* test for strength showed a weak association (.15), the chi-square test indicated that students in the special education pullout program had a higher incidence of pass advanced proficiency ratings and a lower incidence of pass proficient and fail ratings.

For research question 2 a chi-square analysis was conducted to determine if there was a significant difference in the instructional delivery method (inclusion or pullout) and reading

proficiency ratings (pass advanced, pass proficient, fail). The results indicate a statistically significant difference in the reading proficiency ratings between the two instructional delivery methods. While the Cramér's *V* test for strength showed a weak association (.17), the chi-square test indicated that students in the special education pullout program had a higher incidence of pass advanced proficiency ratings and a lower incidence of pass proficient and fail ratings.

For research question 3 a chi-square analysis was conducted to determine if there was a significant difference in the assessment method (SOL test or VGLA) and math proficiency ratings (pass advanced, pass proficient, fail) for students who were instructed in the special education pullout program. The results indicate a statistically significant difference in the math proficiency ratings between the two assessment methods. The Cramér's *V* test for strength showed a relatively strong association (.58) and the chi-square test indicated that students in the special education pullout program who were assessed using the VGLA in math had a higher incidence of pass advanced proficiency ratings and lower incidences of pass proficient and fail ratings.

For research question 4, a chi-square analysis was conducted to determine if there was a significant difference in the assessment method (SOL test or VGLA) and reading proficiency ratings (pass advanced, pass proficient, fail) for students who were instructed in the special education pullout program. The results indicate a statistically significant difference in the reading proficiency ratings between the two assessment methods. The Cramér's *V* test for strength showed a strong association (.61) and the chi-square test indicated that students in the special education pullout program who were assessed using the VGLA in reading had a higher incidence of pass advanced proficiency ratings and lower incidences of pass proficient and fail ratings.

For research question 5 a chi-square analysis was conducted to determine if there was a significant difference in the assessment method (SOL test or VGLA) and math proficiency ratings (pass advanced, pass proficient, fail) for students who were instructed in the inclusive program. The results indicate a statistically significant difference in the math proficiency ratings between the two assessment methods. While the Cramér's *V* test for strength showed a weak association (.20), the chi-square test indicated that students in the inclusion program who were assessed using the VGLA in math had a higher incidence of pass advanced proficiency ratings and lower incidences of pass proficient and fail ratings.

For research question 6 a chi-square analysis was conducted to determine if there was a significant difference in the assessment method (SOL test or VGLA) and reading proficiency ratings (pass advanced, pass proficient, fail) for students who were instructed in the inclusive program. The results indicate a statistically significant difference in the reading proficiency ratings between the two assessment methods. While the Cramér's *V* test for strength showed a moderate association (.38), the chi-square test indicated that students in the inclusion program who were assessed using the VGLA in reading had a higher incidence of pass advanced proficiency ratings and lower incidences of pass proficient and fail ratings.

For research question 7 a chi-square analysis was conducted to determine if there was a significant difference in the instructional delivery method (inclusion or pullout) and math proficiency ratings (pass advanced, pass proficient, fail) for students who took the SOL test. The results indicate no statistically significant difference in the SOL math proficiency ratings between the two instructional delivery methods. The Cramér's *V* test for strength showed a negligible association (.05) and the chi-square test indicated that students performed equally in the inclusion and pullout programs.

For research question 8 a chi-square analysis was conducted to determine if there was a significant difference in the instructional delivery method (inclusion or pullout) and reading proficiency ratings (pass advanced, pass proficient, fail) for students who took the SOL test. The results indicate no statistically significant difference in the SOL reading proficiency ratings between the two instructional delivery methods. While the Cramér’s *V* test for strength showed a weak association (.12), the chi-square test indicated that students performed equally in the inclusion and pullout programs.

Conclusions

Because Virginia has discontinued the VGLA, the differences in achievement as measured by the SOL test between students with disabilities who were placed in general education inclusion classrooms verses their peers in special education pullout classrooms is the important question. Findings from this study (see Table 19) indicate that there is no significant difference in the achievement as measured by the SOL test for students with disabilities who were placed in the general education inclusion classrooms and those in special education pullout classes.

Table 19
SOL Achievement Results

SOL	Sample		Inclusion Passed		Pullout Passed		<i>p</i>	Cramér’s <i>V</i>
	Inclusion	Pullout	<i>N</i>	%	<i>N</i>	%		
Math	556	274	386	69.42%	188	68.61%	.397	.05
Reading	590	285	422	71.53%	199	69.82%	.122	.12

The results of this study mirror those found in 7 of the 18 studies included in the Chapter 2 literature review. The seven studies (Beam, 2005; Berman, 2000; Eskin, 1999; Gale, 2005;

Nichols, 1996; Popp, 2001; Redmon, 2007) reported that there was no significant difference between the achievement of student with disabilities in the general education classroom and their peers in special education pullout classes. Results from 10 of the 18 studies indicate that students with disabilities in inclusion classrooms outperformed their peers in pullout classes (Battista, 1999; Brewton, 2005; Brown-Abdelmageed, 2007; Emmendorfer, 2004; Hall, 1997; Johnson, 2007; Miller, 2003; Rauch, 2002; Ritter, 1999; Siegel, 2007); one study (Zigmond et al., 1995) found that students in the special education pullout classroom outperformed their peers in the general education setting.

Recommendations for Practice

The pressure for schools and school divisions to meet Adequate Yearly Progress (AYP) levels is strong. The law requires schools, school divisions, and states to make progress in student achievement or face specific sanctions. The original NCLB act mandated that all students will be proficient on state assessments in the 2013-2014 school year. From the onset of these requirements states were required to set Annual Measurable Objectives (AMOs) that progressed from the baseline data in 2001 to 100% proficiency in the 2013-2014 school year. Schools and school divisions that do not meet the AMOs for consecutive years face sanctions such as redirecting federal funds into professional development, supplemental educational services, and replacing teachers and principals (NCLB, 2002).

In July 2012 the Virginia Department of Education submitted a waiver request to change the accountability requirements of No Child Left Behind (2002) until the new Elementary and Secondary Education Act is passed. The United States Department of Education (2002) promptly approved the flexibility request that significantly moderates the requirement that all students achieve the 100% proficiency rate by 2014. Virginia's waiver application includes AMOs that

increase each year and are designed to increase expectations of student achievement and decrease gaps among different subgroups of students without requiring that 100% of the students are proficient (United States Department of Education, 2012).

The biggest accountability challenge included in the approved flexibility request is the Federal Graduation Indicator (FGI) AMO of 80%. Prior to the flexibility request the FGI was calculated and reported by all students and for each subgroup, but the accountability measure was only applied to all students. The flexibility request added each subgroup into the accountability calculations (United States Department of Education, 2012).

On Virginia's 2010-2011 School Report Card (based on 2009-2010 graduation data) 44% of the students with disabilities graduated with a high school diploma within 4 years of entering ninth grade (Virginia Department of Education, 2012a). There is a major gap between the performance of the state on the FGI of students with disabilities and the requirement for this subgroup to meet the 80% AMO. Despite the AMOs for reading and math proficiency being moderated, schools, school divisions, and the state of Virginia continue to struggle to meet federal accountability measures with regards to students with disabilities (Virginia Department of Education - Superintendent's Memo, 2011).

The present study found no difference in the achievement of students with disabilities with respect to their placement in the general education inclusion setting and the special education pullout setting. Schools and school divisions may wish to focus on other concerns such as least restrictive environment, budget constraints, and most importantly individual student needs when making decisions regarding the educational placement of students with disabilities.

Recommendations for Further Research

The present study was designed to investigate the relationship between the performance of students with disabilities and their educational placement either in the inclusive general education classroom or in the pullout special education classroom. The results of this study indicate no difference in student achievement between the two placement options.

The first recommendation for further research is to include a measure of teacher effectiveness in the study. Marzano, Pickering, and Pollock (2004) have asserted that teacher quality is a significant factor in student achievement.

Many states are implementing programs to measure student achievement growth as well as proficiency in order to ensure that lower performing students are on track to proficiency as well as to measure teacher and school efficacy. Virginia is one of these states and the tool that has been implemented is the Virginia Growth Percentiles, which measures the progress of students with similar achievement histories over time and presents a percentile growth for each student. The tool produces reports with data on students in grades four through eight in reading and mathematics. There are certain instances in which student growth percentiles would not be reported for a given student such as advanced scores for two or more years, assessment history that includes assessments other than the Standards of Learning assessment, or students who pursue a nonstandard sequence of courses. In all, it is expected that approximately 70% of Virginia students in grades four through eight will receive their student growth percentile scores. Student growth percentiles data are also reported by teachers through a student schedule data collection (Virginia Department of Education, 2011b).

When the VGLA is completely phased out, student growth percentiles will be reported for most students with disabilities in Virginia and their teachers. When these data are reported,

future researchers could compare the achievement scores of students with disabilities in the educational settings of special education pullout and general education inclusion with the teacher student growth percentile scores.

The second recommendation for further research is to conduct a study with a larger scope. In this study the sample consisted of 1,137 students. A study with a larger sample may yield additional significant findings.

The third recommendation for further research is to compare the student achievement across grade levels. This study grouped all students placed in inclusion classrooms and all students placed in special education classrooms together. There may be differences found in achievement among grade levels.

The fourth recommendation for further research is to consider disability classification in a future study. It is possible that students with specific disabilities may be better served in one of the placement options over the other or some combination of both.

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APPENDIX

Special Education Survey

The purpose of this survey is to determine the educational placement of the students listed below during the 2009-2010 school year. Please check the appropriate setting. For the purpose of this survey, a student will be considered participating in an *Inclusive Setting* if the student receives instruction in the general educational classroom for a minimum of 80% of the class time per day. A student will be considered participating in a pull-out setting if the student receives instruction in the general educational classroom less than 80% of the class time per day.

Student	Grade	Content Area	Pull-Out Setting	Inclusive Setting
Student #1	3	Reading		
Student #1	3	Math		
Student #2	3	Reading		
Student #2	3	Math		
Student #3	4	Reading		
Student #3	4	Math		
Student #4	4	Reading		
Student #4	4	Math		
Student #5	5	Reading		
Student #5	5	Math		
Student #6	5	Reading		
Student #6	5	Math		
Student #7	6	Reading		
Student #7	6	Math		
Student #8	6	Reading		
Student #8	6	Math		
Student #9	7	Reading		
Student #9	7	Math		
Student #10	7	Reading		
Student #10	7	Math		
Student #11	8	Reading		
Student #11	8	Math		
Student #12	8	Reading		
Student #12	8	Math		

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