

**The Relationship between Paraeducator Support and Student Scores on the  
Kansas Assessment of Modified Measures**

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## **Abstract**

Paraeducators have an essential role in providing the supports necessary for students with disabilities to be included in the general education classroom. The purpose of this study was to investigate to what extent there is a relationship between the minutes of paraeducator support a student with a moderate disability receives each day and achievement scores as measured by the Kansas Assessment of Modified Measures (KAMM) in reading and mathematics. A quantitative research design was used to measure the association between quantitative variables. The amount of paraeducator time received daily by a student was the independent variable, while student achievement in reading and math were the dependent variables. The population included students in grade 3, 4, 5, 6, 7, 8, and 10 or 11 who received special education services in a Midwest suburban school district during the 2011-2012 and the 2012-2013 school years. Students in the sample qualified to take the KAMM Reading and KAMM Mathematics to measure academic achievement. Correlations were calculated to index the strength and the direction of the relationship between two variables. A *t* test was conducted to test for the statistical significance of each correlation. The results revealed that for students in grades 3, 4, 5, and 7 in reading and students in grades 3 and 7 in mathematics, there was a statistically significant negative relationship between the number of paraeducator minutes students receive daily and achievement scores in reading and mathematics. These results indicated that as the number of paraeducator minutes increased, reading and mathematics achievement decreased. The results revealed that there was no statistically significant relationship for students at any grade level for either reading or mathematics in which achievement increased as the amount of paraeducator support increased. This study has

implications for district personnel and parents interested in improving outcomes for students receiving special education services. Among recommendations for future research are replicating the study using revised state assessments and investigating the impact of paraeducator competencies and professional learning experiences on student outcomes.

## **Dedication**

This work is dedicated to my amazing family who supported me every step through this journey. You knew this has always been a personal goal of mine and you each had a role in assuring I reached the end. For my husband, my Joe, only you know the true struggle this has been—not the class sessions, not the reading, assignments, and projects, not even the dissertation—but everything in between. Thank you for loving me and understanding why I needed not to give up on something I have waited so long to start. For Nicholas and Joycelyn, you gave me a place to work when needed, weekends to look forward to, and did all kinds of little things along the way that you probably did not consider a big deal, but I did. For Meg, thank you for your innumerable texts and phone calls, your eternal cheers of encouragement, and your wise counsel, all during an incredibly busy time for you. You inspired me to accomplish this last degree. To Joe Z., thank you for sharing Meg when I needed her. For Taylor, you always distracted me when I needed to clear my head, provided brawn for projects that needed your touch, and continually impress me with your wisdom. And for Isobel, Lucia, and Remy, being your Gram is my greatest pleasure. There is nothing that compares to your infectious giggles, your ceaseless curiosity, and your ability to provide comic relief at a moment's notice. Thank you for sharing your love with all of us!

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## **Chapter One**

### **Introduction**

The advent of the Education for Handicapped Children Act (Public Law 94-142) in 1975, reauthorized as the Individuals with Disabilities Education Act (IDEA) in 1997 and the Individuals with Disabilities Education Improvement Act (IDEIA) in 2004, has required school districts across the country to provide a free and appropriate public education (FAPE) to all students with disabilities (U.S. Department of Education, 2004). The enactment of IDEA, also called IDEIA, placed an emphasis on including students with disabilities in general education classrooms with same-aged peers being taught by highly qualified general education and special education teachers (Mueller & Murphy, 2001). The inclusion of students with disabilities in the general education classroom satisfied the United States Department of Education 2004 regulation implementing IDEA. This regulation required:

to the maximum extent appropriate, children with disabilities including children in public or private institutions or care facilities, are educated with children who are *nondisabled*; and special classes, separate schooling or other removal of children with disabilities from regular educational environment occurs only if the nature or severity of the disability is such that education in regular classes with the use of supplementary aids and services cannot be achieved satisfactorily. (U.S. Department of Education, 2004)

To comply with the intent of IDEA, school districts have included students with disabilities in the general education classroom through the increased utilization of paraeducators as supplemental aids based on individual student need (Suter & Giangreco,

2009). In 1965, according to Pickett, Likins, and Wallace (2003), approximately 10,000 paraeducators were working in schools. By the year 2010, the U.S. Department of Education (2010) reported that the workforce had expanded to 429,000 full-time equivalent paraeducators supporting students with disabilities within elementary and secondary schools. Data from the U.S. Department of Labor – Bureau of Labor Statistics (2012-13) indicated that paraeducators support students with disabilities in inclusive general and special education programs, self-contained special education classrooms, resource rooms, transition services, and early childhood settings. A 15% increase in the number of additional paraeducator positions between the years of 2010 and 2020 has been projected (Bureau of Labor Statistics, 2012-13).

While paraeducators have been employed in public schools dating back to the 1950s, the focus of responsibility for these staff members has shifted from that of “clerical work and general supervision to direct instruction of students with disabilities” (Sands, Kozleski, & French, 2000, p. 145). The 2004 Amendments to the IDEA required, “Paraeducators who are adequately trained and supervised may assist in the delivery of special education and related services” (U.S. Department of Education, 2004). IDEA further mandated that it is the responsibility of each state to develop a comprehensive staff development plan to ensure appropriate training to support the rapidly changing role of the paraeducator in supporting students with special needs.

## **Background**

Every student in the state of Kansas in grades 3, 4, 5, 6, 7, 8, and either grade 10 or 11 must participate in state achievement testing on an annual basis. Since the implementation of the Kansas Assessment of Modified Measures Reading (KAMM

Reading) and the Kansas Assessment of Modified Measures Mathematics (KAMM Mathematics) during the 2006-2007 school year, Kansas has used this state assessment annually to evaluate academic achievement of students with moderate disabilities. The KAMM Reading and KAMM Mathematics replaced the general Kansas Reading and Mathematics Assessments for students who, because of their disability, qualified for this alternate measure of achievement (Poggio, Yang, Irwin, Glasnapp, & Poggio, 2008). During the 2011-2012 and 2012-2013 school years, 517 students in District S, the district in which is study was conducted, were administered the KAMM Reading to assess achievement in reading, while 489 students were administered the KAMM Mathematics to assess achievement in mathematics. Ninety-five percent of District S students taking the KAMM Reading and KAMM Mathematics during these years received paraeducator support as outlined on their Individualized Education Program (IEP). According to the Kansas Personnel Report, District S employed 677 full time equivalent (FTE) paraeducators during the 2011-2012 school year and 721 FTE paraeducators during the 2012-2013 school year. Similar to other districts across the nation, paraeducators employed by District S provided support to students with moderate disabilities in the general education classroom and the special education resource room (U.S. Department of Education, 2006).

Students receiving special education services have a written plan called an Individualized Education Program (IEP). To assure compliancy with federal and state regulations, the Kansas Special Education Services Process Handbook outlines the federal and state regulations districts must follow when developing and implementing IEPs (Kansas State Department of Education [KSDE], 2011). This document stipulates

that IEP plans are to be reviewed and rewritten annually with the IEP team. A student's IEP team is comprised of the principal or designee, a general education teacher, a special education teacher and related service providers, parents, student when appropriate, and any other individual who has knowledge of or special expertise regarding the student (KSDE, 2011). Based on data collected by the student's educational team, the IEP Team determines the amount of paraeducator support needed by each student to access and progress through the curriculum in the least restrictive environment. Each student's IEP team determines the amount of paraeducator support based on individual student needs. Once the team determines the level of support needed, the team documents the time on the Service Delivery page of the IEP. In addition, if need for the support does not exist, a student may not receive paraeducator support; other students may have a full day of paraeducator support if needs are significant and warrant an intensive level of support over the entire school day (U.S. Department of Education, 2004). Further, KSDE outlines the IDEA requirement that at any time there is a substantial change to the amount of paraeducator support needed for a student, either an increase or decrease of 25% or more, the IEP team must reconvene to document revisions in the student's program and obtain parents' signed approval (KSDE, 2011, p. 89).

According to the Individuals with Disabilities Education Act, (U.S. Department of Education, 2004), students are guaranteed the amount of paraeducator support written on the IEP. Under the law, students are assured the provision for paraeducator support as documented in the IEP even if a move is made from one school to another or transition is made from one grade level to another. All preschool through high school certified

special education staff are trained to follow the processes and procedures as outlined in the law by the U.S. Department of Education (2004).

Along with determining appropriate paraeducator support for a student, the IEP team also determines the appropriate state assessment used to measure a student's academic achievement (Poggio et al., 2008). All students are required to take state assessments annually. At the time of this study, IEP Teams had three choices for state assessment measures depending on students' levels of academic functioning: (1) the general Kansas assessments in reading and mathematics; (2) the Kansas Assessment of Modified Measures in reading and mathematics; or (3) the Kansas Alternate Assessment in reading and mathematics. Beginning with the 2005-2006 school year, the Kansas Assessment of Modified Measures (KAMM) was introduced as a state assessment option for students with moderate disabilities (Poggio et al., 2008, p. 2). While aligned with grade level content standards, the KAMM Reading and KAMM Mathematics are modified assessments in which there are fewer test items and the test items have reduced complexity in comparison to the general reading and mathematics assessments. In Kansas, each district may administer the KAMM Reading and KAMM Mathematics to no more than 2% of the student population each year (KSDE, 2012). From the 2005-2006 school year through the 2012-2013 school year, the KAMM Reading and the KAMM Mathematics were available as modified assessments for students with disabilities.

### **Statement of the Problem**

In urban and suburban school districts in Kansas, paraeducators comprise a large classified employee group, many times outnumbering the certified special education staff

(U.S. Department of Education, 2010). The number of students with disabilities, full-time equivalent (FTE) certified special education staff, and FTE paraeducators for various school districts in northeast Kansas during the 2012-2013 school year are highlighted in Table 1. FTE is the number of working hours that represents one full-time employee during a fixed period, such as a year. FTE simplifies work measurement by converting workload hours into the number of people required to complete that work. While most district staff work full time resulting in a 1.0 FTE position, many certified teachers and paraeducators work part time contracts. This results in staff numbers being reported as decimals. For example, if a staff member works 30 hours per week, the position would be reported as a .75 FTE position, 20 hours per week a .5 position, and 8 hours would be a .2 position. For all districts, with the exception of Kansas City, Kansas, paraeducators outnumbered the certified special education staff for the 2012-2013 school year. Districts allocate a great amount of local, state, and federal funding to salaries, benefits, and training of paraeducators for the purpose of providing support to students with disabilities in general education classrooms.

Giangreco and Suter (2010) expressed concern with the amount of data available to support the efficacy of utilizing paraeducators to improve outcomes for students with disabilities, especially those in inclusive classrooms. While limited in number, several studies between 2007 and 2012 have found a negative relationship between the assignment of paraeducators and student achievement (Farrell, Alborz, Howes, & Pearson, 2010; Giangreco & Broer, 2007; Russell, Webster, & Blatchford, 2012). More studies are needed to inform current special education practice concerning the effectiveness of using paraeducator support to positively impact student outcomes.

Table 1

*Certified Special Educators and Paraeducators in Select Kansas Districts 2012-2013*

	Students with Disabilities	Certified SPED Staff FTE	Paraeducator FTE
Blue Valley	2103	361.20	463.00
DeSoto	504	85.80	102.00
Gardner-Edgerton	744	68.20	127.20
Kansas City, KS	3251	255.60	244.50
Lawrence	1463	199.74	276.80
Olathe	3469	354.60	721.30
Shawnee Mission	2695	389.48	475.00
Spring Hill	353	27.75	63.94
Topeka	2452	294.90	373.80
Turner	621	63.66	85.58

*Note.* SPED = Special Education; FTE = Full time equivalent. Adapted from “Certified Special Educators and Paraeducators in Select Kansas Districts 2012-2013,” by E. B. Fasulo, 2013 [data file].

Concerns arise when paraeducators are used as the primary, and sometimes only, instructional and behavioral support for students who qualify for special education services (Causton-Theoharis, 2009; Giangreco, Edelman, Broer, & Doyle, 2001; Giangreco & Hoza, 2013; Hemmingsson, Borell, & Gustavsson, 2003; Skar & Tamm, 2001). These concerns have included:

- Paraeducators may have the least educational qualifications but are delivering the majority of instruction to the students who have the greatest academic and behavioral needs.

- Retention of paraeducators is challenging due to low wages, inadequate training, lack of role clarification and supervision by certified teaching staff, and perceived lack of respect among educators, administrators, and students.
- Overuse of paraeducator support has been associated with poor relationship development and interactions with age-level peers, less engagement with the classroom teacher, stigmatization due to the association with an adult for extended periods of time, and low acquisition of independence due to the overreliance on adults (Giangreco, 2003; Giangreco, Suter, & Doyle, 2010; Suter & Giangreco, 2009; Mueller, 2002).

The Executive Director of the Kansas Association of School Boards reported that school funding in Kansas has steadily declined since the 2008-2009 school year (Tallman, 2013). Given the declining funding appropriated to the public schools in Kansas, it is imperative that districts ensure that available financial resources are allocated to programs and services that have the greatest positive benefit for student success in the classroom. Districts elect to employ paraeducators due to the shortages of certified special education teachers and as a cost savings measure for the district (Ghere & York-Barr, 2007). Since low wages are associated with paraeducator positions, districts can employ three paraeducators for approximately the same cost as one certified teacher (Ghere & York-Barr, 2007). However, Giangreco, Doyle, and Suter (2012) noted that little special education research has been conducted to support the position that use of paraeducators to provide academic support to students with disabilities is associated with an increase or decrease in achievement for these students.

**Purpose of the Study**

The purpose of this research was to determine if the amount of paraeducator support provided to students identified with moderate disabilities impacted academic performance as measured by standardized state assessments. Specifically, the current study investigated to what extent there is a relationship between the minutes of paraeducator support a student receives each day and scores on the Kansas Assessment of Modified Measures Reading and scores on the Kansas Assessment of Modified Measures Mathematics. The students in this research were enrolled in grades 3, 4, 5, 6, 7, 8 and high school (grade 10 or 11) as students in these grades are assessed annually using the KAMM Reading and KAMM Mathematics.

**Significance of the Study**

In reviewing the professional literature from 2005 to 2012 on the use of paraeducators to support students with special needs, Giangreco, Doyle, and Suter (2013) identified gaps in the published research. While these authors recommended all types of research associated with paraeducators, the researchers emphasized that future studies were needed to determine the impact of paraeducator support in producing positive outcomes for students. Seven of 32 studies completed by various researchers between the years of 2000 and 2007 measured student outcomes. Included in these seven studies on student outcomes were 26 students, most of whom were students with low incident disabilities such as autism and multiple developmental disabilities (Giangreco et al., 2010). The results of these studies supported that adequately trained paraeducators using research-based, systematic approaches planned by certified teaching staff can positively affect a student's performance (McDonnell, Johnson, Polychronis, & Risen, 2002).

However, the results of a limited number of studies indicated a negative relationship between the assignment of paraeducator and student achievement (Farrell et al., 2010; Giangreco & Broer, 2007; Russell et al., 2012). Giangreco et al. (2013) cautioned that the amount of student outcome data from the studies conducted is insufficient to draw conclusions concerning the effectiveness of paraeducators as an appropriate means of raising achievement for students being served in the general education classroom. The findings from the current research have the potential to educate parents, administrators, general education teachers, and special education teachers concerning the effectiveness of using paraeducators as the primary instructional support for students receiving special education services. In addition, districts may be encouraged to consider current staffing practices in the allocation of paraeducators and special education staff to buildings and special education programs. The results of this study could assist building teams in establishing and implementing procedures when determining the amount of paraeducator support needed for individual students and then fading the support as the student demonstrates skills as an independent learner. Furthermore, these findings may contribute to the existing body of research currently available on the effectiveness of paraeducators in improving student achievement.

### **Delimitations**

Delimitations, as defined by Lunenburg and Irby (2008), are “self-imposed boundaries set by the researcher on the purpose and scope of the study” (p. 134). The delimitations set for this research project included:

1. Data was collected from one Midwest suburban school district.

2. The scores from the 2011-2012 and 2012-2013 Kansas Assessment of Modified Measures Reading and the Kansas Assessment of Modified Measures Mathematics were used in measuring achievement for students with disabilities.
3. Students were enrolled in grades 3, 4, 5, 6, 7, 8 and in grades 10 or 11.

### **Assumptions**

Assumptions, according to Lunenburg and Irby (2008) are “postulates, premises, and propositions that are accepted as operational for the purposes of the research” (p.

135). The assumptions that influenced the current research project include:

1. All Kansas Assessment of Modified Measures Reading and Kansas Assessment of Modified Measures Mathematics data retrieved from the Kansas State Department of Education (KSDE) were complete and accurate.
2. Demographic data reported to KSDE by the individual schools within the school district were complete and accurate.
3. Paraeducator time documented on each student’s IEP was completed and accurately reflected the time each student received paraeducator support each school day.
4. Students who qualify to take the KAMM Reading must have reading instruction modified on a routine basis. Likewise, students who qualify to take the KAMM Mathematics must have mathematics instruction modified on a routine basis. Therefore, paraeducator support for those students taking the KAMM Reading and KAMM Mathematics is instructional in nature due to the curricular modifications needed by the student.

5. Students completed assessments to the best of their abilities.

### **Research Questions**

To investigate whether the amount of paraeducator support received by a student with a moderate disability influenced achievement in school, the following research questions were developed:

1. To what extent is there a relationship between the minutes of paraeducator support grade 3 students identified with moderate disabilities receive each day and scores on the KAMM Reading?
2. To what extent is there a relationship between the minutes of paraeducator support grade 4 students identified with moderate disabilities receive each day and scores on the KAMM Reading?
3. To what extent is there a relationship between the minutes of paraeducator support grade 5 students identified with moderate disabilities receive each day and scores on the KAMM Reading?
4. To what extent is there a relationship between the minutes of paraeducator support grade 6 students identified with moderate disabilities receive each day and scores on the KAMM Reading?
5. To what extent is there a relationship between the minutes of paraeducator support grade 7 students identified with moderate disabilities receive each day and scores on the KAMM Reading?
6. To what extent is there a relationship between the minutes of paraeducator support grade 8 students identified with moderate disabilities receive each day and scores on the KAMM Reading?

7. To what extent is there a relationship between the minutes of paraeducator support high school students identified with moderate disabilities receive each day and scores on the KAMM Reading?
8. To what extent is there a relationship between the minutes of paraeducator support grade 3 students identified with moderate disabilities receive each day and scores on the KAMM Mathematics?
9. To what extent is there a relationship between the minutes of paraeducator support grade 4 students identified with moderate disabilities receive each day and scores on the KAMM Mathematics?
10. To what extent is there a relationship between the minutes of paraeducator support grade 5 students identified with moderate disabilities receive each day and scores on the KAMM Mathematics?
11. To what extent is there a relationship between the minutes of paraeducator support grade 6 students identified with moderate disabilities receive each day and scores on the KAMM Mathematics?
12. To what extent is there a relationship between the minutes of paraeducator support grade 7 students identified with moderate disabilities receive each day and scores on the KAMM Mathematics?
13. To what extent is there a relationship between the minutes of paraeducator support grade 8 students identified with moderate disabilities receive each day and scores on the KAMM Mathematics?

14. To what extent is there a relationship between the minutes of paraeducator support high school students identified with moderate disabilities receive each day and scores on the KAMM Mathematics?

### **Definition of Terms**

For accurate interpretation of this study's purpose and findings, terms specific to this research have been identified and defined. The following definitions are provided for this purpose:

**Certified special education staff.** The state of Kansas considers any staff member who possesses a professional license or certificate through the appropriate Kansas governing agency and who provides educational or related services to students with disabilities a member of the certified special education staff. These educators includes early childhood through high school special education teachers, occupational, physical, and music therapists, speech-language pathologists, school psychologists, and school social workers (KSDE, 2011, p. 113).

**Free, Appropriate Public Education (FAPE).** Free appropriate public education is defined as special education and related services that:

- (a) are provided at public expense, under public supervision and direction, and without charge;
- (b) meet the standards of the State Education Agency;
- (c) include an appropriate preschool, elementary school, or secondary school education in the State involved; and
- (d) are provided in conformity with an individualized education program (IEP) that meets the requirements of Sec. 300.320 through 300.324. (U.S. Department of Education, 2004)

**Inclusion.** Special education services that place students with disabilities in the least restrictive environment of the general education classroom with appropriate supports are considered inclusion (Sindelar, Shearer, Yendol-Hoppey, & Liebert, 2006).

**Individualized Education Program (IEP).** An IEP is an education plan developed for a student if a determination is made that child has a disability and needs special education and related services (U.S. Department of Education, 2004).

**Individuals with Disabilities Education Act (IDEA).** IDEA is a federal law mandating that students with or suspected of having a disability have access to a free appropriate public education in the least restrictive environment. IDEA outlines procedures for identification, evaluation, and placement of students with disabilities as well as parental due process rights (Pankake, Littleton, & Schroth, 2005, p. 3). Enacted in 1997, IDEA was reauthorized in 2004 as the Individuals with Disabilities Education Improvement Act (IDEIA); however, the law continues to be referred to as IDEA.

**Kansas Assessment of Modified Measures Reading (KAMM Reading).** The KAMM Reading is a reading achievement test administered to Kansas students with moderate disabilities from the 2005-2006 school year through the 2012-2013 school year (Poggio et al., 2008, p. 2).

**Kansas Assessment of Modified Measures Mathematics (KAMM Mathematics).** The KAMM Mathematics is a mathematics achievement test administered to Kansas students with moderate disabilities from the 2005-2006 school year through the 2012-2013 school year (Poggio et al., 2008, p. 2).

**Least Restrictive Environment (LRE).** LRE is a legal term found within IDEA guaranteeing that students with disabilities be educated with non-disabled peers to the maximum extent appropriate (Pankake et al., 2005, p. 11).

**Moderate disability.** A student with a moderate disability generally spends all or part of the school day in a general education classroom with or without adult support, but may also receive special education for part of the day in a resource room within the school. Modifying the general education curriculum is a common instructional practice for students with moderate disabilities (Collins & Wolery, 2012).

**Paraeducator.** A paraeducator is a special education staff member who provides instructional or related service support to students with disabilities under the supervision of a licensed or certified special education professional (KSDE, 2013, p. 25).

**Special education.** Special education is specially designed instruction to meet the unique needs of a child with a disability (U.S. Department of Education, 2004).

### **Overview of the Methodology**

The population for this study included all students in a Midwest suburban school district in grades 3, 4, 5, 6, 7, 8, and grade 10 or 11 receiving special education services whose achievement in reading and/or mathematics was measured using the KAMM Reading and KAMM Mathematics during the 2011-2012 and 2012-2013 school years. Purposive sampling was used for participant selection. The researcher reviewed IEPs and reported the documented daily minutes of paraeducator support from the Service Delivery page. The district's Assessment Department provided the student achievement scores for the study. The researcher calculated Pearson product-moment correlation coefficients to determine the strength and direction of the relationship between the pairs

of variables at each tested grade level for both reading and mathematics. The statistical significance of the correlation coefficients was tested using *t* tests.

### **Organization of the Study**

The first chapter in this study introduced the components of the study including: background for the study, statement of the problem, purpose of the study, significance of the study, delimitations and assumptions, research questions, definition of terms, and an overview of the methodology used. Chapter two reviews relevant literature related to the proposed research questions. This chapter includes the history of paraeducators in the schools, rationale for employing paraeducators, the role of paraeducators, unintended consequences of paraeducator support, and the outcomes for students needing paraeducator support. Chapter three explains the design of the study and the methodology used to conduct the research. The results of the hypothesis testing for each research question are reported in chapter four. Chapter five provides a summary of the findings related to the literature, interpretation of the results of the data analysis, a statement of the conclusion drawn, and recommendations for further research.

## **Chapter Two**

### **Review of Literature**

The existence of paraeducators as supports for students and staff in school districts across the United States is commonplace (French, 1999; Giangreco et al., 2010; Werts, Wolery, Snyder, & Caldwell, 1996). From the 1950s until today, there has been not only a transformation in the role of the paraeducator, but an upward trend in the number of paraeducators employed in the schools each year (Pickett, Gerlach, Morgan, Likins, & Wallace, 2007; Wallace, 2004). The enactment of the Individuals with Disabilities Education Act (IDEA) in 1975 led administrators, educators, and parents to deem paraeducator support for students with disabilities a crucial element in students having access to a free, appropriate public education (Etscheidt, 2005; Giangreco et al., 2001). This factor, along with fundamental changes in special education service delivery model in the mid-1980s, were two major influences in the proliferation of paraeducators in the public school system (Zigmond, 2003).

According to the U.S. Department of Education, there were 390,000 paraeducators employed in 2005, with 40% of states reporting the employment of more paraeducators than of special education teachers (U.S. Department of Education, 2005). By 2010, federal data specified significant increases in the number of paraeducators; approximately 429,000 paraeducators compared to 388,000 special education teachers, with 56% of states reporting the employment of more paraeducators over special education teachers (U.S. Department of Education, 2010). According to this database, in 2010, Kansas employed 7,129 paraeducators to support students with disabilities while 3,417 special education teachers were employed statewide. While the United States

serves more students through special education programming in the general education classroom than other countries, the U.S. also employs more paraeducators to support these students (Giangreco, Hurley, & Suter, 2009a). According to Giangreco, Broer, and Edelman (1999), placement of a student with a paraeducator “has become a fairly common national response to supporting students with disabilities in general education classes” (p. 283).

The typical profile of a special education paraeducator working in the schools today is that of a 44-year old female working in a comprehensive elementary, middle, or high school and living in the community in which she works (Chopra et al., 2004; Giangreco et al., 2013; Pickett & Gerlach, 2003; Riggs & Mueller, 2001). In 2013, the Office of Special Education Programs (OSEP) reported that paraeducators have 6.5 years of special education experience and works in an average of five different classrooms per week (as cited in U.S. Department of Education, n.d.). The National Center for Educational Statistics (as cited in Hampden-Thompson, Diehl, & Kinukawa, 2007) reported that 90% of all public elementary and secondary schools in the United States employ paraeducators. According to OSEP, 58% of paraeducators are supervised by a special education teacher or a related service provider such as a speech-language pathologist, occupational therapist, or physical therapist (as cited in U.S. Department of Education, n.d.).

The Office of Special Education Programs has reported statistics concerning the paraeducators working in the United States stating that “29% have a high school diploma or less, 38% have some college experience, and 32% have an associate’s degree or higher” (as cited in McGrath, Johns, & Mathur, 2010, p. 2). Most paraeducators hired to

work with students with disabilities have no prior experience or training in the fields of education or special education (Giangreco et al., 2013; Riggs & Mueller, 2001). Since a college degree is not a requirement for employment, paraeducator jobs are considered low salary occupations, earning less than ten dollars per hour with limited opportunity for advancement (Carter, O'Rourke, Sisco & Pelsue, 2009). As with most low wage jobs, there is a high turnover rate and low tenure with many paraeducators leaving their positions to transfer to other occupations, return to postsecondary education, or stay home to manage family responsibilities (Ashbaker & Morgan, 2006). High costs to districts, schools, educational teams, and students are associated with the high turnover rate of paraeducators (Ghere & York-Barr, 2007).

This chapter provides a discussion of the history of special education paraeducators in the public schools from the 1950s until present. In addition, this literature review examines the rationale for employing paraeducators, the role of the paraeducator, and the unintended consequences of paraeducator support. Finally, outcomes for students receiving paraeducator support complete the literature review.

### **History of Paraeducators in Schools**

The employment of paraeducators began in the United States following World War II due to the shortage of certified teachers available for employment in the schools (Chopra, Sandoval-Lucero, & French, 2011; National Resource Center for Paraeducators, n.d.-a). In the 1950s, paraeducators were used to provide relief for teachers from clerical duties and supervision of students in non-instructional settings (Giangreco & Doyle, 2004; Nevin, Villa, & Thousand, 2009). Hiring paraeducators created more time for teachers to plan and deliver instruction to students (Nevin et al., 2009). The duties of the paraeducator consisted of preparing materials, duplicating copies for classroom use, and

managing students on the playground or in the hallways and cafeteria (Pickett, 1994; Young, Simpson, Myles, & Kamps, 1997). The role of the paraeducator continued in this capacity through the 1950s, 1960s, and through the mid-1970s when the Individuals with Disabilities Education Act was enacted (Nevin et al., 2009).

Advances in medicine and technology caused great decreases in the mortality rate for children born with significant disabilities following World War II (Brown, Farrington, Knight, Ross, & Ziegler, 1999). Life expectancies for these children extended beyond those of children born with similar disabilities before World War II (Brown et al., 1999). Public school systems were neither equipped nor required to educate these students; consequently, segregated government and private alternatives to public education were made available to students with disabilities (Nevin et al., 2009). Parents began to organize their efforts to keep students with disabilities in the community rather than to send them to separate government or privately owned facilities to be educated (National Resource Center for Paraeducators, n.d.-a). With the passage in 1975 of P.L. 94-142, the Education for All Handicapped Children Act (U.S. Department of Education, 2004), schools were required to provide services for students with significant disabilities previously excluded from the public schools. This federal law guaranteed equal access to education for all students by affording students with disabilities a free, appropriate public education (FAPE). Additionally, changes in educational pedagogy supported the provision of an individualized, learner-centered education for students with disabilities in the public schools (National Resource Center for Paraeducators, n.d.-a). Hence, students moved from government and privately owned institutions to the public schools and the number of students with disabilities in districts across the United States increased

tremendously (Brown et al., 1999). While certified special education staff were employed to teach students with disabilities in the public schools, paraeducators were also added in great numbers to the school workforce to provide support for the individual needs of students with disabilities (Ashbaker & Morgan, 2012; Brown et al., 1999; Chopra et al., 2011; National Resource Center for Paraeducators, n.d.-a). During this time, paraeducator roles shifted from clerical work to the role of supporting students with disabilities by implementing instructional strategies and activities created by certified teachers (Giangreco, Smith, & Pickney, 2006; Pickett & Gerlach, 2003).

When students with significant disabilities were first included in the public school system in the mid-1970s, many did not attend neighborhood schools, but were grouped together in separate buildings or special education centers (Zigmond, 2003). It was assumed that students with special needs did not possess the cognitive abilities for learning; therefore, it was not necessary to employ a large number of college-educated teachers to provide educational services to this group of students (Brown et al., 1999). In place of certified special education teachers, paraeducators were paid low wages to work with students with challenging educational needs under the direction of a certified teacher. In the 1980s, parents began to advocate for their students with special needs to be allowed attendance at the same neighborhood schools as siblings and neighbors (Strully & Strully, 1985). Again, school districts determined that the only means of meeting this demand was to add additional paraeducators to the workforce (Brown et al., 1999; Giangreco, 2010ab).

The proliferation of the number of students with significant disabilities being included in general education classrooms was one factor in the vast increase in

paraeducator positions (Downing, Ryndak, & Clark, 2000). However, the shift from providing a pullout model, in which students are removed from the general education classroom to access special education services, to a model of providing those services in a general education classroom continued the upward trend of paraeducator numbers (Zigmond, 2003). In addition, special education teacher workload justified the steady increase in the number of paraeducators (Pickett et al., 2003). During the 1990s, the role of the paraeducator significantly shifted from being a supplemental instructional support to students with disabilities to being the primary instructor of children with significant disabilities (Chopra et al., 2011; Giangreco et al., 2006). By the late 1990s, researchers began to compile a body of literature that questioned the practice of having paraeducators as the sole educational support to a student with a disability (Brown et al., 1999; Giangreco et al., 1999). A principle concern was that of the paraeducator, the staff member with the least expertise and qualifications in teaching students, functioning as the primary instructional support to the students with the most challenging and complex learning needs (Brown et al., 1999; Giangreco, Broer, & Edelman, 2001). Giangreco, Yuan, McKenzie, Camerson, & Fialka (2005) further admonished the practice of assigning paraeducators to work exclusively with individual students with disabilities, reporting that one-on-one paraeducator support inhibited development of teacher and peer relationships for the student with a disability as well as other unintended consequences.

Even with researchers questioning the practice of assigning individual paraeducators to students, increases in paraeducator numbers continued to rise. According to the National Center of Education Statistics (as cited by Hampton-Thompson et al., 2007), from 1993 to 2000, there was a 65% increase in the number of

paraeducators assisting students with disabilities in general education and special education classrooms. A major factor in this marked increase was the amendment to the IDEA in 1997 requiring students with disabilities to have access to curriculum and instruction taught in the general education classroom alongside their peers, also called inclusion (Ashbaker & Morgan, 2004; Giangreco, Doyle, & Suter, 2012; Zigmond, 2003). Consequently, school districts hired additional paraeducators to satisfy this requirement (Giangreco, Edelman, Luiselli, & MacFarland, 1997; Nevin, Villa, & Thousand, 2009). In 2001, No Child Left Behind legislation mandated that districts hire highly qualified paraeducators who met minimum standards for employment. These minimum requirements included that the paraeducator be a “high school graduate and complete an orientation session addressing confidentiality, the services provided, and the policies and procedures of the local education agency concerning special education” (KSDE, 2013, p. 25). Furthermore, certified teachers were required to provide supervision and training for paraeducators causing greater impact on special education teacher workload (Simpson, Lacava, & Graner, 2004). Additional legislation affecting paraeducators occurred in 2004 when the Individuals with Disabilities Education Improvement Act of 2004 (IDEIA) added the requirement that paraeducators must participate in annual professional development activities (Villa, Thousand, & Nevin, 2013). This requirement identified and addressed the issue of paraeducators having limited training in how to carry out their assigned responsibilities, which often resulted in high levels of staff turnover (Nevin et al., 2009).

The employment of paraeducators to support both certified teaching staff and students with disabilities impacts a school district’s budget (Ghere & York-Barr, 2007).

But even with the corresponding costs of employing high numbers of paraeducators creating financial burdens for school districts, the utilization of paraeducators continues to be the foundational mechanism on which school districts rely to support and instruct students with disabilities (Giangreco, Broer, & Suter, 2011; Giangreco, Doyle, Halvorsen, & Broer, 2004). With the requirement for school districts to comply with state and federal regulations regarding FAPE, Ashbaker and Morgan (2006) projected that continued increases among the paraeducator ranks will remain in the future.

### **Rationale for Employing Paraeducators**

There are numbers of reasons that schools districts across the nation employ paraeducators to work in classrooms (French, 2003b). The prevalence of paraeducators in the schools working in inclusive settings has led researchers to declare that paraeducators are fundamental to the inclusion process (Giangreco, 2010b; Causton-Theoharis & Malmgren, 2005b). Paraeducators have become the primary vehicle used to provide the instructional support to a greater number of students in inclusive settings, ensuring that districts meet the intent of IDEA (Broer, Doyle, & Giangreco, 2005; Downing et al., 2000; Katsiyannis, Hodge, & Lanford, 2000; Suter & Giangreco, 2009). IDEA (2004) explicitly states that “to the maximum extent appropriate,” students with disabilities are to be educated with their non-disabled peers in the least restrictive environment (KSDE, 2011, p. 123). Furthermore, IDEA requires that the IEP team determine if a student needs paraeducator services in order to be provided FAPE and have an educational program that meets each student’s unique needs (U.S. Department of Education, 2004). Therefore, paraeducators are a necessary support to students with

disabilities to ensure access to the general education setting and the curriculum, allowing them to be educated alongside their peers (Liston, Nevin, & Malian, 2009).

The practice of hiring paraeducators evolved during the twentieth century to support the increased demands on special educators in the schools (Pickett, 1994). Special education staff are the most “thinly stretched professional educators” working in the schools (Giangreco, 2003, p. 52), compelling school districts to employ paraeducators to provide workload relief. Not only are there many burdensome paperwork requirements, special educators generally have a high caseload of students with various disabilities across multiple grade levels needing more instructional support than can be provided by a single educator (Giangreco et al., 2010). The special educator must serve as a collaborative partner with a number of general education teachers across numerous grade levels, must be able to teach and modify all curricular areas for all students, and, along with other members of the educational team, must evaluate students to determine eligibility for special education services. Many special education teachers have caseloads as large as or larger than the average class size in the school in which they teach, making working conditions a key explanation as to why special education staff spend proportionately less time providing instruction to students with disabilities than do paraeducators (Giangreco & Broer, 2007; Giangreco, Suter, & Hurley, 2013). Because of the teacher’s responsibilities, paraeducator support is essential to assist in the provision of services as outlined on students’ IEPs (Giangreco et al., 2010).

Parents expect that their students with disabilities need to have an assigned paraeducator to receive a quality education in an inclusive general education setting, sometimes regardless of the type or severity of the child’s disability. In a qualitative

study examining the relationship between students with disabilities and the assigned paraeducators, Chopra et al. (2004) concluded that parents believed that paraeducators were the most important factor to student success in an inclusive classroom. Depending on the severity of a student's disability, parents are sometimes told by school personnel that in order for their student with a disability to be allowed access to the general education class, the student must be accompanied by a paraeducator. Other times, out of fear, the parents feel that the paraeducator is necessary for the student to be safe, supported, accepted by classmates, and treated fairly by teachers (Giangreco et al., 2006; Giangreco et al., 2005). Regardless of the reason, parents perceive that paraeducators are of utmost importance to their child's education and believe that the schools need more, not fewer, paraeducators (Tews & Lupart, 2008; Werts, Harris, Tillery, & Roarch, 2004). They oppose budget cuts that may reduce the number of paraeducators available to students with disabilities (Werts et al., 2004).

Along with parents, general education teachers, special education teachers, and students provide rationale regarding the need for paraeducators. Many general education teachers consider the use of a paraeducator to accompany a student with disability in the general education classroom as essential support (Downing et al., 2000; French, 1999; Giangreco & Broer, 2007; Wolery, Werts, Caldwell, Synder, & Liskowski, 1995). Likewise, in a Vermont study that explored service delivery in inclusive schools, Giangreco (2010b) found that special education teachers advocate for paraeducator support with a greater frequency than general education teachers or parents, more likely due to their extensive responsibilities. Students also argued for the need for paraeducator support. In a study of eight students of varying ages and disabilities, Tews and Lupart

(2008) found that students strongly believed they needed a paraeducator to facilitate social interaction and promote positive relationships with peers and adults in the educational environment.

Additional justifications for paraeducators in the schools exist. Pickett, Gerlach, Morgan, Likins, and Wallace (2007) explained that paraeducators were hired to fill the gap in certified special education personnel shortages. With the salary of a paraeducator equivalent to about one third of the average teacher salary, districts hire paraeducators to serve students with special needs as a cost-savings measure (French, 2003a). Finally, increased numbers of students who qualify for Early Childhood Disability services and those who are transitioning to services beyond high school have led to marked increases in the need for paraeducators (French & Pickett, 1997).

### **Role of the Paraeducator**

Over the last 50 years, the role of the paraeducator has continually expanded to become more complex and demanding (Giangreco & Broer, 2005; National Resource Center for Paraeducators, n.d.-b). When the model of providing special education services to students with special needs shifted from self-contained special education classrooms into general education classrooms with peers, the role of the paraeducator changed (Downing et al., 2000). Inclusion modified the main function of the paraeducator from that of clerical work and supervision in non-instructional settings to having responsibilities that overlapped with the certified teaching staff, mainly in direct instruction with students. Through paraeducator support, students with a wide range of disabilities have gained access to education in the least restrictive environment alongside their peers (Devlin, 2005; Giangreco, Edelman, & Broer, 2003).

Paraeducators work under the direct supervision of a licensed special education teacher (Giangreco, 2013; Nevin & Villa, 2009). It is essential that the paraeducator's role be clearly stated and understood by not only the paraeducator, but by the special education teacher who works with, trains, and supervises the paraeducator (Minondo, Meyer, & Xin, 2001; Mueller, 2003). Because of the increasing demands of the curriculum and the complexity of students' learning needs, the roles and duties of the paraeducator have increased in difficulty (Katsiyannis et al., 2000). Although they have high levels of responsibility, paraeducators usually begin their employment in the schools with little training on how to work with students with special needs. The vast majority of the training is received once they are on-the-job, learning through experience or insight from teachers and other paraeducators.

A primary role that paraeducators assume is to provide direct academic instruction to students with disabilities (Giangreco et al., 2010). Over half the paraeducators working in special education programs provide daily academic support by delivering individual and small group instruction to both students with disabilities and non-disabled peers (Riggs & Mueller, 2001). In a study by Minondo, Meyer, and Xin (2001), 94 school district staff members were surveyed on the perceived roles and responsibilities of paraeducators. Both teachers and paraeducators indicated that the most appropriate role for a paraeducator was to provide individual instructional support to students with disabilities. In a descriptive study using qualitative and quantitative data from 214 school personnel including paraeducators, general education teachers, special education teachers, and administrators, Giangreco, Broer, and Edelman (2002) reported

that all categories of staff perceived that the primary role for paraeducators was one of instruction.

Adapting and modifying the curriculum is a second essential role of a paraeducator. Paraeducators make most of the decisions regarding the modifications and adaptations needed by students to access curricular materials and classroom activities (Giangreco et al., 1999; Marks, Schrader, & Levine, 1999). The majority of the modifications and adaptations happen during the lesson as paraeducators indicate there is little time to preview lessons and materials before the lesson is presented (French & Chopra, 1999).

Another paraeducator role includes facilitating natural, frequent interactions with non-disabled peers in the least restrictive environment (Causton-Theoharis & Malmgren, 2005b). A publication from the Study of Personnel Needs in Special Education (OSEP, 2013) indicated that a crucial paraeducator role is to ensure that students supported by the paraeducator are not isolated from their peers. Paraeducators reported that teaching social skills necessary to encourage student engagement with peers was a frequently used strategy in promoting relationships with peers (Liston et al., 2009). Katsiyannis, Hodge, and Lanford (2000) indicated that paraeducators model appropriate social skills such as initiating conversation, maintaining and changing topics, problem solving, and closing conversations, which facilitates the development of friendships for the students with disabilities. This finding was supported by Causton-Theoharis and Malmgren, (2005b), who found that social interactions might not occur naturally between students with disabilities and their peers without adult support. The study concluded that adequate

training allowed paraeducators to facilitate interactions with peers, leading students with disabilities to interact 25 times more frequently when compared to baseline measures.

The majority of special education paraeducators report spending at least 10% of each day involved in monitoring student behavior (OSEP, 2013). In a study conducted by Marks, Schrader, and Levine (1999), 20 paraeducators employed by a school district who worked with students exhibiting challenging behaviors were interviewed to ascertain the paraeducator's role during a typical school day. The results indicated paraeducators assumed responsibility for behavior management, indicating they felt solely responsible for the success of the student in the inclusive setting. Not only do paraeducators provide the individual supports to implement behavior plans, they monitor student behavior in the classroom and throughout the school environment. Downing et al., (2000) reported that paraeducators assigned the role of walking around the room increased the likelihood all students were on task and allowed the paraeducator to intervene when necessary. Working with all students in the area of behavior fosters relationships with peers to develop natural supports for students with disabilities (Freschi, 1999).

While the primary role for communicating with parents belongs to the certified teacher, the paraeducator often serves as the liaison between the school staff and the parents (Ruedel, Diamond, Zaidi, & Aboud, n.d.; Werts et al., 2004). Chopra and French (2004) interviewed parents of students with significant disabilities to determine the impact on paraeducator/parent communication. The findings confirmed that paraeducators and parents communicated on a regular basis even though this practice was not encouraged by the certified staff. While the perception of the staff interviewed was this "close relationship was beneficial to the child," the findings held that the

paraeducators' close relationship with the parents was a hindrance to the students' education (Chopra & French, 2004, p. 250).

Paraeducators have a broad range of responsibilities depending on the classrooms or students they are hired to support (Blacher & Rodriguez, 2007). Based upon students' needs as outlined in the IEP, duties may include attending to students' personal care needs; assisting with toileting, feeding, and mobility; and teaching daily living skills throughout the day. However, the responsibility of teaching daily living skills is rarely mentioned in the literature (Downing et al., 2000; Giangreco et al., 2009). In addition, paraeducators may be responsible for teaching students daily living skills such as cooking, cleaning, and other household tasks based on the students' ability and developmental level. Paraeducators may teach critical skills necessary for a student to function in the community. For high school students and 18 to 21 year old students receiving special education services, transitioning to independent living or workplace environments is a focus. Accessing public transportation, maintaining appropriate social interactions in public, or assisting a student on community-based learning activities are part of the responsibilities delegated to paraeducators (Katsiyannis et al., 2000). They also routinely collect and analyze data to measure student progress on IEP goals. While some paraeducators may still perform clerical tasks such as grading assignments, duplicating materials, and filing paperwork, these roles are the least discussed in the current literature (Reudel et al., n.d.; "Teacher and paraeducator team roles," n.d.).

Paraeducators have a high level of responsibility and many times take on similar instructional roles to the teacher (Carroll, 2001). Researchers report that paraeducators are sometimes placed in roles in which they are not qualified nor compensated to perform

(French, 2001; Giangreco & Broer, 2005; Riggs & Mueller, 2001). Giangreco et al. (2010) validate that the perceived fundamental responsibility for paraeducators is that of primary instructional support to students with disabilities. While instructional support appears to be a prevalent role of paraeducators, there is disagreement among experts whether this role is appropriate (Giangreco, 2009; Giangreco, 2010b; Giangreco et al., 2012). A primary concern is using paraeducators as the only instructor for students with disabilities rather than a supplemental support to the primary instruction from a highly qualified teacher. The intent of using paraeducators was to supplement instruction to students with disabilities, not to replace the teacher in being responsible for student learning. However, studies continue to reveal that paraeducators act alone in instructional decision-making, especially for the most academically or behaviorally challenged students, with little supervision or leadership from certified staff (French 2001; Giangreco et al., 2001; Giangreco et al., 1999; Riggs & Mueller, 2001). Additional concerns about paraeducator roles include their responsibility in the development and modification of instructional materials, communicating with parents, and assessing students (Chopra et al. 2004; Giangreco & Broer, 2005; Giangreco, Broer, & Edelman, 2001, 2002b; Giangreco et al., 2001; Minondo et al, 2001; Riggs & Mueller, 2001; Werts et al., 2004).

### **Unintended Consequences of Paraeducator Support**

The intention of hiring paraeducators was to provide meaningful support to both students with disabilities and the certified teaching staff. This support is a vehicle to ensure that a student with a disability is included in a general education classroom allowing for an education in the least restrictive environment (Giangreco, 2003). Yet, this common approach to including students with disabilities has led to questionable

practices that may be detrimental to students with disabilities (Giangreco et al., 2006). The effects of student overreliance on paraeducators have been widely documented in the research over the last 20 years (Broer et al., 2005; Downing et al., 2000; Giangreco et al., 1997; Giangreco et al., 2010; Marks et al., 1999; Suter & Giangreco, 2009). Intensive paraeducator support for individual students, even when provided for compassionate and sound educational reasons, is linked with inadvertent negative results that impact students. The unintended negative consequences of paraeducator support reported include: 1) separation from peers, 2) unnecessary dependence on adults, 3) barriers to the development of peer relationships, 4) hindrance of teacher engagement, 5) stigmatization, 6) loss of personal control, 7) loss of gender identity, 8) increase in problem behaviors, and 9) the increased probability of being bullied (Broer et al., 2005; Downing et al., 2000; Giangreco, 2003; Giangreco et al., 1997; Marks et al., 1999). Unaddressed, these unintended consequences may threaten a student's access to a free, appropriate public education (Causton-Theoharis, 2009; Suter & Giangreco, 2009).

Paraeducator supports are linked with lower levels of teacher involvement with the student with a disability (Giangreco et al., 2010a). However, Giangreco et al. (2010a) found that general education teachers were more engaged with students with special needs if the paraeducator was assigned to the classroom rather than to an individual student. Having an individual paraeducator linked to a student resulted in teachers relinquishing responsibility for the student with a disability. When the paraeducator was assigned to the classroom rather than an individual student, the general education teacher took greater ownership in training and supervision responsibilities for the paraeducator (Giangreco et al., 2001).

Moreover, problems become evident when the paraeducator is assigned the responsibility of making most of the instructional decisions for a student with a disability (McGrath et al., 2010). A district's overreliance on paraeducators may indicate a flaw in how the general and special education programs operate, especially when paraeducators inappropriately function in the role of the general or special education teacher (Downing et al, 2000; Giangreco & Broer 2005). Giangreco and Broer (2005) interviewed paraeducators in 12 inclusive Vermont schools and found that nearly 70% of paraeducators made instructional and programming decisions for students with disabilities without the supervision of a general or special education teacher. The researchers concluded that practices such as this point to underlying issues in a school system such as high caseloads and class sizes, inconsistent expectations for supervision and training, and especially the lack of teacher engagement with students with disabilities.

Inhibited social development with peers is another unintended consequence of paraeducator support due to the intensified social isolation of students with disabilities (Causton-Theoharis & Malmgren, 2005b). McGrath et al. (2010) concluded that problems become evident when a student with a disability spends most of his social time such as lunch, recess, and passing periods with a paraeducator instead of his peers. Separating a student with a disability from his peers can lead to the student's overreliance on the paraeducator and prevent the student from engaging in meaningful interactions with peers (Causton-Theoharis & Malmgren, 2005b; Doyle, 2002).

Late in the 1990s, research began to amass on the relationships between paraeducators and students with disabilities in which the paraeducator served not only in

an instructional capacity but also served in a friend and parent role to students with disabilities (Freschi, 1999; Giangreco et al., 1997; Marks et al., 1999; Skar & Tamm, 2001). Broer et al. (2005) investigated this issue further by conducting interviews of 16 young adults with significant disabilities who had graduated from high school. Each participant had received paraeducator support in the general education classroom. The researchers found that participants perceived that being assigned a paraeducator interfered with their opportunities to develop friendships with their peers. Students perceived that they were bullied due to the stigma of being associated with an assigned paraeducator. Further, study participants explained that the paraeducator served as the students' friend filling the void when they had not developed friendships with peers. The barriers to developing friendships isolate students with disabilities from their classmates, which is contrary to the purpose of including students with disabilities in their neighborhood schools (Brown et al., 1999).

Paraeducator proximity to a student with a disability further creates isolation from peers and overreliance on the paraeducator for the student with a disability (Devlin, 2005). While one study found that the proximity of the paraeducator positively impacted student engagement (Werts, Zigmond, & Leeper, 2001), the results of other studies indicated that when a paraeducator is assigned to an individual student, proximity is associated with the development of dependence on the paraeducator and a decrease in peer relationships (Hemmingsson et al., 2003; Malmgren & Causton-Theoharis, 2006; Marks et al., 1999). In a qualitative study conducted by Hemmingsson et al. (2003), seven students with physical disabilities revealed that paraeducator proximity was detrimental to the students' ability to participate independently in social situations with

peers. Students indicated they had little input over what type of support was provided to them and that they had limited personal decision-making due to the proximity of the paraeducator. For students with behavioral concerns, behavior issues escalated due to paraeducator proximity (Gerber, Finn, Archilles, Boyd-Zaharias, 2001). Proximity negatively impacted peer relationships with classmates creating a physical barrier thus causing peers to avoid interacting with a student with a behavior disability (Giangreco, 2003). The results of studies by Causton-Theoharis and Malmgren (2005b) and Malmgren and Causton-Theoharis (2006) showed that for students with the categorical label of emotional disturbance, paraeducator proximity in the inclusive classroom was found to be the single-most important condition negatively affecting behavior and peer interactions.

With paraeducator proximity associated with student overreliance on adult support, Brown et al. (1999) emphasized that students should be discouraged from being totally dependent on an adult in the classroom. Rather than the paraeducator continually prompting or anticipating the every need of the student, researchers suggested that the paraeducator foster and develop student skills for independence rather than overreliance (Brown et al., 1999; Carter, Sisco, & Lane, 2011). Determining that students have become dependent on paraeducator support, Giangreco and Broer (2007) expressed concern about schools across the nation being overreliant on paraeducators in supporting students in general education classrooms. A screening tool to assess a school's overreliance on paraeducators found that 80% of schools reported that paraeducators were considered the only vehicle to offer support to students with disabilities in an inclusive setting rather than one of many options considered (Giangreco and Broer,

2007). This widely held belief led to the proliferation of paraeducators being employed in the schools across the nation (Giangreco et al., 2006; Pickett et al., 2003). Giangreco et al. (2006) and Pickett et al. (2003) indicated that schools need to consider alternatives to the overreliance on paraeducators and create a balanced framework that accounts for effective use and support of paraeducators. Alternatives to support students with disabilities discussed in the literature include resource reallocation, co-teaching, peer supports, increased general education teacher capacity, and the teaching of student self-determination strategies (Downing et al., 2000).

Overreliance on paraeducators causes detrimental effects for students and schools and has financial implications for districts as well. Mueller and Murphy (2001) suggested that there are large associated costs to districts as the number of paraeducators continues to increase. Since paraeducator jobs are associated with low wages, many times given no benefits, and a reported lack of respect for the role, districts find it difficult to hire and retain qualified paraeducators (Giangreco & Broer, 2005). Ghre and York-Barr (2007) pointed out the substantial organizational costs related to the high turnover of paraeducators, specifically the direct replacement expenses for interviewing, hiring, and training when a paraeducator resigns the position. Hence, schools district have begun to question the financial implications of sustaining so many paraeducator positions (Brown et al., 1999; Giangreco et al., 2006).

Ethical issues have been raised concerning the use of the paraeducator, the staff member with the least training, to provide the sole instruction to students with the greatest needs (Giangreco et al., 2006). According to Broer et al. (2005), this standard practice in schools debases the student with special needs, deeming that this student is

less important than his non-disabled peers and that students with disabilities do not need or deserve the services of a highly qualified educator (Suter & Giangreco, 2009). Often, students with disabilities get little or no engagement from certified teaching staff or peers. Giangreco et al. (2001) asserted that this practice sets a double standard as it would not be considered appropriate for a student without a disability to have little or no engagement with the certified teacher, yet is considered a standard practice for a student with a disability. Half of all students in special education enlist one-to-one paraeducator support creating a restrictive environment for the student even though the student may be included in a general education classroom (Suter & Giangreco, 2009).

As early as 1997, Giangreco raised concerns with allowing paraeducators to be autonomous in making decisions about a student's educational or behavior program. The heavy workload of special educators may lead paraeducators to have less supervision and greater autonomy in making decisions about student programs without the necessary credentials or training (Giangreco, 2003). Certified teachers are not required to know curriculum across many curricular areas and grade levels; however, it is expected that paraeducators be versed on a multitude of subject areas across grade levels in order to support students (Giangreco, 2003). While the paraeducator should support provision for services as outlined in the IEP, researchers argued that certified staff should ultimately be responsible for planning and programming in all areas for students with disabilities (Downing et al., 2000).

With increases in the numbers of paraeducators, but no strengthening of teachers' capacity to effectively use these staff members, a district's "overreliance on paraeducators may be unnecessarily restrictive or reduce the probability of insuring that

students with disabilities receive a free, appropriate public education” (Giangreco, 2010b, p. 3). Paraeducators have become relied upon to be the “sole designer, deliverer, or evaluator of a student’s program,” which is in violation of IDEA and may lead to potential legal challenges (Etscheidt, 2005, p. 68). While assigning the least qualified personnel to assume the greatest responsibility in educating students with complex learning and behavior challenges has potentially serious ramifications for students with disabilities, this practice also exposes schools to unnecessary legal risks (Giangreco & Broer, 2007).

The improper use of and overreliance on paraeducators not only creates challenges from an academic standpoint, there are also legal implications from inappropriate utilization of paraeducators (Etscheidt, 2005; Giangreco et al., 2006). Katsiyannis et al. (2000) noted that a number of court cases have focused on appropriate supervision and training of paraeducators, as well as paraeducator qualifications and student need for paraeducator support as a provision of service on the IEP. In addition, court cases have determined that educational benefit includes not only academic gains, but also improvements in non-academic areas such as behavior and social engagement (Etscheidt, 2005). Lake Travis Independent School District (2003), South River Board of Education (2003), and Menlo Park City Elementary School District (2002), addressed the provision of paraeducator services for educational benefit. Likewise, Waterbury Board of Education (2002), *Molly L. v. Lower Merion School District* (2002), and *Connally Independent School District* (2001), addressed non-academic benefits from paraeducator support.

Court cases involving educational benefit were highlighted in the literature. In

Lake Travis Independent School District (2003), the court found in favor of the parent deciding that the five-year-old student diagnosed with Pervasive Developmental Disorder (PDD) could not reasonably benefit from instruction in an inclusive setting without the support of a 1:1 paraeducator. The decision in South River Board of Education (2003) ruled in favor of the parent stating that the eight-year-old student with a specific learning disability could not be provided a meaningful education without the assurance of an individual student paraeducator. In Menlo Park City Elementary School District (2002), the courts ruled in favor of the school district stating that the school district was not obligated to provide individual paraeducator services for a nine-year-old student with sensory integration issues to limit regression of skills during breaks in the school year such as winter break and spring break.

Court cases dealing with non-academic benefits have also been argued. In the Waterbury Board of Education (2002) case, the court found in favor of the school district, determining that the parents' request for an individual paraeducator for their 8-year-old son with Attention Deficit Hyperactivity Disorder (ADHD) and behavior issues would not prohibit student behavior problems and may result in unnecessary dependency on an adult. In Molly L. v. Lower Merion School District (2002), the court found in favor of the school district in providing "as needed" paraeducator support to an 8-year-old with motor and sensory deficits. The court ruled that supports that are more intensive would impede the development of the student's coping and social skills. In Connally Independent School District (2001), the courts ruled for the school district saying that the parents' request for the school to provide a full-time paraeducator for a 14-year-old

student with autism exhibiting no need for academic or behavioral support in the classroom was inappropriate.

### **Outcomes for Students with Paraeducator Support**

Since 1993, there have been three major literature reviews published concerning paraeducator support for students with disabilities. The first was conducted by Jones and Bender (1993) in which research studies conducted between the years of 1957 and 1992 were reviewed. The Jones and Bender (1993) review highlighted the changing role of the paraeducator and the subsequent confusion caused by the lack of concise job descriptions and expectations. By 1993, when this review of research was compiled, literature was beginning to appear in journals suggesting the need for research concerning the impact of paraeducator support on student outcomes (Jones & Bender, 1993).

A second major review of literature was compiled by Giangreco et al. in 2001. In this review, 43 pieces of literature concerning paraeducator support on topics such as roles and responsibilities (Boomer, 1994; French, 1998), supervision and training (Salzberg & Morgan, 1995; Hilton & Gerlach, 1997), hiring and paraeducator assignment (Blalock, Rivera, Anderson, & Kottler, 1992; Blalock, 1991), and guidelines for when to assign paraeducators to students (Freschi, 1999; Giangreco et al., 1999) were highlighted. Giangreco et al. (2001) discovered that between the years of 1991 and 2000, no published research existed concerning the impact of paraeducator support on student outcomes.

Giangreco et al. (2010) compiled the third major literature review. The authors of this review indicated there was an increase in studies investigating various aspects of paraeducators in the schools. Research topics discussed in this review included: (a) supervision and training (Carter et al., 2009; Chopra et al., 2011; French, 2001;

Giangreco, 2003; Keller, Bucholz, & Brady, 2007; Wallace, Shin, Bartholomay, & Stahl, 2001); (b) paraeducator roles (Carroll, 2001; Liston et al., 2009; Patterson, 2006; Pickett et al., 2003); (c) relationships with parents (Chopra, & French, 2004; Werts et al., 2004); and (d) student perspectives (Broer et al., 2005; Skar & Tamm, 2001; Tews & Lupart, 2008).

Over the last 20 years, researchers conducting a small number of single-subject studies attempted to determine the impact of appropriately trained paraeducator support on positive outcomes for students (Giangreco et al., 2010). Studies supported that properly trained paraeducators using systematic approaches, targeted curriculum, and materials designed by a certified teacher can positively impact a student's performance (McDonnell et al., 2002) or can promote social interactions with peers (Causton-Theoharis & Malmgren, 2005b; Devlin, 2005; Malmgren, Causton-Theoharis, & Trezek, 2005). Other studies analyzed the effective utilization of paraeducators under specific conditions including a focus on student engagement (Downing et al., 2000; Werts et al., 2001) and skill development (Vadasy, Sanders, & Tudor, 2007). Again, the results of these studies, while limited in scope, indicated positive outcomes for these students with disabilities.

Lushen, Kim, & Reid (2012) used a multiple baseline across participant design that measured the effectiveness of paraeducator-delivered narrative writing instruction to three elementary struggling writers. The results indicated that all students exhibited growth in the length and complexity of the narrative samples and that the paraeducator was successful in delivering the lessons with fidelity. Likewise, in a study conducted by Milley and Machalicek (2012), the results suggested effective strategies to use with

students with autism spectrum disorders to promote independence including activity schedules, tactile prompting, and peer supports. Skar & Tamm (2001) investigated how 13 students with limited mobility perceived their paraeducators. Students reported that the paraeducator substituted as a mother/father in the school setting and served as a friend to the student, which was considered a detrimental effect of paraeducator support (Skar & Tamm, 2001).

O'Shaughnessy and Swanson (2000) and Bingham, Hall-Kenyon, and Culatta (2010) investigated early literacy instruction using trained and supervised paraeducators. O'Shaughnessy and Swanson (2000) completed a study that compared two different six-week reading programs with second grade students with reading disabilities in which trained paraeducators delivered the instruction. While both interventions were effective in improving the reading skills of the students involved in the study, the researchers questioned how much more progress might have been achieved if the interventions were delivered by certified teachers rather than paraeducators. Bingham, Hall-Kenyon, and Culatta (2010) investigated 63 at-risk kindergarten students provided supplemental literacy instruction under the direction of a paraeducator. Students who engaged in explicit phonemic awareness training with a paraeducator performed better on literacy tasks than those who received 1:1 instruction through a tutoring program. The results of the study emphasized the important role that paraeducators might play in the development of early literacy skills.

A study conducted by Rubie-Davies, Blatchford, Webster, Koutsoubou, and Bassett (2010) provided results that helped explain that qualitative differences existed between teacher-to-student and paraeducator-to-student interactions. This may clarify

why outcomes are better for students who work with certified teachers over students whose instruction is delegated to paraeducators. Rubie-Davies et al. (2010) explained that when qualified teachers instructed students, the teachers engaged the students in rich conversations about learning, activated students' background knowledge, and assisted the students in making connections to what they were learning. Paraeducators, on the other hand, focused on getting the work completed without engaging students in the thinking processes involved in learning.

While limited in number, studies have shown positive student outcomes when the paraeducator support has been supplemental in nature and the paraeducator has received explicit training in using evidence-based programs or strategies delivered with fidelity. However, many researchers opined that there are gaps in the research related to outcomes for students with moderate and significant disabilities being served by paraeducators in inclusive general education settings (Gerber et. al., 2001; Giangreco et al., 2001; Giangreco & Doyle, 2002; Giangreco & Doyle, 2003; Tews & Lupart, 2008; Young et al., 1997). Giangreco and Broer (2005) confirmed the paucity of research by indicating, “virtually no student outcome data exists suggesting that students with disabilities do as well or better in school given paraprofessional supports” (p. 10).

While Giangreco and Broer (2005) concluded that little research used student outcome data to validate the use of paraeducator support in schools, other researchers have also questioned the efficacy of using paraeducator support to improve student outcomes. In 1993, when reviewing research from 1957 to 1993, Jones and Bender reported a lack of evidence in the literature to support that students have improved outcomes when assigned a paraeducator. Giving the suggestion that further research in

this area was needed to inform practice did not lead to an increase in student outcomes literature over the next decade (Giangreco et al., 2001).

In research and publications related to paraeducators between 1991 and 2000, there were 43 pieces of literature on paraeducators according to Giangreco et al. (2001). Twenty-three non-databased articles in 11 different journals and three books by different publishers were written during this period. Seventeen databased articles appeared in 12 different journals. Included in the literature were topics on roles and responsibilities of paraeducators, supervision and training, hiring and paraeducator assignments, and guidelines for when to assign paraeducators to students. Giangreco et al. (2001) found little published research on paraeducator support related to the impact on student outcomes for students served through inclusive settings. In addition, they argued that there was no convincing data to suggest that the outcomes for students were better when a certified teacher transferred instructional responsibility for educating students with disabilities to a paraeducator. Giangreco et al. (2001) concluded that the practice of using paraeducators to support students with disabilities in the general education classroom continues to be a highly utilized method even though there is little evidence in the literature to address its effectiveness for students.

In 2010, Giangreco et al. stated that the past and current paraeducator literature had not effectively addressed the efficacy of paraeducator support in the general education setting on student outcomes. Highlighting the research on paraeducators between 2000 and 2007, Giangreco et al. (2010) noted that only seven of the 32 studies reported included any type of student outcome data (22%) and that a combined 26 students served as subjects in these seven studies. Most subjects were students with low

incidence disabilities such as autism and multiple developmental disabilities. Moreover, research did not include studies addressing collaboration between paraeducators and the certified teachers to support significant outcomes for students in academic, behavioral, and social areas of development. According to Giangreco et al. (2010), most of the current studies focusing on student outcomes either replicated or extended previous studies, with little data to establish the efficacy of utilizing paraeducators in the general classroom setting to improve student outcomes. These researchers affirmed that the most recent compilation of research on paraeducators was valuable; however, the amount of student outcome data gleaned from these studies was inadequate to “inform policy decisions with a high level of confidence” (Giangreco et al., 2010, p. 50).

Giangreco and Broer (2007) stated that no strong conceptual basis was cited for assigning paraeducators, the least qualified educational staff, “to provide primary educational supports to the students with the most complex learning challenges,” nor does research suggest that students with disabilities learn more or better with paraeducator support (p. 149). In addition, the researchers stated that no theoretical model exists that would support “having the least qualified staff serve in primary instructional roles for students with disabilities” (Giangreco & Broer, 2007, p. 150). While the use of paraeducators does relieve some of the responsibility of a certified educator in providing educational, behavioral, or emotional support to a student with special needs, Giangreco (2003) warned that “educators should not confuse this outcome with effectiveness for students” (p. 50). Farrell, Alborz, Howes, and Pearson (2010) conducted a systematic review of intervention studies between the years 2000 and 2008. These researchers concluded that while targeted intervention from a trained paraeducator

in specific areas of early literacy and language skills did yield positive results for students, the presence of paraeducators in supporting students with disabilities in general education classrooms did not have a positive impact on the academic achievement of students with disabilities. The results of the study by Farrell et al. (2010) supported the findings of a large-scale longitudinal study called the Deployment and Impact of Support Staff (DISS) Project (Russell et al., 2012). Researchers at Institution of Education at the University of London found that the impact of paraeducator support on student achievement was negative. Students who received academic support from paraeducators scored lower on measures of achievement than did students who did not receive support, even when researchers controlled for students' special needs in the data analysis (Russell et al., 2013).

Burnstein, Sears, Wilcoxon, and Cabello (2004) reported inconclusive findings concerning the effectiveness of educating students with disabilities in inclusive classrooms. One of the most important factors in a student's success in an inclusive classroom is the degree of teacher interaction and engagement with a student with a disability (Giangreco et al., 2001; Villa et al., 2013). Teachers are less engaged with a student with a disability when a paraeducator has been assigned to the student. The researchers indicated that the teacher tends to know less about the level of functioning of a student, the necessary modifications to the curriculum needed by the student, uses the paraeducator to communicate with the student, and depends on the paraeducator to plan instructional lessons for the student. Because of their lack of training, supervision, and understanding of the curriculum, paraeducators are not always aware of the educational outcomes for students. For fear of being judged as not doing their jobs, it is a common

practice for paraeducators to complete student assignments and homework for the students with little regard for student learning (Giangreco, 2003). Appropriate training of not only paraeducators, but also school-wide general and special education staff, could improve paraeducator supports, and subsequently contribute to improving student outcomes.

To increase the positive impact on student outcomes, researchers suggest that when a paraeducator delivers instruction, it “should be supplemental rather than primary and planned by a qualified, licensed teacher or special educator” (Giangreco, 2010, p. 7). This insulates paraeducators from making pedagogical decisions. However, Downing, Ryndak, and Clark (2000), French (2001), and Giangreco et al. (2002) suggested that this is not the practice and paraeducators routinely make instructional decisions on their own without adequate training or supervision. Certified staff, such a general and special education teachers, have instructional knowledge to make decisions on student educational programs based on explicit and intensive training in research-based practices and should be providing the supervision to paraeducators to ensure fidelity in delivering quality instruction to students (Causton-Theoharis, Giangreco, Doyle, & Vadasy, 2007).

A 2009 Vermont study involving 92 special educators and 36 administrators in 19 schools explored service delivery in inclusive schools (Suter & Giangreco, 2009). Findings indicated that special education teachers have high caseloads, the schools employed more paraeducators than special education teachers, and more than half of all paraeducators are assigned to individual students. In the current educational climate that supports the use of evidence-based educational practices, Suter and Giangreco (2009) raised the question of why the use of paraeducators continues to increase with little data

to support the effectiveness of this practice. The literature available on paraeducator use in the provision of special education services in the general education classroom has yielded limited evidence that paraeducator support is effective in improving student outcomes. Researchers suggest it is not surprising that student outcome data is not available given that students with the most challenging learning needs are placed under the instructional responsibility of the least qualified, lowest paid member of the instructional team (Brown et al., 1999). However, the number of paraeducators across the country continues to grow despite the lack of empirical data.

### **Summary**

This review of the literature provided an overview of a historical perspective of paraeducators in the United States from the 1950s until the present. Rationale for the employment of paraeducators including support for inclusion, workloads of special education staff, expectations of teachers and parents, and cost savings to districts was discussed. In addition, a description was given of a paraeducator's complex and demanding role. The unintended detrimental consequences of paraeducator support were examined including the possible impact on students with disabilities and schools. Finally, student outcome data from the literature was reviewed, highlighting lack of evidence to support that students have improved outcomes when assigned a paraeducator. Chapter three presents the current study's research design, population, sample, and sampling procedure, including the instrumentation and measurement tools. In addition, Chapter three articulates the study's data collection procedures, as well as the study's data analysis, hypothesis testing, and limitations.

## **Chapter Three**

### **Methods**

This study was designed to explore the relationship between the minutes of paraeducator support received each day by students identified with moderate disabilities and achievement as measured by the Kansas Assessment of Modified Measures Reading (KAMM Reading) and the Kansas Assessment of Modified Measures Mathematics (KAMM Mathematics). Chapter three outlines the methodology used for the study including the research design, population and sample, sampling procedures, and instrumentation. This chapter also delineates the data collection procedures, data analysis and hypothesis testing, and limitations of the study.

#### **Research Design**

A quantitative research design was utilized in this study. Specifically, a correlation research method was employed to measure the association between two quantitative variables. Correlational research methods have played a historical role in both educational and psychological research with the purpose of determining the relationship among two or more variables (Lunenburg & Irby, 2008). The three variables examined included minutes of paraeducator support as outlined on students' Individualized Education Programs (IEP), student achievement in reading as measured by the KAMM Reading, and student achievement in mathematics measured by the KAMM Mathematics.

#### **Population and Sample**

The population for the study included students receiving special education services in grades 3, 4, 5, 6, 7, 8, and 10 or 11 attending a Midwest suburban school

district. Students identified as having a moderate disability from 35 elementary schools, nine middle schools, and four high schools in the district comprised the population. The sample consisted of students who qualified for and received special education services during the 2011-2012 and 2012-2013 school years. Students in the sample received specially designed instruction by a highly qualified special education teacher and because of their disabilities, qualified to take the KAMM Reading or KAMM Mathematics to measure academic achievement. Of the students in the sample, 517 were assessed using the KAMM Reading, while 489 were assessed using the KAMM Mathematics.

### **Sampling Procedures**

For this study, the researcher utilized purposive sampling. Lunenburg and Irby (2008) indicated that purposive sampling “involves selecting a sample based on the researcher’s experience or knowledge of the group to be sampled” (p. 175). A student participated in the present study if the following criteria were met:

1. The student was enrolled in grades 3, 4, 5, 6, 7, 8, and 10 or 11;
2. The student was eligible for and in need of special education services;
3. The student was assessed in the 2011-2012 or 2012-2013 school years using the Kansas Assessment of Modified Measures (KAMM) for reading and/or mathematics.

The Assessment Department of District S provided students’ names for the current study based on district and state reports of the students who took the KAMM Reading and the KAMM Mathematics.

## **Instrumentation**

According to Lunenburg and Irby “instrumentation is critical to descriptive research” (2008, p. 31). The independent variable for this study was the amount of paraeducator time received daily by a student with a disability. Paraeducator time for students in the sample was collected from the Service Delivery page of each student’s IEP. The KAMM Reading and the KAMM Mathematics were the instruments used for this study. Two dependent variables were measured. The first dependent variable of student achievement in reading was measured by student scores on the KAMM Reading. According to the Kansas Department of Education (KSDE), students with disabilities whose IEP teams have determined meet the eligibility requirement to take a modified assessment in reading (see Appendix A) are administered the KAMM Reading in place of the Kansas Reading Assessment (KRA, 2012). Similar in format to the KRA, the KAMM Reading is based on grade level indicators for each content area; however, the test items are less complex with a reduced number of assessed indicators and fewer multiple-choice test items (Center for Education Testing and Evaluation [CETE], 2008, p. 1). For the KRA, students are required to answer between 75 and 105 test items while the KAMM Reading requires students to answer 30-49 test items (KSDE, 2012; CETE, 2006, p. 2). For the KRA, each test item has four answer choices to choose from, while the complexity of the KAMM Reading is reduced allowing students to choose from three answer choices for each test item (CETE, 2008, p. 1). For the KAMM Reading, there are fewer passages for students to read when compared to the general KRA. The most recent version of the KAMM Reading was planned and developed by KSDE and first administered in spring 2006 (CETE, 2008, p. 2). The computer-delivered KAMM

Reading assessment was designed for students in grades 3 through 8 and grades 10 and 11 with moderate reading disabilities. Students unable to complete the assessment online utilize pencil-paper accommodations (CETE, 2008, p. 2).

For the KAMM Reading, the number of total items across grade level tests ranges from 30 items in grade 3 to 49 items in high school. At all grade levels tested, there are passages to read, with four passages for grades 3 and 4 (two narrative and two expository), five passages for grades 5, 6, and 7 (two narrative, two expository, one technical), and six passages for grades 8, 10, and 11 (two narrative, two expository, one technical, and one persuasive). Students are allowed to take the reading assessment over as many days as necessary for completion.

Cut scores are “selected points on the score scale of a test used to determine whether a particular test score is sufficient for some purpose” (Zieky & Perie, 2006). To establish the cut scores, a KAMM Reading committee convened after the initial assessments were administered in the spring 2006. Committee participants were chosen based on factors such as grade taught, primary instruction area, geographic location, school size, and years of experience teaching in Kansas schools (CETE, 2008, p. 9). With the purpose of establishing cut score recommendations for all tested grade levels, participants collectively completed a standardized three-day process in June 2006.

The established cut scores developed for the KAMM Reading classified students into one of five performance categories: Academic Warning, Approaches Standard, Meets Standard, Exceeds Standard, and Exemplary. The proportion of students falling in each category provided a primary source of information for determining Adequate Yearly Progress (AYP) for schools, districts, and the state of Kansas (CETE, 2008, p. 3).

Table 2 provides a summary of the Performance Level Cut Scores established for the KAMM Reading. Each student received a percentage correct score placing the student in one of five performance levels. For example, a grade 3 student with a score between 0 and 39% would fall in the Academic Warning performance level, while a grade three student with a score between 89 and 93% would fall in the Exceeds Standard performance level.

Table 2

*KAMM Reading Performance Level Cut Scores – Percentage Correct*

Grade	Academic Warning	Approaches Standard	Meets Standard	Exceeds Standard	Exemplary
3	0-39	40-57	58-88	89-93	94-100
4	0-38	39-54	55-84	85-90	91-100
5	0-37	38-51	52-82	83-90	91-100
6	0-38	39-47	48-75	76-83	84-100
7	0-34	35-40	41-71	72-82	83-100
8	0-35	36-46	47-76	77-85	86-100
HS	0-37	38-48	49-81	82-87	86-100

*Note.* HS = high school. Adapted from “Kansas Assessments in Reading and Mathematics: Technical Manual for the Kansas Assessments of Modified Measures”, by A. J. Poggio, X. Yang, P. M. Irwin, D. R. Glasnapp, and J. P. Poggio, 2008. Copyright 2008 by Center for Education Testing and Evaluation, 2008.

The second dependent variable, student achievement in mathematics, was measured by student scores on the KAMM Mathematics. According to the Kansas Department of Education (KSDE), students with disabilities whose IEP teams have determined meet the eligibility requirement to take a modified assessment in mathematics (see Appendix A) are administered the KAMM Mathematics in place of the Kansas

Mathematics Assessment (KMA, 2012). Similar in format to the KMA, the KAMM Mathematics is based on grade level indicators for each content area; however, the test items are less complex with a reduced number of assessed indicators and fewer multiple-choice test items (CETE, 2008, p. 1). For the KMA, students are required to answer between 75 and 105 test items while the KAMM Mathematics requires students to answer 40 test items (KSDE, 2012; CETE, 2006, p. 2). For the KMA, each test item has four answer choices to choose from, while the complexity of the KAMM Mathematics is reduced allowing students to choose from three answer choices for each test item (CETE, 2008, p. 1). The most recent version of the KAMM Mathematics was planned and developed by KSDE and first administered in spring 2006 (CETE, 2008, p. 2). The computer-delivered KAMM Mathematics assessment was designed for students in grades 3 through 8 and grades 10 and 11 with moderate disabilities in the area of mathematics. Students unable to complete the assessment online utilize pencil-paper accommodations (CETE, 2008, p. 2).

On the KAMM Mathematics, there are 40 items for all grade levels. A calculator is allowed for all portions of the assessment. As with the KAMM Reading, students are permitted to take the KAMM Mathematics assessment over as many days as necessary for completion (CETE, 2008, p 2).

To establish the cut scores, a KAMM Mathematics committee convened after the initial assessments were administered in the spring 2006. Committee participants were chosen based on factors such as grade taught, primary instruction area, geographic location, school size, and years of experience teaching in Kansas schools (CETE, 2008, p.

9). With the purpose of establishing cut score recommendations for all tested grade levels, participants collectively completed a standardized three-day process in June 2006.

The established cut scores developed for the KAMM Mathematics classified students into one of five performance categories: Academic Warning, Approaches Standard, Meets Standard, Exceeds Standard, and Exemplary. The proportion of students falling in each category provided a primary source of information for determining Adequate Yearly Progress (AYP) for schools, districts, and the state of Kansas (CETE, 2008, p. 3).

Table 3 summarizes the Performance Level Cut Scores established for the KAMM Mathematics. Each student received a percentage correct score placing the student in one of five performance levels. A grade 3 student with a score between 0 and 34% would fall in the Academic Warning performance level, while a student with a score between 82 and 94% would fall in the Exceeds Standard performance level.

Table 3

*KAMM Mathematics Performance Level Cut Scores – Percentage Correct*

Grade	Academic Warning	Approaches Standard	Meets Standard	Exceeds Standard	Exemplary
3	0-34	35-56	57-81	82-94	95-100
4	0-34	35-54	55-81	82-94	95-100
5	0-34	35-56	57-81	82-91	92-100
6	0-34	35-54	55-79	80-91	92-100
7	0-34	35-51	52-74	75-86	87-100
8	0-34	35-49	50-74	75-84	85-100
HS	0-31	32-44	45-64	65-80	80-100

*Note.* HS = high school. Adapted from “Kansas Assessments in Reading and Mathematics: Technical Manual for the Kansas Assessments of Modified Measures”, by A. J. Poggio, X. Yang, P. M. Irwin, D. R. Glasnapp, and J. P. Poggio, 2008. Copyright 2008 by Center for Education Testing and Evaluation, 2008.

A final committee met in August 2006 to review the established cut scores and made final recommendations to the Kansas Department of Education (KSDE) for consideration (CETE, 2008, p.14). KSDE then formalized the recommendations to the Kansas State Board of Education (KSBE). KSBE made the final approval of the established cut scores prior to the administration of the KAMM Reading and KAMM Mathematics during the 2006-2007 school year (CETE, 2008, p.15).

**Measurement.** For the independent variable of paraeducator support each student received each day, time in minutes, was used as the measurement. The KAMM Reading measured the dependent variable of student achievement in reading, while the KAMM Mathematics measured the dependent variable of student achievement in mathematics. Both the KAMM Reading and KAMM Mathematics yield a score of percentage correct

from 0 to 100. For the purposes of this research, hypothesis testing was based on percentages of student achievement rather than on performance level categories.

**Reliability and validity.** Reliability is the “degree to which an instrument consistently measures whatever it is measuring” (Lunenburg & Irby, 2008, p.182). The Technical Manual for the Kansas Assessments in Reading and Mathematics (CETE, 2008) described the item development process that established reliability for the KAMM (p. 17). Procedures were used to estimate classification consistency and accuracy for both the KAMM Reading and KAMM Mathematics. Classification consistency is defined as the degree of agreement between two independent administrations of the same test, while classification accuracy is defined as the extent to which a tool can accurately classify students into categories (Livingston & Lewis, 1995, p. 2).

For the KAMM Reading, overall test classification consistency values across all performance level categories ranged from .56 in grade 3 to .64 in grade 5. Classification accuracy was consistently higher than classification consistency yet maintained the same pattern of variability across grades. Classification accuracy coefficients for reading ranged from .69 in grade 5 to .80 in grade 10. For the KAMM Mathematics, test classification consistency values ranged from .45 in grade 10 to .63 in grade 4. As in reading, the classification accuracy for KAMM Mathematics was consistently higher than classification consistency and maintained the same pattern of variability across grades. Classification accuracy coefficients for mathematics ranged from .56 in grade 10 to .73 in grade 4. For both the KAMM Reading and KAMM Mathematics, the reliabilities of classification at a given cut point were generally high whereas probabilities of misclassification were low. These values support the adequacy of the KAMM Reading

and the KAMM Mathematics assessments for making the major decision associated with AYP reporting for Kansas school districts.

Table 4 summarizes the KAMM Reading by grade level, number of items per grade level, number of students administered the KAMM Reading at a particular grade level, and Cronbach's alpha (CETE, 2008, p. 5). For grade 4, for example, 1,921 students took the 37-item assessment with reliability established at .87. Reliability coefficients for student groups ranged from a low of .86 for grades 3, 6, and 7 to a high of .90 for high school students. All reliability measures were above .80 indicating that the KAMM Reading is a reliable instrument to measure reading achievement across grade levels.

Table 4

*Reliability Coefficients for 2006-2007 KAMM Reading for All Students*

Grade	<i>N</i> Students	<i>N</i> Items	$\alpha$
3	1,776	30	0.86
4	1,921	37	0.87
5	2,105	45	0.89
6	2,152	47	0.86
7	2,118	46	0.86
8	2,149	48	0.87
HS	1,471	49	0.90

*Note.* *N* Students = number of students; *N* Items = number of items;  $\alpha$  = reliability coefficient. Adapted from "Kansas Assessments in Reading and Mathematics: Technical Manual for the Kansas Assessments of Modified Measures", by A. J. Poggio, X. Yang, P. M. Irwin, D. R. Glasnapp, and J. P. Poggio, 2008.

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Table 5 summarizes the KAMM Mathematics by grade level, number of items per grade level, number of students administered the KAMM Mathematics at a particular grade level, and Cronbach's alpha (CETE, 2008, p. 6). For grade 4, for example, 1,568 students took the 40-item assessment with reliability established at .85. Reliability coefficients for student groups ranged from a low of .74 for high school students to a high of .87 for grade 3 students. All reliability measures were above .80 with the exception of high school. While measures are lower for mathematics than reading, calculations indicate that the KAMM Mathematics is a reliable instrument to measure mathematic achievement across grade levels.

Table 5

*Reliability Coefficients for 2006-2007 KAMM Mathematics for All Students*

Grade	<i>N</i> Students	<i>N</i> Items	$\alpha$
3	1,316	40	0.87
4	1,568	40	0.85
5	1,833	40	0.85
6	1,931	40	0.86
7	2,064	40	0.81
8	2,203	40	0.81
HS	1,209	40	0.74

*Note.* *N* Students = number of students; *N* Items = number of items;  $\alpha$  = reliability coefficient. Adapted from "Kansas Assessments in Reading and Mathematics: Technical Manual for the Kansas Assessments of Modified Measures", by A. J. Poggio, X. Yang, P. M. Irwin, D. R. Glasnapp, and J. P. Poggio, 2008.

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Lunenburg and Irby (2008) defined validity as “the degree to which an instrument measures what it purports to measure” (p. 181). To establish construct validity, WestEd provided KSDE with reading and mathematics items aligned with the Kansas curriculum standards. Kansas educators, along with KSDE specialists and content committee members, examined the final rounds of test items during content and fairness reviews. In addition to confirming the appropriateness of each test item, the reviews ensured “that each item accurately reflected what was intended to be taught in Kansas schools” (CETE, 2008, p. 4). During the reviews, each test item was accepted, edited, or rejected from the respective item pool (CETE, 2008, p. 4).

An inter-indicator analysis was conducted to determine the relationships among subsections of the 7 to 11 indicators measured on each KAMM Reading assessment with between 3 and 6 items per indicator. For the KAMM Mathematics, there were 10 indicators with 4 items per indicator. The results from this analysis provided empirical evidence for understanding the basic internal structure of the domain being measured. By evaluating associations across indicators, test developers provided evidence of construct validity. The expectation was that the “relationships would be low to moderate because while they are all intended to measure the same construct (i.e., mathematics or reading ability), they simultaneously measure different aspects of the construct” (CETE, 2008, p. 20). The size of the correlation coefficients between the scores indicated the strength of the relationships between the criteria. The higher the correlation coefficient between the scores, the more valid the test is considered at assessing the criterion (CETE, 2008, p. 20).

The test developers examined the inter-indicator correlation at each grade level for both the KAMM Reading and KAMM Mathematics. The test developers used a Pearson product-moment correlation coefficient ( $r$ ) to calculate inter-indicator correlations. The significance for all correlations was set at .01 (CETE, 2008, p. 36). Table 6 summarizes the median inter-indicator correlations per grade for reading and mathematics. For grade 3, the median inter-indicator correlation for reading was .46, while the median inter-indicator for mathematics was .32.

Table 6

*Summary of Median Inter-Indicator Correlations per Grade*

Content Area	3	4	5	6	7	8	HS
Reading	0.46	0.40	0.43	0.38	0.37	0.34	0.44
Mathematics	0.32	0.29	0.27	0.33	0.23	0.28	0.21

Adapted from “Kansas Assessments in Reading and Mathematics: Technical Manual for the Kansas Assessments of Modified Measures” (KAMM), by A. J. Poggio, X. Yang, P. M. Irwin, D. R. Glasnapp, and J. P. Poggio, 2008. Copyright 2008 by Center for Education Testing and Evaluation, 2008.

The median inter-indicator correlations ranged from .34 to .46 for reading. Mathematics inter-indicator correlations ranged from .21 to .33. All correlations were significant at  $\alpha = .05$ .

In summary, the KAMM Reading is a reliable instrument to measure students’ reading achievement across grade levels. While reliability coefficients are lower for mathematics than reading, the KAMM Mathematics is a reliable instrument to measure mathematic achievement across grade levels. Test developers also established construct validity for both the KAMM Reading and the KAMM Mathematics.

## **Data Collection Procedures**

Prior to collecting data, the researcher submitted the research proposal form to obtain permission from the school district (see Appendix B) to conduct the research. The completed research proposal form was electronically mailed to the Director of School Improvement and Assessment on August 15, 2013. After review, on October 24, 2013, the director granted permission to conduct the study in District S and notified the researcher. The researcher initiated the process to obtain permission from Baker University by submitting an Institutional Review Board (IRB) request to Baker University on March 21, 2013 (see Appendix C). The Baker University IRB committee granted approval for the study on April 3, 2014 (see Appendix D).

The researcher contacted the district's Assessment Department to request information on students taking the KAMM Reading and KAMM Mathematics during the 2011-2012 and 2012-2013 school years. The Assessment Department sent a report to the researcher that included the following information: student first and last name, school, grade, score for reading and/or mathematics, and performance level (academic warning, approaches standard, meets standard, exceeds standard, or exemplary) for reading and/or mathematics.

The researcher accessed the 2011-2012 and 2012-2013 Service Delivery pages of the IEP for each student whose achievement was assessed using the KAMM Reading and/or KAMM Mathematics. The minutes of paraeducator support each student received daily was recorded. Then the student assessment data for students in grades 3, 4, 5, 6, 7, 8, and grades 10 or 11 received from the Assessment Department and the minutes of paraeducator support for each student as outlined on the Service Delivery page of each

student's IEP were compiled into a Microsoft Excel spreadsheet. Information collected included student name, school, grade, score, achievement level, and number of paraeducator minutes per day. One spreadsheet was developed with KAMM Reading data and one spreadsheet was developed with the KAMM Mathematics data. After the compilation of information was complete, the student names were removed and numbers were assigned to the student data to provide for anonymity.

### **Data Analysis and Hypothesis Testing**

The present study used quantitative methods of data analysis. Once the quantitative data collected were organized in a Microsoft Excel worksheet, the researcher checked the information for accuracy for import into IBM® SPSS® Statistics Faculty Pack 22 for Windows. The quantitative analysis focused on 14 research questions. Each question is presented below with the hypothesis followed by the hypothesis testing method.

**RQ1.** To what extent is there a relationship between the minutes of paraeducator support grade 3 students identified with moderate disabilities receive each day and scores on the Kansas Assessment of Modified Measures (KAMM) Reading?

**H1.** A relationship exists between the minutes of paraeducator support grade 3 students identified with moderate disabilities receive each day and scores on the KAMM Reading.

To analyze the relationship between the paraeducator support grade 3 students with moderate disabilities receive each day and scores on the KAMM Reading, a Pearson product-moment correlation coefficient was calculated. The researcher calculated the correlation coefficient to determine the strength and direction of the linear relationship

between the amount of paraeducator support received and student achievement in reading for grade 3 students. A one-sample  $t$  test was conducted to test for the statistical significance of the correlation coefficient with the level of significance set at .05.

**RQ2.** To what extent is there a relationship between the minutes of paraeducator support grade 4 students identified with moderate disabilities receive each day and scores on the KAMM Reading?

**H2.** A relationship exists between the minutes of paraeducator support grade 4 students identified with moderate disabilities receive each day and scores on the KAMM Reading.

To analyze the relationship between the paraeducator support grade 4 students with moderate disabilities receive each day and scores on the KAMM Reading, a Pearson product-moment correlation coefficient was calculated. The researcher calculated the correlation coefficient to determine the strength and direction of the linear relationship between the amount of paraeducator support received and student achievement in reading for grade 4 students. A one-sample  $t$  test was conducted to test for the statistical significance of the correlation coefficient with the level of significance set at .05.

**RQ3.** To what extent is there a relationship between the minutes of paraeducator support grade 5 students identified with moderate disabilities receive each day and scores on the KAMM Reading?

**H3.** A relationship exists between the minutes of paraeducator support grade 5 students identified with moderate disabilities receive each day and scores on the KAMM Reading.

To analyze the relationship between the paraeducator support grade 5 students with moderate disabilities receive each day and scores on the KAMM Reading, a Pearson product-moment correlation coefficient was calculated. The researcher calculated the correlation coefficient to determine the strength and direction of the linear relationship between the amount of paraeducator support received and student achievement in reading for grade 5 students. A one-sample *t* test was conducted to test for the statistical significance of the correlation coefficient with the level of significance set at .05.

**RQ4.** To what extent is there a relationship between the minutes of paraeducator support grade 6 students identified with moderate disabilities receive each day and scores on the KAMM Reading?

**H4.** A relationship exists between the minutes of paraeducator support grade 6 students identified with moderate disabilities receive each day and scores on the KAMM Reading.

To analyze the relationship between the paraeducator support grade 6 students with moderate disabilities receive each day and scores on the KAMM Reading, a Pearson product-moment correlation coefficient was calculated. The researcher calculated the correlation coefficient to determine the strength and direction of the linear relationship between the amount of paraeducator support received and student achievement in reading for grade 6 students. A one-sample *t* test was conducted to test for the statistical significance of the correlation coefficient with the level of significance set at .05.

**RQ5.** To what extent is there a relationship between the minutes of paraeducator support grade 7 students identified with moderate disabilities receive each day and scores on the KAMM Reading?

**H5.** A relationship exists between the minutes of paraeducator support grade 7 students identified with moderate disabilities receive each day and scores on the KAMM Reading.

To analyze the relationship between the paraeducator support grade 7 students with moderate disabilities receive each day and scores on the KAMM Reading, a Pearson product-moment correlation coefficient was calculated. The researcher calculated the correlation coefficient to determine the strength and direction of the linear relationship between the amount of paraeducator support received and student achievement in reading for grade 7 students. A one-sample *t* test was conducted to test for the statistical significance of the correlation coefficient with the level of significance set at .05.

**RQ6.** To what extent is there a relationship between the minutes of paraeducator support grade 8 students identified with moderate disabilities receive each day and scores on the KAMM Reading?

**H6.** A relationship exists between the minutes of paraeducator support grade 8 students identified with moderate disabilities receive each day and scores on the KAMM Reading.

To analyze the relationship between the paraeducator support grade 8 students with moderate disabilities receive each day and scores on the KAMM Reading, a Pearson product-moment correlation coefficient was calculated. The researcher calculated the correlation coefficient to determine the strength and direction of the linear relationship between the amount of paraeducator support received and student achievement in reading for grade 8 students. A one-sample *t* test was conducted to test for the statistical significance of the correlation coefficient with the level of significance set at .05.

**RQ7.** To what extent is there a relationship between the minutes of paraeducator support high school students identified with moderate disabilities receive each day and scores on the KAMM Reading?

**H7.** A relationship exists between the minutes of paraeducator support high school students identified with moderate disabilities receive each day and scores on the KAMM Reading.

To analyze the relationship between the paraeducator support high school students with moderate disabilities receive each day and scores on the KAMM Reading, a Pearson product-moment correlation coefficient was calculated. The researcher calculated the correlation coefficient to determine the strength and direction of the linear relationship between the amount of paraeducator support received and student achievement in reading for high school students. A one-sample t test was conducted to test for the statistical significance of the correlation coefficient with the level of significance set at .05.

**RQ8.** To what extent is there a relationship between the minutes of paraeducator support grade 3 students identified with moderate disabilities receive each day and scores on the KAMM Mathematics?

**H8.** A relationship exists between the minutes of paraeducator support grade 3 students identified with moderate disabilities receive each day and scores on the KAMM Mathematics.

To analyze the relationship between the paraeducator support grade 3 students with moderate disabilities receive each day and scores on the KAMM Mathematics, a Pearson product-moment correlation coefficient was calculated. The researcher calculated the correlation coefficient to determine the strength and direction of the linear

relationship between the amount of paraeducator support received and student achievement in mathematics for grade 3 students. A one-sample t test was conducted to test for the statistical significance of the correlation coefficient with the level of significance set at .05.

**RQ9.** To what extent is there a relationship between the minutes of paraeducator support grade 4 students identified with moderate disabilities receive each day and scores on the KAMM Mathematics?

**H9.** A relationship exists between the minutes of paraeducator support grade 4 students identified with moderate disabilities receive each day and scores on the KAMM Mathematics.

To analyze the relationship between the paraeducator support grade 4 students with moderate disabilities receive each day and scores on the KAMM Mathematics, a Pearson product-moment correlation coefficient was calculated. The researcher calculated the correlation coefficient to determine the strength and direction of the linear relationship between the amount of paraeducator support received and student achievement in mathematics for grade 4 students. A one-sample t test was conducted to test for the statistical significance of the correlation coefficient with the level of significance set at .05.

**RQ10.** To what extent is there a relationship between the minutes of paraeducator support grade 5 students identified with moderate disabilities receive each day and scores on the KAMM Mathematics?

**H10.** A relationship exists between the minutes of paraeducator support grade 5 students identified with moderate disabilities receive each day and scores on the KAMM Mathematics.

To analyze the relationship between the paraeducator support grade 5 students with moderate disabilities receive each day and scores on the KAMM Mathematics, a Pearson product-moment correlation coefficient was calculated. The researcher calculated the correlation coefficient to determine the strength and direction of the linear relationship between the amount of paraeducator support received and student achievement in mathematics for grade 5 students. A one-sample t test was conducted to test for the statistical significance of the correlation coefficient with the level of significance set at .05.

**RQ11.** To what extent is there a relationship between the minutes of paraeducator support grade 6 students identified with moderate disabilities receive each day and scores on the KAMM Mathematics?

**H11.** A relationship exists between the minutes of paraeducator support grade 6 students identified with moderate disabilities receive each day and scores on the KAMM Mathematics.

To analyze the relationship between the paraeducator support grade 6 students with moderate disabilities receive each day and scores on the KAMM Mathematics, a Pearson product-moment correlation coefficient was calculated. The researcher calculated the correlation coefficient to determine the strength and direction of the linear relationship between the amount of paraeducator support received and student achievement in mathematics for grade 6 students. A one-sample t test was conducted to

test for the statistical significance of the correlation coefficient with the level of significance set at .05.

**RQ12.** To what extent is there a relationship between the minutes of paraeducator support grade 7 students identified with moderate disabilities receive each day and scores on the KAMM Mathematics?

**H12.** A relationship exists between the minutes of paraeducator support grade 7 students identified with moderate disabilities receive each day and scores on the KAMM Mathematics.

To analyze the relationship between the paraeducator support grade 7 students with moderate disabilities receive each day and scores on the KAMM Mathematics, a Pearson product-moment correlation coefficient was calculated. The researcher calculated the correlation coefficient to determine the strength and direction of the linear relationship between the amount of paraeducator support received and student achievement in mathematics for grade 7 students. A one-sample t test was conducted to test for the statistical significance of the correlation coefficient with the level of significance set at .05.

**RQ13.** To what extent is there a relationship between the minutes of paraeducator support grade 8 students identified with moderate disabilities receive each day and scores on the KAMM Mathematics?

**H13.** A relationship exists between the minutes of paraeducator support grade 8 students identified with moderate disabilities receive each day and scores on the KAMM Mathematics.

To analyze the relationship between the paraeducator support grade 8 students with moderate disabilities receive each day and scores on the KAMM Mathematics, a Pearson product-moment correlation coefficient was calculated. The researcher calculated the correlation coefficient to determine the strength and direction of the linear relationship between the amount of paraeducator support received and student achievement in mathematics for grade 8 students. A one-sample t test was conducted to test for the statistical significance of the correlation coefficient with the level of significance set at .05.

**RQ14.** To what extent is there a relationship between the minutes of paraeducator support high school students identified with moderate disabilities receive each day and scores on the KAMM Mathematics?

**H14.** A relationship exists between the minutes of paraeducator support high school students identified with moderate disabilities receive each day and scores on the KAMM Mathematics.

To analyze the relationship between the paraeducator support high school students with moderate disabilities receive each day and scores on the KAMM Mathematics, a Pearson product-moment correlation coefficient was calculated. The researcher calculated the correlation coefficient to determine the strength and direction of the linear relationship between the amount of paraeducator support received and student achievement in mathematics for high school students. A one-sample t test was conducted to test for the statistical significance of the correlation coefficient with the level of significance set at .05.

## **Limitations**

According to Lunenburg and Irby (2008, p. 133), “limitations are factors that may have an effect on the interpretation of the findings or on the generalizability of the results.” While the researcher cannot control limitations, Lunenburg and Irby (2008) emphasized the importance of providing the reader with information on limitations to avoid misinterpretation of the research findings. Limitations for this study included:

1. The school district in which the research was conducted elects to use a single standardized test of student achievement per school year.
2. Student achievement scores may be affected by multiple factors. While student achievement as measured by the KAMM was potentially influenced by the amount of paraeducator time the student received on a daily basis, other factors may have an impact on student learning.
3. Instructional strategies, test preparation, testing environment, and the collective staff attitude and expectations may be inconsistent from school to school.
4. IEP teams in various buildings may have differing philosophies on how to assign paraeducator time.

## **Summary**

The current study was a quantitative design using correlational research methods. This chapter reexamined the purpose of the study and outlined the methods used including the research design, population and sample, sampling procedures, instrumentation, data collection procedures, and data analysis and hypothesis testing. A purposive sample of all students in the Midwest suburban school district included in the study and the conditions for participation were discussed. Instrumentation, including

measurement, reliability and validity information, were examined followed by a description of the data collection procedures and methods of data analysis. The results of the quantitative data analysis for this study are presented in chapter four.

## **Chapter Four**

### **Results**

The purpose of this study was to determine if the amount of paraeducator support provided to students identified with moderate disabilities impacted academic performance as measured by standardized state assessments. Specifically, the current study investigated to what extent there is a relationship between the minutes of paraeducator support a student receives each day and scores on the Kansas Assessment of Modified Measures (KAMM) Reading and scores on the Kansas Assessment of Modified Measures (KAMM) Mathematics. The students in this study were enrolled in grades 3, 4, 5, 6, 7, 8 and high school (grade 10 or 11) as academic achievement for students in these grades are assessed annually through standardized state assessments. Chapter four provides an explanation of the descriptive statistics for the sample. This chapter also presents the results of the data analysis for each hypothesis associated with the research questions posed for this study. Pearson product-moment correlation coefficients were calculated to index the strength and direction of the relationship between the minutes of paraeducator support a student receives each day and scores on the KAMM Reading and KAMM Mathematics. The results of the *t* tests provided evidence for the statistical significance of the correlations.

#### **Descriptive Statistics**

Lunenburg and Irby (2008) defined descriptive statistics as the “mathematical procedures for organizing and summarizing numerical data” (p. 63). The sample for this study included students in grades 3, 4, 5, 6, 7, 8, and high school (grade 10 or 11) with moderate disabilities whose academic achievement was measured using the KAMM

Reading and KAMM Mathematics during the 2011-2012 and the 2012-2013 school years. Five hundred and seventeen students were assessed using the KAMM Reading as the standardized state assessment. Table 7 summarizes the KAMM Reading data for each grade level including the sample size, mean scores, standard deviation, and minimum and maximum scores. Also included in the table is the mean number of paraeducator minutes per day, standard deviation, and minimum and maximum number of paraeducator minutes per day for each grade level. For example, in grade 4, 80 students took the KAMM Reading with a mean score of 77.74, a standard deviation of 13.60, a minimum score of 43, and a maximum score of 100. Given that all students taking the KAMM Reading were identified as having a moderate disability, the data revealed an unexpected wide range in minimum and maximum scores on this assessment. For grade 4 students, the mean number of paraeducator minutes per day was 93.10 minutes, with a standard deviation of 65.98. For grade 4, there was a range in paraeducator minutes per day from a minimum of 0 minutes to a maximum of 325 minutes. The wide range in number of paraeducator minutes per day was also unanticipated. Furthermore, since all students taking the KAMM Reading were identified as having a moderate disability rather than a mild or severe disability, it was unexpected that some students had no paraeducator support while other students had as much as a full day of paraeducator support.

Table 7

*Grade Level KAMM Reading Scores and Paraeducator Minutes per Day*

Grade	<i>n</i>	KAMM Reading Scores				Paraeducator Minutes per Day			
		<i>M</i>	<i>SD</i>	Min	Max	<i>M</i>	<i>SD</i>	Min	Max
3	77	79.97	14.39	33	100	106.73	80.33	0	400
4	80	77.74	13.60	43	100	93.10	65.98	0	325
5	69	75.97	15.61	42	98	91.55	53.76	0	304
6	72	69.88	11.93	32	94	160.22	74.16	0	378
7	82	67.20	13.93	35	96	155.79	70.68	0	340
8	83	77.41	13.79	31	98	157.52	61.31	0	300
HS	54	83.28	9.55	55	96	151.78	59.41	0	270

*Note.* HS = High School (Grades 10 and 11).

Four hundred and eighty nine students were assessed using the KAMM Mathematics standardized state assessment. Table 8 summarizes the KAMM Mathematics data for each grade level including the sample size, mean scores, standard deviation, and minimum and maximum scores. Also included in the table is the mean number of paraeducator minutes per day, standard deviation, and minimum and maximum number of minutes of paraeducator minutes per day for each grade level. For example, in grade 4, 74 students took the KAMM Mathematics with a mean score of 68.30, a standard deviation of 13.40, a minimum score of 35, and a maximum score of 95. For the same grade level, the mean number of paraeducator minutes per day was 99.27 minutes, with a standard deviation of 68.06. For grade 4, there was a range in paraeducator minutes per day from a minimum of 0 minutes to a maximum of 325 minutes. Given that all students taking the KAMM Mathematics were identified as

having a moderate disability, the data revealed an unexpected wide range in minimum and maximum scores on this assessment. The wide range in number of paraeducator minutes per day was also unanticipated. Furthermore, since all students taking the KAMM Mathematics were identified as having a moderate disability rather than a mild or severe disability, it was unexpected that some students had no paraeducator support while other students had as much as a full day of paraeducator support.

Table 8

*Grade Level KAMM Mathematics Scores and Paraeducator Minutes per Day*

Grade	<i>n</i>	KAMM Mathematics Scores				Paraeducator Minutes per Day			
		<i>M</i>	<i>SD</i>	Min	Max	<i>M</i>	<i>SD</i>	Min	Max
3	64	76.06	14.09	30	98	106.83	79.88	0	400
4	74	68.30	13.40	35	95	99.27	68.06	0	325
5	65	68.26	14.63	33	95	89.12	50.13	0	249
6	68	71.32	13.09	40	95	168.60	79.06	0	378
7	86	63.64	13.61	35	93	150.56	76.19	0	359
8	75	68.24	13.26	38	95	146.03	67.52	0	300
HS	57	60.46	14.44	30	95	149.51	60.51	0	270

*Note.* HS = High School (Grades 10 and 11).

Statistical information was summarized for each grade level for both the KAMM Reading and the KAMM Mathematics. The descriptive statistics provided numerical information related to the sample for this study including: (a) the grade level; (b) the number of students per grade level; (c) the mean, standard deviation, and minimum and maximum scores for the KAMM Reading and the KAMM Mathematics for each grade level; and (d) the mean, standard deviation, and minimum and maximum number of

paraeducator minutes per day for each grade level. The following section explains the results of the hypothesis testing associated with each of the study's research questions.

### **Hypothesis Testing**

The results of the hypothesis testing to address the 14 research questions used to drive this study are discussed in this section. Each research question is followed by its corresponding hypothesis statement. The method used to test each hypothesis and the results of each test are described.

**RQ1.** To what extent is there a relationship between the minutes of paraeducator support grade 3 students identified with moderate disabilities receive each day and scores on the Kansas Assessment of Modified Measures (KAMM) Reading?

**H1.** A relationship exists between the minutes of paraeducator support grade 3 students identified with moderate disabilities receive each day and scores on the KAMM Reading.

To analyze the relationship between the minutes of paraeducator support grade 3 students with moderate disabilities receive each day and scores on the KAMM Reading, a Pearson product-moment correlation coefficient was calculated. The researcher calculated the correlation coefficient to determine the strength and direction of the linear relationship between the number of minutes of paraeducator support received daily and student achievement in reading for grade 3 students. A one-sample *t* test was conducted to test for the statistical significance of the correlation coefficient with the level of significance set at .05.

The correlation coefficient ( $r = -.244$ ) provided evidence for a moderately weak negative relationship between the number of paraeducator minutes grade 3 students

receive daily and achievement scores on the KAMM Reading. The results of the one sample  $t$  test indicated a statistically significant relationship between the number of paraeducator minutes grade 3 students receive daily and achievement scores on the KAMM Reading,  $df = 75$ ,  $p = .032$ . The results of this test supported that as the number of paraeducator minutes increases reading achievement tends to decrease.

**RQ2.** To what extent is there a relationship between the minutes of paraeducator support grade 4 students identified with moderate disabilities receive each day and scores on the KAMM Reading?

**H2.** A relationship exists between the minutes of paraeducator support grade 4 students identified with moderate disabilities receive each day and scores on the KAMM Reading.

To analyze the relationship between the paraeducator support grade 4 students with moderate disabilities receive each day and scores on the KAMM Reading, a Pearson product-moment correlation coefficient was calculated. The researcher calculated the correlation coefficient to determine the strength and direction of the linear relationship between the number of minutes of paraeducator support received daily and student achievement in reading for grade 4 students. A one-sample  $t$  test was conducted to test for the statistical significance of the correlation coefficient with the level of significance set at .05.

The correlation coefficient ( $r = -.250$ ) provided evidence for a moderately weak negative relationship between the number of paraeducator minutes grade 4 students receive daily and achievement scores on the KAMM Reading. The results of the one sample  $t$  test indicated a statistically significant relationship between the number of

paraeducator minutes grade 4 students receive daily and achievement scores on the KAMM Reading,  $df = 78$ ,  $p = .025$ . The results of this test supported that as the number of paraeducator minutes increases reading achievement tends to decrease.

**RQ3.** To what extent is there a relationship between the minutes of paraeducator support grade 5 students identified with moderate disabilities receive each day and scores on the KAMM Reading?

**H3.** A relationship exists between the minutes of paraeducator support grade 5 students identified with moderate disabilities receive each day and scores on the KAMM Reading.

To analyze the relationship between the paraeducator support grade 5 students with moderate disabilities receive each day and scores on the KAMM Reading, a Pearson product-moment correlation coefficient was calculated. The researcher calculated the correlation coefficient to determine the strength and direction of the linear relationship between number of minutes of paraeducator support received daily and student achievement in reading for grade 5 students. A one-sample  $t$  test was conducted to test for the statistical significance of the correlation coefficient with the level of significance set at .05.

The correlation coefficient ( $r = -.365$ ) provided evidence for a moderate negative relationship between the number of paraeducator minutes grade 5 students receive daily and achievement scores on the KAMM Reading. The results of the one sample  $t$  test indicated a statistically significant relationship between the number of paraeducator minutes grade 5 students receive daily and achievement scores on the KAMM Reading,

$df = 67, p = .002$ . The results of this test supported that as the number of paraeducator minutes increases reading achievement tends to decrease.

**RQ4.** To what extent is there a relationship between the minutes of paraeducator support grade 6 students identified with moderate disabilities receive each day and scores on the KAMM Reading?

**H4.** A relationship exists between the minutes of paraeducator support grade 6 students identified with moderate disabilities receive each day and scores on the KAMM Reading.

To analyze the relationship between the paraeducator support grade 6 students with moderate disabilities receive each day and scores on the KAMM Reading, a Pearson product-moment correlation coefficient was calculated. The researcher calculated the correlation coefficient to determine the strength and direction of the linear relationship between number of minutes of paraeducator support received daily and student achievement in reading for grade 6 students. A one-sample  $t$  test was conducted to test for the statistical significance of the correlation coefficient with the level of significance set at .05.

The correlation coefficient ( $r = -.065$ ) provided evidence for a weak negative relationship between the number of paraeducator minutes grade 6 students receive daily and achievement scores on the KAMM Reading. The results of the one sample  $t$  test indicated that the relationship was not statistically significant between the number of paraeducator minutes grade 6 students receive daily and achievement scores on the KAMM Reading,  $df = 70, p = .585$ . The results of the test did not support that as the

number of paraeducator minutes increases reading achievement decreases, or that as the number of paraeducator minutes increases reading achievement increases.

**RQ5.** To what extent is there a relationship between the minutes of paraeducator support grade 7 students identified with moderate disabilities receive each day and scores on the KAMM Reading?

**H5.** A relationship exists between the minutes of paraeducator support grade 7 students identified with moderate disabilities receive each day and scores on the KAMM Reading.

To analyze the relationship between the paraeducator support grade 7 students with moderate disabilities receive each day and scores on the KAMM Reading, a Pearson product-moment correlation coefficient was calculated. The researcher calculated the correlation coefficient to determine the strength and direction of the linear relationship between number of minutes of paraeducator support received daily and student achievement in reading for grade 7 students. A one-sample *t* test was conducted to test for the statistical significance of the correlation coefficient with the level of significance set at .05.

The correlation coefficient ( $r = -.262$ ) provided evidence for a moderately weak negative relationship between the number of paraeducator minutes grade 7 students receive daily and achievement scores on the KAMM Reading. The results of the one sample *t* test indicated a statistically significant relationship between the number of paraeducator minutes grade 7 students receive daily and achievement scores on the KAMM Reading,  $df = 80$ ,  $p = .018$ . The results of this test supported that as the number of paraeducator minutes increases reading achievement tends to decrease.

**RQ6.** To what extent is there a relationship between the minutes of paraeducator support grade 8 students identified with moderate disabilities receive each day and scores on the KAMM Reading?

**H6.** A relationship exists between the minutes of paraeducator support grade 8 students identified with moderate disabilities receive each day and scores on the KAMM Reading.

To analyze the relationship between the paraeducator support grade 8 students with moderate disabilities receive each day and scores on the KAMM Reading, a Pearson product-moment correlation coefficient was calculated. The researcher calculated the correlation coefficient to determine the strength and direction of the linear relationship between the number of minutes of paraeducator support received daily and student achievement in reading for grade 8 students. A one-sample *t* test was conducted to test for the statistical significance of the correlation coefficient with the level of significance set at .05.

The correlation coefficient ( $r = -.081$ ) provided evidence for a weak negative relationship between the number of paraeducator minutes grade 8 students receive daily and achievement scores on the KAMM Reading. The results of the one sample *t* test indicated that the relationship was not statistically significant between the number of paraeducator minutes grade 8 students receive daily and achievement scores on the KAMM Reading,  $df = 81$ ,  $p = .466$ . The results of this test did not support that as the number of paraeducator minutes increases reading achievement decreases, or that as the number of paraeducator minutes increases reading achievement increases.

**RQ7.** To what extent is there a relationship between the minutes of paraeducator support high school students identified with moderate disabilities receive each day and scores on the KAMM Reading?

**H7.** A relationship exists between the minutes of paraeducator support high school students identified with moderate disabilities receive each day and scores on the KAMM Reading.

To analyze the relationship between the paraeducator support high school students with moderate disabilities receive each day and scores on the KAMM Reading, a Pearson product-moment correlation coefficient was calculated. The researcher calculated the correlation coefficient to determine the strength and direction of the linear relationship between the number of minutes of paraeducator support received daily and student achievement in reading for high school students. A one-sample *t* test was conducted to test for the statistical significance of the correlation coefficient with the level of significance set at .05.

The correlation coefficient ( $r = -.021$ ) provided evidence for a weak negative relationship between the number of paraeducator minutes high school students receive daily and achievement scores on the KAMM Reading. The results of the one sample *t* test indicated that the relationship was not statistically significant between the number of paraeducator minutes high school students receive daily and achievement scores on the KAMM Reading,  $df = 52$ ,  $p = .881$ . The results of this test did not support that as the number of paraeducator minutes increases reading achievement decreases, or that as the number of paraeducator minutes increases reading achievement increases.

Table 9 summarizes the statistical information for all grade levels in the area of reading. Specifically, the table highlights the results of the Pearson product-moment correlation between minutes of paraeducator support and reading achievement as measured by the KAMM Reading. The grade level, correlation coefficient, degrees of freedom, and  $p$ -value are included. For example, for grade 5 students the analysis revealed a correlation coefficient of  $-.365$ , degrees of freedom of  $67$ , and a  $p$ -value of  $.002$ .

Table 9

*Results of Pearson Product-Moment Correlation between Minutes of Paraeducator Support and Reading Achievement as Measured by the KAMM Reading*

	$r$	$df$	$p$
Grade 3	-.244	75	.032
Grade 4	-.250	78	.025
Grade 5	-.365	67	.002
Grade 6	-.065	70	.585
Grade 7	-.262	80	.018
Grade 8	-.081	81	.466
High School	-.021	53	.881

*Note.*  $r$  = Pearson product-moment correlation coefficient;  $df$  = Degrees of freedom;  $p$  = Probability

**RQ8.** To what extent is there a relationship between the minutes of paraeducator support grade 3 students identified with moderate disabilities receive each day and scores on the KAMM Mathematics?

**H8.** A relationship exists between the minutes of paraeducator support grade 3 students identified with moderate disabilities receive each day and scores on the KAMM Mathematics.

To analyze the relationship between the paraeducator support grade 3 students with moderate disabilities receive each day and scores on the KAMM Mathematics, a Pearson product-moment correlation coefficient was calculated. The researcher calculated the correlation coefficient to determine the strength and direction of the linear relationship between the number of minutes of paraeducator support received daily and student achievement in mathematics for grade 3 students. A one-sample *t* test was conducted to test for the statistical significance of the correlation coefficient with the level of significance set at .05.

The correlation coefficient ( $r = -.223$ ) provided evidence for a moderately weak negative relationship between the number of paraeducator minutes grade 3 students receive daily and achievement scores on the KAMM Mathematics. The results of the one sample *t* test indicated a marginally significant relationship between the number of paraeducator minutes grade 3 students receive daily and achievement scores on the KAMM Mathematics,  $df = 62$ ,  $p = .076$ . The results of this test supported that as the number of paraeducator minutes increases mathematics achievement tends to decrease.

**RQ9.** To what extent is there a relationship between the minutes of paraeducator support grade 4 students identified with moderate disabilities receive each day and scores on the KAMM Mathematics?

**H9.** A relationship exists between the minutes of paraeducator support grade 4 students identified with moderate disabilities receive each day and scores on the KAMM Mathematics.

To analyze the relationship between the paraeducator support grade 4 students with moderate disabilities receive each day and scores on the KAMM Mathematics, a Pearson product-moment correlation coefficient was calculated. The researcher calculated the correlation coefficient to determine the strength and direction of the linear relationship between the number of minutes of paraeducator support received daily and student achievement in mathematics for grade 4 students. A one-sample *t* test was conducted to test for the statistical significance of the correlation coefficient with the level of significance set at .05.

The correlation coefficient ( $r = -.137$ ) provided evidence for a weak negative relationship between the number of paraeducator minutes grade 4 students receive daily and achievement scores on the KAMM Mathematics. The results of the one sample *t* test indicated that the relationship was not statistically significant between the number of paraeducator minutes grade 4 students receive daily and achievement scores on the KAMM Mathematics,  $df = 72$ ,  $p = .244$ . The results of this test did not support that as the number of paraeducator minutes increases mathematic achievement decreases, or that as the number of paraeducator minutes increases mathematic achievement increases.

**RQ10.** To what extent is there a relationship between the minutes of paraeducator support grade 5 students identified with moderate disabilities receive each day and scores on the KAMM Mathematics?

**H10.** A relationship exists between the minutes of paraeducator support grade 5 students identified with moderate disabilities receive each day and scores on the KAMM Mathematics.

To analyze the relationship between the paraeducator support grade 5 students with moderate disabilities receive each day and scores on the KAMM Mathematics, a Pearson product-moment correlation coefficient was calculated. The researcher calculated the correlation coefficient to determine the strength and direction of the linear relationship between the number of minutes of paraeducator support received daily and student achievement in mathematics for grade 5 students. A one-sample *t* test was conducted to test for the statistical significance of the correlation coefficient with the level of significance set at .05.

The correlation coefficient ( $r = -.146$ ) provided evidence for a weak negative relationship between the number of paraeducator minutes grade 5 students receive daily and achievement scores on the KAMM Mathematics. The results of the one sample *t* test indicated that the relationship was not statistically significant between the number of paraeducator minutes grade 5 students receive daily and achievement scores on the KAMM Mathematics,  $df = 63$ ,  $p = .246$ . The results of this test did not support that as the number of paraeducator minutes increases mathematic achievement decreases or that as the number of paraeducator minutes increases mathematic achievement increases.

**RQ11.** To what extent is there a relationship between the minutes of paraeducator support grade 6 students identified with moderate disabilities receive each day and scores on the KAMM Mathematics?

**H11.** A relationship exists between the minutes of paraeducator support grade 6 students identified with moderate disabilities receive each day and scores on the KAMM Mathematics.

To analyze the relationship between the paraeducator support grade 6 students with moderate disabilities receive each day and scores on the KAMM Mathematics, a Pearson product-moment correlation coefficient was calculated. The researcher calculated the correlation coefficient to determine the strength and direction of the linear relationship between the number of minutes of paraeducator support received daily and student achievement in mathematics for grade 6 students. A one-sample *t* test was conducted to test for the statistical significance of the correlation coefficient with the level of significance set at .05.

The correlation coefficient ( $r = -.106$ ) provided evidence for a weak negative relationship between the number of paraeducator minutes grade 6 students receive daily and achievement scores on the KAMM Mathematics. The results of the one sample *t* test indicated that the relationship was not statistically significant between the number of paraeducator minutes grade 6 students receive daily and achievement scores on the KAMM Mathematics,  $df = 66$ ,  $p = .392$ . The results of this test did not support that as the number of paraeducator minutes increases mathematic achievement decreases, or that as the number of paraeducator minutes increases mathematic achievement increases.

**RQ12.** To what extent is there a relationship between the minutes of paraeducator support grade 7 students identified with moderate disabilities receive each day and scores on the KAMM Mathematics?

**H12.** A relationship exists between the minutes of paraeducator support grade 7 students identified with moderate disabilities receive each day and scores on the KAMM Mathematics.

To analyze the relationship between the paraeducator support grade 7 students with moderate disabilities receive each day and scores on the KAMM Mathematics, a Pearson product-moment correlation coefficient was calculated. The researcher calculated the correlation coefficient to determine the strength and direction of the linear relationship between the number of minutes of paraeducator support received daily and student achievement in mathematics for grade 7 students. A one-sample *t* test was conducted to test for the statistical significance of the correlation coefficient with the level of significance set at .05.

The correlation coefficient ( $r = -.181$ ) provided evidence for a weak negative relationship between the number of paraeducator minutes grade 7 students receive daily and achievement scores on the KAMM Mathematics. The results of the one sample *t* test indicated a marginally significant relationship between the number of paraeducator minutes grade 7 students receive daily and achievement scores on the KAMM Mathematics,  $df = 84$ ,  $p = .096$ . The results of this test supported that as the number of paraeducator minutes increases mathematics achievement tends to decrease.

**RQ13.** To what extent is there a relationship between the minutes of paraeducator support grade 8 students identified with moderate disabilities receive each day and scores on the KAMM Mathematics?

**H13.** A relationship exists between the minutes of paraeducator support grade 8 students identified with moderate disabilities receive each day and scores on the KAMM Mathematics.

To analyze the relationship between the paraeducator support grade 8 students with moderate disabilities receive each day and scores on the KAMM Mathematics, a Pearson product-moment correlation coefficient was calculated. The researcher calculated the correlation coefficient to determine the strength and direction of the linear relationship between the number of minutes of paraeducator support received daily and student achievement in mathematics for grade 8 students. A one-sample *t* test was conducted to test for the statistical significance of the correlation coefficient with the level of significance set at .05.

The correlation coefficient ( $r = .040$ ) provided evidence for a weak positive relationship between the number of paraeducator minutes grade 8 students receive daily and achievement scores on the KAMM Mathematics. The results of the one sample *t* test indicated that the relationship was not statistically significant between the number of paraeducator minutes grade 8 students receive daily and achievement scores on the KAMM Mathematics,  $df = 73$ ,  $p = .731$ . The results of this test did not support that as the number of paraeducator minutes increases mathematic achievement decreases, or that as the number of paraeducator minutes increases mathematic achievement increases.

**RQ14.** To what extent is there a relationship between the minutes of paraeducator support high school students identified with moderate disabilities receive each day and scores on the KAMM Mathematics?

**H14.** A relationship exists between the minutes of paraeducator support high school students identified with moderate disabilities receive each day and scores on the KAMM Mathematics.

To analyze the relationship between the paraeducator support high school students with moderate disabilities receive each day and scores on the KAMM Mathematics, a Pearson product-moment correlation coefficient was calculated. The researcher calculated the correlation coefficient to determine the strength and direction of the linear relationship between the number of minutes of paraeducator support received daily and student achievement in mathematics for high school students. A one-sample  $t$  test was conducted to test for the statistical significance of the correlation coefficient with the level of significance set at .05.

The correlation coefficient ( $r = -.070$ ) provided evidence for a weak negative relationship between the number of paraeducator minutes high school students receive daily and achievement scores on the KAMM Mathematics. The results of the one sample  $t$  test indicated that the relationship was not statistically significant between the number of paraeducator minutes high school students receive daily and achievement scores on the KAMM Mathematics,  $df = 55$ ,  $p = .603$ . The results of this test did not support that as the number of paraeducator minutes increases mathematic achievement decreases, or that as the number of paraeducator minutes increases mathematic achievement increases.

Table 10 summarizes the statistical information for all grade levels in the area of mathematics. Specifically, the table highlights the results of the Pearson product-moment correlation between minutes of paraeducator support and mathematic achievement as measured by the KAMM Mathematics. The grade level, correlation coefficient, degrees

of freedom, and  $p$ -value are included. For example, for grade 5 students the analysis revealed a correlation coefficient of  $-.146$ , degrees of freedom of  $63$ , and a  $p$ -value of  $.246$ .

Table 10

*Results of Pearson Product-moment Correlation between Minutes of Paraeducator Support and Mathematic Achievement as Measured by the KAMM Mathematics*

	$r$	$df$	$p$
Grade 3	$-.223$	$62$	$.076$
Grade 4	$-.137$	$72$	$.244$
Grade 5	$-.146$	$63$	$.246$
Grade 6	$-.106$	$66$	$.392$
Grade 7	$-.181$	$84$	$.096$
Grade 8	$.040$	$73$	$.731$
High School	$-.070$	$55$	$.603$

*Note.*  $r$  = Pearson product-moment correlation coefficient;  $df$  = Degrees of freedom;  $p$  = Probability

This section provided a review of each of the research questions and hypotheses associated with the question. Also included were the hypothesis testing method and the results of the hypothesis testing. Tables summarizing the statistical information for all grade levels for the KAMM Reading and the KAMM Mathematics were included.

### **Summary**

Chapter four began with a summarization of the descriptive statistics used to describe the quantitative data for each grade level. Included was the sample size, mean scores, standard deviation, and minimum and maximum scores for the grade level for the

KAMM Reading and KAMM Mathematics. Also included in the descriptive statistics were the mean number of paraeducator minutes per day, standard deviation, and minimum and maximum number of paraeducator minutes per day for each grade level. Next, hypothesis testing results were discussed for each of this study's 14 research questions.

Results related to the research questions revealed that for grades 3, 4, 5, and 7 students there was a statistically significant negative relationship between the number of paraeducator minutes students receive daily and achievement scores on the KAMM Reading. For students in these grade levels, as the number of paraeducator minutes increased reading achievement decreased. For students in grades 6, 8, and high school (grade 10 or 11), there was no statistically significant relationship between the number of paraeducator minutes students receive daily and achievement scores on the KAMM Reading. For students in these grade levels, the data did not support that as the number of paraeducator minutes increased reading achievement decreased or that as the number of paraeducator minutes increased reading achievement increased. Results related to the research questions revealed that for grades 3 and 7 students there was a statistically significant negative relationship between the number of paraeducator minutes students receive daily and achievement scores on the KAMM Mathematics. For students in these grade levels, as the number of paraeducator minutes increased mathematics achievement decreased. For students in grades 4, 5, 6, 8, and high school (grades 10 or 11), there was no statistically significant relationship between the number of paraeducator minutes students receive daily and achievement scores on the KAMM Mathematics. For students in these grade levels, the data did not support that as the number of paraeducator minutes

increased mathematics achievement decreased or that as the number of paraeducator minutes increased mathematics achievement increased. The study revealed that there was no statistically significant positive relationship for students at any grade level for either reading or mathematics in which achievement increased as the amount of paraeducator support increased.

Chapter five presents the interpretations of the findings and the recommendations for future research. This chapter discusses the study summary including the overview of the problem, the purpose statement and research questions, the review of methodology, and the major findings. A discussion of the findings related to the literature follows the study summary. The chapter concludes with implications for action, recommendations for future research, and concluding remarks.

## Chapter Five

### Interpretation and Recommendations

The previous chapter presented the results of the data analysis for this study. Chapter five summarizes the study by restating the overview of the problem, the purpose statement and research questions, the methodology, and the major findings of this research. A discussion of the findings related to the literature follows. The chapter concludes with implications for action, recommendations for future research designed to complement or extend the findings of this study, and concluding remarks.

#### Study Summary

The following section provides a summary of the current study. The summary contains an overview of the problem concerning the utilization of paraeducators to improve outcomes for students with disabilities. The next section states the purpose of the study and the research questions. The summary concludes with a review of the methodology and the study's major findings.

**Overview of the Problem.** A great amount of local, state, and federal funding is allocated and expended to employ paraeducators in school districts for the purpose of providing support for students with disabilities in the general education classroom. Many times paraeducators in a school district outnumber the certified special education staff (U.S. Department of Education, 2010). It is common practice in schools to use paraeducators, the lowest paid, least qualified member of the educational team, as the primary support for students with intensive instructional and behavioral needs. This practice creates concerns that students qualifying for special education services have less

engagement with teachers and peers, are stigmatized due to the proximity of the paraeducator for extended periods, and demonstrate an overreliance on adults (Causton-Theoharis, 2009; Giangreco, 2003; Giangreco et al., 2001; Giangreco & Hoza, 2013; Giangreco et al., 2010; Hemmingsson et al., 2003; Skar & Tamm, 2001; Suter & Giangreco, 2009). While assigning paraeducators to support students with the greatest needs is a prevalent practice, researchers note that there has been little research to support the use of paraeducators in improving outcomes for students with disabilities included in the general education classroom (Farrell et al., 2010; Giangreco et al., 2012; Giangreco & Broer, 2007; Russell et al., 2012).

**Purpose Statement and Research Questions.** The purpose of this research was to determine if the amount of paraeducator support provided to students identified with moderate disabilities impacted academic performance as measured by standardized state assessments. Specifically, the current study investigated to what extent there was a relationship between the minutes of paraeducator support a student receives each day and each of the following: scores on the KAMM Reading and scores on the KAMM Mathematics. The students in this study were enrolled in grades 3, 4, 5, 6, 7, 8 and high school (grade 10 or 11) as students in these grades are assessed annually using the KAMM Reading and KAMM Mathematics.

**Review of the Methodology.** The population for this study included all students in a Midwest suburban school district in grades 3, 4, 5, 6, 7, 8, and grade 10 or 11 identified with moderate disabilities whose achievement in reading and/or mathematics was measured using the KAMM Reading or KAMM Mathematics during the 2011-2012 and 2012-2013 school years. Purposive sampling was used for participant selection. The

researcher reviewed IEPs and reported the documented daily minutes of paraeducator support from the Service Delivery page. The district's Assessment Department provided the student achievement scores for the study. The researcher calculated Pearson product-moment correlation coefficients to determine the strength and direction of the relationship between the pairs of variables at each tested grade level for both reading and mathematics. The statistical significance of the correlation coefficients was tested using a *t* test.

**Major Findings.** Results related to the research questions revealed that for grades 3, 4, 5, and 7 students there was a statistically significant negative relationship between the number of paraeducator minutes students receive daily and achievement scores on the KAMM Reading. For students in these grade levels, as the number of paraeducator minutes increased reading achievement decreased. For students in grades 6, 8, and high school (grade 10 or 11), there was no statistically significant relationship between the number of paraeducator minutes students receive daily and achievement scores on the KAMM Reading. For students in these grade levels, the data did not support that as the number of paraeducator minutes increased reading achievement decreased or that as the number of paraeducator minutes increased reading achievement increased. Results related to the research questions revealed that for grades 3 and 7 students there was a statistically significant negative relationship between the number of paraeducator minutes students receive daily and achievement scores on the KAMM Mathematics. For students in these grade levels, as the number of paraeducator minutes increased mathematics achievement decreased. For students in grades 4, 5, 6, 8, and high school (grades 10 or 11), there was no statistically significant relationship between the

number of paraeducator minutes students receive daily and achievement scores on the KAMM Mathematics. For students in these grade levels, the data did not support that as the number of paraeducator minutes increased mathematics achievement decreased or that as the number of paraeducator minutes increased mathematics achievement increased. The study revealed that there was no statistically significant positive relationship, for either reading or mathematics, in which achievement increased as the amount of paraeducator support increased for students with moderate disabilities at any grade level.

### **Findings Related to the Literature**

This section examines this study's findings as they relate to the literature regarding outcomes for students who receive paraeducator support. Specifically, this research focused on the relationship between the minutes of paraeducator support students identified with moderate disabilities receive each day and scores on the KAMM Reading and the KAMM Mathematics. Since very little research exists in the literature concerning student outcomes, the findings from the current study could be compared to only a few studies.

Major literature reviews published between 1993 and 2010 indicated that little research has been conducted related to outcomes for students with moderate and significant disabilities being supported by paraeducators in the inclusive general education setting (Giangreco et al, 2001; Giangreco et al., 2010; Jones & Bender, 1993). According to the reviewers, research conducted between these dates suggested that further research on student outcomes was warranted to inform practice on the assignment of paraeducators; however, few studies have attempted to establish a relationship between

paraeducator support and student achievement (Giangreco et al., 2001). A limited number of studies conducted between 2007 and 2012 found a negative relationship between the assignment of a paraeducator and student achievement (Farrell et al., 2010; Giangreco & Broer, 2007; Russell et al., 2012). The current study was conducted to fill a gap in the body of research that could assist in determining if students with disabilities assigned paraeducator support demonstrate gains in academic achievement.

The findings from the current study are consistent with the research findings of Giangreco and Broer (2007), who found that data does not suggest that students with disabilities learn more or better with paraeducator support. The results of the current study indicated that for students in grades 3, 4, 5, and 7, as the number of paraeducator minutes increased, reading achievement as measured by the KAMM Reading decreased. Likewise, the results of the current study indicated that for students in grades 3 and 7, as the number of paraeducator minutes increased, mathematics achievement as measured by the KAMM Mathematics decreased. Furthermore, the current study revealed that there was no statistically significant positive relationship, for either reading or mathematics, in which achievement increased as the amount of paraeducator support increased for students with moderate disabilities at any grade level.

Additionally, the findings of the current study are consistent with those of Russell, Webster, and Blatchford (2012) who found that the impact of paraeducator support on student achievement was negative. The current study revealed that students with moderate disabilities in grades 3, 4, 5, and 7 scored lower on reading achievement measures as the number of minutes of paraeducator support increased. Similar results were found in mathematics for students with moderate disabilities in grades 3 and 7.

Likewise, the findings of the current study are consistent with those of Farrell et al. (2010) who concluded that the presence of paraeducators in supporting students with disabilities in an inclusive classroom did not have a positive impact on the academic achievement of these students. In the current study, for students in grades 6, 8, and high school for reading, the results indicated there is no relationship between the number of paraeducator minutes of support that students receive each day and increases or decreases in student achievement as measured by scores on the KAMM Reading. In the current study, for students in grades 4, 5, 6, 8 and high school for mathematics, the results indicated there is no relationship between the number of paraeducator minutes of support that students receive each day and increases or decreases in student achievement as measured by scores on the KAMM Mathematics.

### **Conclusions**

This section provides conclusions drawn from the current study on the relationship between paraeducator support and student scores on the KAMM Reading and KAMM Mathematics. Implications for action and recommendations for further research are included. Concluding remarks complete this section.

**Implications for Action.** Giangreco and Broer (2007) reported that for 80% of schools field-testing a screening tool to assess overreliance on paraeducators, paraeducators were considered the only means of support for students with disabilities rather than one of a menu of options to contemplate. Based on the findings of the present study as well as other studies finding negative relationships between the assignment of paraeducators and student achievement (Farrell, et al., 2010; Giangreco & Broer, 2007; Russell et al., 2012), it is incumbent upon school districts to review foundational beliefs

on educating students with disabilities, especially for those students who receive paraeducator support.

The present study has implications for district and building administrators, general education teachers, special education staff, and parents interested in improving outcomes for students receiving special education services. First, for district administrators, this study offers insights into the effectiveness, or lack of effectiveness, of paraeducator support to improve student achievement. Ongoing dialogue with building administrators, special and general education teachers, paraeducators, parents, and students would be a first step in the development of a strategic plan for addressing issues related to the utilization of paraeducators. District administrators must be aware of and understand the research related to paraeducators and student achievement, as well as the state and national data on the prevalence of paraeducators, in order to enact necessary changes at the district level that will transform practice at the building level.

Furthermore, the current study has implications for building principals because the findings offer evidence that student achievement does not necessarily improve as paraeducator support increases. Since a student's IEP team determines the amount of paraeducator support needed by the student, building principals might choose to lead staff in reflective activities concerning building practices related to the assignment of paraeducators. Conducting a needs assessment to determine if the school is overreliant on paraeducators, followed by the development of a building improvement plan to address identified issues, could positively affect the achievement of students with disabilities.

Finally, this study has implications for general and special education teachers as well as the paraeducators who are assigned to support students with disabilities. Through professional development opportunities for all staff focused on improving paraeducator effectiveness, outcomes for students with disabilities could improve. Ongoing training related to student independence might include topics such as teacher and peer engagement, strategies to promote student independence, and approaches to fading paraeducator support. The following section provides a discussion of recommendations for future research that might extend the findings of the present study.

**Recommendations for Future Research.** The purpose of this study was to determine the relationship between paraeducator support and academic achievement for students with moderate disabilities. While there is a large volume of diverse research available on paraeducator topics, there are few studies related to the relationship between paraeducator support and academic achievement for students. There are even fewer studies investigating outcomes for students who receive paraeducator support in the general education classroom setting. While this study was useful in expanding the body of research related to outcomes for students, there are several recommendations for future research.

The KAMM Reading and KAMM Mathematics measures were administered for the final time during the 2012-2013 school year. During the 2013-2014 school year, students were administered new state assessments aligned with the Kansas College and Career Ready Standards (KCCRS). A separate test was not developed for students with moderate disabilities, rather these students were administered the same state assessment taken by students without disabilities. The purpose of new assessment administration

during the 2013-2014 school year was to gather the data necessary to norm the assessment for each grade level. Once student achievement data for the new state assessment become available for district use, this study should be replicated to compare the relationship between the minutes of paraeducator support students identified with moderate disabilities receive each day and scores on revised state assessments.

A second suggestion for future research would be to examine the differences in paraeducator competencies and professional learning experiences and student outcomes. First, a future study might explore the relationship of paraeducator years of experience, understanding of academic content, or use of effective teaching strategies and student achievement. In addition, a future study could investigate professional learning experiences of paraeducators. All districts are obligated to provide staff development for paraeducators and all paraeducators are required to participate in 20 hours of staff development each year. A future study should investigate the types of training paraeducators choose to complete and the alignment of the training to the needs of the student receiving paraeducator support.

Findings by Giangreco et al. (2010a) indicated that teachers were less engaged with students with disabilities when students were assigned a paraeducator. A future study could examine teacher engagement and student outcomes to determine if there are differences in teacher involvement for students with disabilities depending on the amount of paraeducator time assigned to the student, teacher experience, or the content area being taught. In addition, paraeducator and teacher perceptions related to paraeducator competencies might be another area of investigation. Specifically, a future study could determine the differences between paraeducators' perceptions about their ability to teach

mathematic and reading skills to students with disabilities and student outcomes in these curricular areas. In addition, a study could investigate the general education teachers' and special educators' perceptions of paraeducators' ability to teach mathematic and reading skills to students with disabilities and student outcomes in these curricular areas.

**Concluding Remarks.** The results of the present study contributed to the body of work completed by preceding researchers relating to paraeducator support and academic achievement for students with disabilities. This investigation revealed that for students with disabilities in some grade levels, as the number of paraeducator minutes increased reading or mathematics achievement decreased. For other grade levels, there was not a relationship between the number of paraeducator minutes a student with a disability received and increases or decreases in student achievement in reading or mathematics. Yet the study revealed that there was no statistically significant positive relationship, for either reading or mathematics, in which achievement increased as the amount of paraeducator support increased for students with disabilities at any grade level.

Paraeducators are indispensable members of the special education landscape in our schools. Their support for students with disabilities is offered with the best of intentions, as most educators and parents are not aware of the research findings emphasizing the potential for detrimental and unintended consequences of paraeducator support. Students with special needs deserve a quality education comparable to that of their peers. While supports, accommodations, and modifications may be necessary for students qualifying for special services to access the curriculum and receive educational benefit, supports should result in positive outcomes and not be detrimental to achievement. This study supported previous research challenging educators to seek

alternative solutions to the common practice of assigning paraeducators as the primary instructional support to our students with the greatest educational needs. Furthermore, districts, schools, and educators are obligated to examine current practices at the district, building, and classroom levels to determine more effective options to providing a student necessary support rather than defaulting to the assignment of a paraeducator.

## References

- Ashbaker, B. Y., & Morgan, J. (2004). Legal issues relating to school paraprofessionals. *A Legal Memorandum-Quarterly Law Topics for School Leaders: National Association of Secondary Principals*, Spring, 1-8.
- Ashbaker, B. Y., & Morgan, J. (2006). *Paraprofessionals in the classroom*. Boston, MA: Pearson.
- Ashbaker, B. Y., & Morgan, J. (2012). Team players and team managers: Special educators work with paraeducators to support inclusive classrooms. *Creative Education*, 3, 322-327.
- Bingham, G. E., Hall-Kenyon, K. M., & Culatta, B. (2010). Systematic and engaging early literacy: Examining the effects of paraeducator implemented early literacy instruction. *Communication Disorders Quarterly*, 31(1), 38-43.
- Blacher, J., & Rodriguez, T. (2007). Holding on to their kitemstrings: Paraprofessional support in inclusive settings. *Exceptional Parent*, 37(10), 74-76.
- Blalock, G. (1991). Paraprofessionals: Critical team members in our special education programs. *Intervention in School and Clinic*, 36, 200-214.
- Blalock, G., Rivera, D., Anderson, K., & Kottler, B. (1992). A school district/university partnership in paraprofessional training. *LD Forum* 17(3), 29-36.
- Boomer, L. W. (1994). The utilization of paraprofessionals in programs for students with autism. *Focus on Autistic Behavior*, 9(2), 1-9.
- Broer, S. M., Doyle, M. B., & Giangreco, M. F. (2005). Perspectives of students with intellectual disabilities about their experiences with paraprofessional support. *Exceptional Children*, 71(4), 415-430.

- Brown, L., Farrington, K., Knight, T., Ross, C., & Ziegler, M. (1999). The need for fewer paraprofessionals and more teachers and therapists in educational programs for students with disabilities. *Journal of the Association for Persons with Severe Handicaps*, 24(4), 249-252. Retrieved from <http://www.uvm.edu/~cdci/parasupport/reviews/Brown.pdf>
- Bureau of Labor Statistics. (2012-13). *Occupational outlook handbook: Teacher assistants* (U.S. Department of Labor, Comp.). Retrieved from <http://www.bls.gov/oes/current/oes259041.htm>
- Burnstein, N., Sears, S., Wilcoxon, A., & Cabello, B. (2004). Moving toward inclusive practices. *Remedial and Special Education*, 25(2), 104-116.
- Carroll, D. (2001). Considering paraeducator training, roles, and responsibilities. *TEACHING Exceptional Children*, 34(2), 60-64.
- Carter, E. W., O'Rourke, L., Sisco, L., & Pelsue, D. (2009). Knowledge, responsibilities, and training needs of paraprofessionals in elementary and secondary schools. *Remedial and Special Education*, 30, 344-359. doi:10.1177/0741932508324399
- Carter, E. W., Sisco, L. G., & Lane, K. L. (2011). Paraprofessional perspectives on promoting self-determination among elementary and secondary students with severe disabilities. *Research & Practice for Persons with Severe Disabilities*, 36(1-2), 1-10. doi:10.2511/rpsd.36.1-2.1
- Causton-Theoharis, J. N. (2009). The golden rule of providing support in inclusive classrooms: Support others as you would wish to be supported. *TEACHING Exceptional Children*, 42(2), 36-43.

- Causton-Theoharis, J. N., Giangreco, M. F., Doyle, M. B., & Vadasy, P. F. (2007). Paraprofessionals: The "sous chefs" of literacy instructional. *TEACHING Exceptional Children*, 40(1), 56-62.
- Causton-Theoharis, J. N., & Malmgren, K. W. (2005a). Building bridges: Strategies to help paraprofessionals promote peer interaction. *TEACHING Exceptional Children*, 37(6), 18-24.
- Causton-Theoharis, J. N., & Malmgren, K. W. (2005b). Increasing interactions between students with severe disabilities and their peers via paraprofessional training. *Exceptional Children*, 71, 431-444.
- Chopra, R. V., & French, N. K. (2004). Paraeducator relationships with parents of students with significant disabilities. *Remedial and Special Education*, 25(4), 240-251.
- Chopra, R. V., Sandoval-Lucero, E., Aragon, L., Bernthal, C., Berg de Balderas, H., & Carroll, D. (2004). The paraprofessional role of connector. *Remedial and Special Education*, 25(4), 219-231.
- Chopra, R. V., Sandoval-Lucero, E., & French, N. K. (2011). Effective supervision of paraeducators: Multiple benefits and outcomes. *National Teacher Education Journal*, 4(2), 15-26.
- Collins, B., & Wolery, M. (2012). *Systematic instruction for students with moderate and severe disabilities*. Baltimore, MD: Brookes.
- Connally Independent School District, 34 IDELR 309 (SEA TX 2001).

- Devlin, P. (2005). Effect of continuous improvement training on student interaction and engagement. *Research and Practice for Persons with Severe Disabilities*, 30, 47-59.
- Downing, J., Ryndak, D., & Clark, D. (2000). Paraeducators in inclusive classrooms. *Remedial and Special Education*, 21, 171-181. doi:10.1177/074193250002100308
- Doyle, M. B. (2002). *The paraprofessionals guide to inclusive education: Working as a team* (2nd ed.). Baltimore, MD: Paul H. Brookes.
- Etscheidt, S. (2005). Paraprofessional services for students with disabilities: A legal analysis of issues. *Research & Practice for Persons with Severe Disabilities*, 30(2), 60-80.
- Farrell, P., Alborz, A., Howes, A., & Pearson, D. (2010). The impact of teaching assistant on improving pupils' academic achievement in mainstream schools: A review of the literature. *Educational Review*, 62(4), 435-448. doi:10.1080/00131911.2010.486476
- Fasulo, E. B. (2013). Certified special educators and paraeducators in select Kansas districts 2012-2013 [data file].
- French, N. K. (1998). Working together: Resource teachers and paraeducators. *Remedial and Special Education*, 19, 357-368.
- French, N. K. (1999). Paraeducators: Who are they and what do they do? *TEACHING Exceptional Children*, 31(1), 65-69.
- French, N. K. (2001). Supervising paraprofessionals: A survey of teachers practices. *Research and Practice for Persons with Severe Disabilities*, 35, 41-553.

- French, N. K. (2003a). *Managing paraeducators in your school: How to hire, train, and supervise non-certified staff*. Thousand Oaks, CA: Corwin.
- French, N. K. (2003b). Paraeducators in special education programs. *Focus on Exceptional Children*, 36(2), 1-16.
- French, N. K., & Chopra, R. (1999). Parent perspectives on the roles of paraprofessionals. *Journal of the Association for Persons with Severe Handicaps*, 24(4), 259-272.
- French, N. K., & Pickett, A. L. (1997). Paraprofessionals in special education: Issues for teacher educators. *Teacher Education and Special Education*, 20(1), 61-73.
- Freschi, D. F. (1999). Guidelines for working with one-to-one aides. *TEACHING Exceptional Children*, 31(4), 42-47.
- Gerber, S. G., Finn, J. D., Archilles, C. M., & Boyd-Zaharias, J. (2001). Teacher aides and students' academic achievement. *Educational Evaluation and Policy Analysis*, 23(2), 123-143.
- Ghere, G., & York-Barr, J. (2007). Paraprofessional turnover and retention in inclusive programs: Hidden costs and promising practices. *Remedial and Special Education*, 28(1), 21-32.
- Giangreco, M. F. (2003). Working with Paraprofessionals. *Educational Leadership*, 61(2), 50-53.
- Giangreco, M. F. (2009, April). *Critical issues brief: Concerns with the proliferation of one-to-one paraprofessionals*. Retrieved from <http://www.dddcec.org/positionpapers.htm>

- Giangreco, M. F. (2010a). One-to-one paraprofessionals for students with disabilities in inclusive classrooms: Is conventional wisdom wrong? *Intellectual & Developmental Disabilities, 48*(1), 1-13. doi:10.1352/1934-9556-48.1.1
- Giangreco, M. F. (2010b). Utilization of teacher assistants in inclusive schools: Is it the kind of help that helping is all about? *European Journal of Special Needs Education, 25*(4), 341-345. doi:10.1080/08856257.2010.513537
- Giangreco, M. F. (2013). Teacher assistant supports in inclusive schools: Research, practices, and alternatives. *Australasian Journal of Special Education, 37*(2), 93-106. doi:10.1017/jse.2013.1
- Giangreco, M. F., & Broer, S. M. (2005). Questionable utilization of paraprofessionals in inclusive schools: Are we addressing symptoms or causes? *Focus on Autism and Other Developmental Disabilities, 20*(1), 10-26.
- Giangreco, M. F., & Broer, S. M. (2007). School-based screening to determine overreliance on paraprofessionals. *Focus on Autism and Other Developmental Disabilities, 22*(3), 149-158. doi:10.1177/10883576070220030201
- Giangreco, M. F., Broer, S. M., & Edelman, S. W. (1999). The tip of the iceberg: Determining whether paraprofessional support is needed for students with disabilities in general education settings. *Journal of the Association for Persons with Severe Handicaps, 24*, 280-290.

- Giangreco, M. F., Broer, S. M., & Edelman, S. W. (2001). Teacher engagement with students with disabilities: Differences between paraprofessional service delivery models. *Journal of the Association for Persons with Severe Handicaps*, 26(2), 75-86. Retrieved from <http://www.uvm.edu/~cdci/parasupport/reviews/teacherengagement.pdf>
- Giangreco, M. F., Broer, S. M., & Edelman, S. W. (2002). "That was then, this is now!" Paraprofessional supports for students with disabilities in general education classrooms. *Exceptionality*, 10(1), 47-64.
- Giangreco, M. F., Broer, S. M., & Suter, J. C. (2011). Guidelines for selecting alternatives to overreliance on paraprofessionals: Field-testing in inclusion-oriented schools. *Remedial and Special Education*, 32(1), 22-38. doi:10.1177/0741932509355951
- Giangreco, M. F., CichoskiKelly, E., Backus, L., Edelman, S. W., Tucker, P., Broer, S., CichoskiKelly, C., & Spiney, P. (1999, March). Developing a shared understanding: Paraeducator supports for students with disabilities in general education. *TASH Newsletter*, 25(3), 21-23.
- Giangreco, M. F., & Doyle, M. B. (2002). Students with disabilities and paraprofessional supports: Benefits, balance, and band-aids. *Focus on Exceptional Children*, 34(7), 1-12.
- Giangreco, M. F., & Doyle, M. B. (2004). Directing paraprofessional work. In C. Kennedy & E. Horn (Eds.), *Including student with severe disabilities* (pp. 185-204). Boston, MA: Allyn & Bacon.

- Giangreco, M. F., Doyle, M. B., Halvorson, A. T., & Broer, S. M. (2004). Alternatives to overreliance on paraprofessionals in inclusive education. *Journal of Special Education Leadership, 17*(2), 82-90.
- Giangreco, M. F., Doyle, M. B., & Suter, J. C. (2012). Constructively responding to requests for paraprofessionals: Field-testing in inclusion-oriented schools. *Remedial and Special Education, 33*, 362-373. doi:10.1177/0741932509355951
- Giangreco, M. F., Doyle, M. B., & Suter, J. C. (2013). Teacher assistants in inclusive classrooms. In L. Florian (Ed.), *The SAGE handbook of special education* (2nd ed., pp. 691-701). London, UK: Sage.
- Giangreco, M. F., Edelman, S. W., & Broer, S. M. (2001). Respect, appreciation, and acknowledgement of paraprofessionals who support students with disabilities. *Exceptional Children, 67*, 485-498.
- Giangreco, M. F., Edelman, S. W., & Broer, S. M. (2003). Schoolwide planning to improve paraeducator supports. *Exceptional Children, 70*(1), 63-79.
- Giangreco, M. F., Edelman, S. W., Broer, S. M., & Doyle, M. B. (2001). Paraprofessional support of students with disabilities: Literature from the past decade. *Exceptional Children, 68*(1), 45-63.
- Giangreco, M. F., Edelman, S. W., Luiselli, E., & MacFarland, S. Z. (1997). Helping or hovering? Effects of instructional assistant proximity on students with disabilities. *Exceptional Children, 64*, 7-18.
- Giangreco, M. F., & Hoza, B. (2013). Are paraprofessional supports helpful? *Attention, 20*(4), 22-25.

- Giangreco, M. F., Hurley, S. M., & Suter, J. C. (2009a). Personnel utilization and general class placement of students with disabilities: Ranges and ratios. *Intellectual and Developmental Disabilities, 47*(1), 53-56.
- Giangreco, M. F., Hurley, S. M., & Suter, J. C. (2009b). Revisiting personnel utilization in inclusion-oriented schools. *Intellectual and Developmental Disabilities, 47*(1), 53-56. doi: 10.1352/2009.47:53-56
- Giangreco, M. F., Smith, C. S., & Pinckney, E. (2006). Addressing the paraprofessional dilemma in an inclusive school: A program description. *Research and Practice for Persons with Severe Disabilities, 31*, 215-229.
- Giangreco, M. F., Suter, J. C., & Doyle, M. B. (2010). Paraprofessionals in inclusive schools: A review of recent research. *Journal of Educational and Psychological Consultation, 20*(1), 41-57. doi:10.1080/10474410903535356
- Giangreco, M. F., Suter, J. C., & Hurley, S. M. (2013). Revisiting personnel utilization in inclusion-oriented schools. *Journal of Special Education, 47*(10), 121-132. doi: 10.1177/0022466911419015
- Giangreco, M. F., Yuan, S., McKenzie, B., Cameron, P., & Fialka, J. (2005). "Be careful what you wish for...": Five reasons to be concerned about the assignment of individual paraprofessionals. *Teaching Exceptional Children, 35*(5), 28-34.
- Hampden-Thompson, G., Diehl, J., & Kinukawa, A. (2007). *Description and Employment criteria of instructional paraprofessionals*. Jessup, MD: U.S. Government Printing Office.

- Hemmingsson, H., Borell, L., & Gustavsson, A. (2003). Participation in school: School assistants creating opportunities and obstacles for pupils with disabilities. *Occupational Therapy Journal of Research*, 23(3), 88-98. Retrieved from <http://www.uvm.edu/~cdci/parasupport/reviews/hemmingsson.html>
- Hilton, A., & Gerlach, K. (1997). Employment, preparation and management of paraeducators: Challenges to appropriate services for students with developmental disabilities. *Education and Training in Mental Retardation and Developmental disabilities*, 32, 71-77.
- Jones, K. H., & Bender, W. N. (1993). Utilization of paraprofessionals in special education: A review of the literature. *Remedial and Special Education*, 14, 7-14.
- Kansas State Department of Education. (2011, June). *Kansas special education services process handbook*. Topeka, KS: Kansas State Department of Education.
- Kansas State Department of Education. (2012, August). *KSDE reading assessment fact sheet*. Topeka, KS: Kansas State Department of Education.
- Kansas State Department of Education. (2013, August). *Special education reimbursement guide: State categorical aid*. Topeka, KS: KSDE.
- Katsiyannis, A., Hodge, J., & Lanford, A. (2000). Paraeducators: legal and practice considerations. *Remedial and Special Education*, 21(5), 297-304.
- Keller, C. L., Bucholz, J., & Brady, M. P. (2007). Yes, I can! Empowering paraprofessionals to teach learning strategies. *TEACHING Exceptional Children*, 39(3), 18-23.
- Lake Travis Independent School District, 4 ECLPR 500 (SEA TX 2003).

- Liston, A. G., Nevin, A., & Malian, I. (2009). What do paraeducators in inclusive classrooms say about their work? Analysis of national survey data and follow-up interviews in California. *TEACHING Exceptional Children Plus*, 5(5), 3-17.
- Livingston, S. A., & Lewis, C. (1995). Estimating the consistency and accuracy of classifications based on test scores. *Journal of Educational Measurement*, 32(Summer), 179-197. doi:10.1111/j.1745-3984.1995.tb00462.x
- Lunenburg, F. C., & Irby, B. J. (2008). *Writing a successful thesis or dissertation: Tips and strategies for students in the social and behavioral sciences*. Thousand Oaks, CA: Corwin Press.
- Lushen, K., Kim, O., & Reid, R. (2012). Paraeducator-led instruction for struggling writers. *Exceptionality*, 20(4), 250-265. doi: 10.1080/09362835.2012.724626
- Malmgren, K. W., & Causton-Theoharis, J. N. (2006). Boy in the bubble: Effects of paraprofessional proximity and other pedagogical decisions on interactions of a student with behavior disorders. *Journal of Research in Childhood Education*, 20(4), 302-312.
- Malmgren, K. W., Causton-Theoharis, J. N., & Trezek, B. J. (2005). Increasing peer interaction for students with behavioral disorders via paraprofessional training. *Behavioral Disorders*, 31(1), 95-106.
- Marks, S. U., Schrader, C., & Levine, M. (1999). Paraeducator experiences in inclusive settings: Helping, hovering, or holding their own? *Exceptional Children*, 65(3), 315-328.

- McDonnell, J., Johnson, J. W., Polychronis, S., & Risen, T. (2002). Effects of embedded instruction on student with moderate disabilities enrolled in general education classes. *Education and Training in Mental Retardation and Developmental Disabilities, 37*, 363-377.
- McGrath, M. Z., Johns, B. H., & Mathur, S. R. (2010). Empowered or overpowered? Strategies for working effectively with paraprofessionals. *Beyond Behavior*, Winter, 2-6. Retrieved from <http://blogs.gssd.ca/studentsservices/files/2011/09/Empowered-or-Overpowered.pdf>
- Menlo Park City Elementary School District, 36 IDELR 230 (SEA CA 2002).
- Milley, A., & Machalicek, W. (2012). Decreasing students' reliance on adults: A strategic guide for teachers of students with autism spectrum disorder. *Intervention in School and Clinic, 48*(2), 67-75. doi:10.1177/1053451212449739
- Minondo, S., Meyer, L., & Xin, J. (2001). The roles and responsibilities of teaching assistants in inclusive education: What's appropriate? *Journal of the Association for Persons with Severe Handicaps, 26*, 114-119.
- Molly L. v. Lower Merion School District, 36 IDELR 182 (ED PA 2002).
- Mueller, P. H. (2002). The paraeducator paradox. *Exceptional Parent, 32*(9), 64-67.
- Mueller, P. H., & Murphy, F. V. (2001). Determining when a student requires paraeducator support. *TEACHING Exceptional Children, 33*(6), 22-27.
- National Resource Center for Paraeducators. (n.d.-a). *Paraeducator state of the art: Historical perspective (1950-1980)*. Retrieved from National Resource Center for Paraeducators website: <http://www.nrcpara.org/report/historical>

- National Resource Center for Paraeducators. (n.d.-b). (*Teacher and paraeducator team roles*). Retrieved from National Resource Center for Paraeducators website:  
<http://www.nrcpara.org/book/export/html/1101>
- Nevin, A., Villa, R. A., & Thousand, J. S. (2009). *A guide to co-teaching with paraeducators: Practical tips for K-12 educators*. Thousand Oaks, CA: Corwin.
- O'Shaughnessy, T. E., & Swanson, L. (2000). A comparison of two reading interventions for with reading disabilities. *Journal of Learning Disabilities, 33*, 257-277.
- Pankake, A., Littleton, M., & Schroth, G. (2005). *The administration & supervision of special programs in education* (2nd ed.). Dubuque, IA: Kendall/Hunt.
- Patterson, K. B. (2006). Roles and responsibilities of paraprofessionals: In their own words. *TEACHING Exceptional Children Plus, 2*(5). Retrieved from <http://files.eric.ed.gov/fulltext/EJ967108.pdf>
- Pickett, A. (1994). *Paraprofessionals in the education workforce*. Washington, DC. National Education Association.
- Pickett, A. L., & Gerlach, K. (2003). *Supervision paraeducators in school settings: A team approach*. Austin, TX: Pro-Ed.
- Pickett, A. L., Gerlach, K., Morgan, R., Likins, M., & Wallace, T. (2007). *Paraeducators in schools: Strengthening the educational team*. Austin, TX: Pro-Ed.
- Pickett, A. L., Likins, M., & Wallace, T. (2003). *The employment and preparation of paraeducators: The state of the art- 2003* (Report No. 7). Retrieved from <http://www.nrcpara.org/report>

- Poggio, A. J., Yang, X., Irwin, P. M., Glasnapp, D. R., & Poggio, J. P. (2008, September). *Kansas assessments in reading and mathematics: Technical manual for the Kansas assessments of modified measures*. Lawrence, KS: University of Kansas.
- Riggs, C. G., & Mueller, P. H. (2001). Employment and utilization of paraeducators in inclusive settings. *Journal of Special Education, 35*, 54-62. doi:10.1177/002246690103500106
- Rubie-Davies, C. M., Blatchford, P., Webster, R., Koutsoubou, M., & Bassett, P. (2010). Enhancing learning? A comparison of teacher and teaching assistant interactions with pupils. *School Effectiveness and School Improvement, 21*, 429-449. doi:10.1080/09243453.2010.512800
- Ruedel, K., Diamond, C. M., Zaidi, A., & Aboud, A. (n.d.). The inclusive environment: Paraeducators and teachers working together. Retrieved November 11, 2013, from Academic.edu website: [https://www.academia.edu/922366/The\\_Inclusive\\_Environment\\_Paraeducators\\_and\\_Teachers\\_Working\\_Together](https://www.academia.edu/922366/The_Inclusive_Environment_Paraeducators_and_Teachers_Working_Together)
- Russell, A., Webster, R., & Blatchford, P. (2012). *Maximizing the impact of teaching assistants: Guidance for school leaders and teachers*. London, UK: Routledge.
- Russell, A., Webster, R., & Blatchford, P. (2013). *Making the most of teaching assistants: Guidance for school leaders and teachers*. New York, NY: Routledge.
- Salzberg, C. L., & Morgan, J. (1995). Preparing teachers to work with paraeducators. *Teacher Education and Special Education, 18*, 49-55.
- Sands, D. J., Kozleski, E. B., & French, N. D. (2000). *Inclusive education for the 21st century*. Belmont, CA: Wadsworth/Thompson Learning.

- Simpson, R. L., Lacava, P. G., & Graner, P. S. (2004). The No Child Left Behind Act: Challenges and implications for educators. *Intervention in School and Clinic, 40*(2), 67-75. doi:10.1177/10534512040400020101
- Sindelar, P. T., Shearer, D. K., Yendol-Hoppey, D., & Liebert, T. W. (2006). The sustainability of inclusive school reform. *Exceptional Child, 72*(3), 317-331.
- Skar, L., & Tamm, M. (2001). My assistant and I: Disabled children's and adolescents' roles and relationships to their assistants. *Disabilities and Society, 16*, 917-931. doi:10.1080/09687590120084010
- South River Board of Education, 39 IDELR 88 (SEA NJ 2003).
- Strully, J., & Strully, C. (1985). Friendship and our children. *Journal of the Association for Persons with Severe Handicaps, 10*, 224-227.
- Suter, J. C., & Giangreco, M. F. (2009). Numbers that count: Exploring special education and paraprofessional service delivery in inclusion-oriented schools. *Journal of Special Education, 43*(2), 81-93. doi:10.1177/0022466907313353
- Tallman, M. (2013, August). *Tallman Education Report: What is the real state of Kansas school funding?* Retrieved from Kansas Association of School Boards website: <http://tallmankasb.blogspot.com/2013/08/what-is-real-state-of-kansas-school.html>
- Tews, L., & Lupart, J. (2008). Students with disabilities' perspectives of the role and impact of paraprofessionals in inclusive educational settings. *Journal of Policy and Practice in Intellectual Disabilities, 5*(1), 39-46.
- U.S. Department of Education. (2004). *Building the legacy: IDEA 2004*. Retrieved March 9, 2013 from <http://idea.ed.gov/>

- U.S. Department of Education. (2005). *Personnel employed (FTE) to provide special education and related services to children and students ages 3-21 under IDEA, Part B, by personnel type, certification status and state* [Data file]. Retrieved March 25, 2014 from <http://www.ideadata.org>
- U.S. Department of Education (2006). *Twenty-sixth annual report to Congress on the implementation of the Individuals with Disabilities Education Act, 2004*. Retrieved on April 21, 2014 from <http://www2.ed.gov/about/reports/annual/osep/2004/26th-vol-1.pdf>
- U.S. Department of Education. (2010). *Personnel employed (FTE) to provide special education and related services to children and students ages 3-21 under IDEA, Part B, by personnel type, certification status and state* [Data file]. Retrieved March 25, 2014 from <http://www.ideadata.org>
- U.S. Department of Education. (n.d.). *The role of paraprofessionals in special education*. Retrieved March 13, 2014, from Study of Personnel Needs in Special Education website: <http://education.ufl.edu/spense/files/2013/05/parasFinal.pdf>
- Vadasy, P. F., Sanders, E. A., & Tudor, S. (2007). Effectiveness of paraeducator-supplemented individual instruction: Beyond basic decoding skills. *Journal of Learning Disabilities, 40*(6), 508-525.
- Villa, R. A., Thousand, J. S., & Nevin, A. I. (2013). *A guide to co-teaching: New lessons and strategies to facilitate student learning* (3rd ed.). Thousand Oaks, CA: Corwin.
- Wallace, T. (2004). Paraprofessionals in schools: Topics for administrators. *Journal of Special Education Leadership, 17*, 46-61.

- Wallace, T., Shin, J., Bartholomay, T., & Stahl, B. (2001). Knowledge and skills for teachers supervising the work of paraprofessionals. *Exceptional Children, 67*, 520-533.
- Waterbury Board of Education, 37 IDELR 262 (SEA CT 2002).
- Werts, M. G., Harris, S., Tillery, C. Y., & Roark, R. (2004). What parents tell us about paraeducators. *Remedial and Special Education, 25*(4), 232-239.
- Werts, M.G., Wolery, M., Snyder, E., & Caldwell, N. (1996). Teachers' perceptions of the supports critical to the success of inclusion programs. *Journal of the Association for Persons with Severe Handicaps, 21*(9), 9-21.
- Werts, M. G., Zigmond, N., & Leeper, D. C. (2001). Paraprofessional proximity and academic engagement: Students with disabilities in primary aged-classrooms. *Education and Training in Mental Retardation and Developmental Disabilities, 36*, 424-440.
- Wolery, M., Werts, M. G., Caldwell, N. K., Snyder, E. D., & Liskowski, L. (1995). Experienced teachers' perceptions of resources and supports for inclusion. *Education and Training in Mental Retardation and Developmental Disabilities, 30*, 15-26.
- Young, B., Simpson, R. L., Myles, B. S., & Kamps, D. M. (1997). An examination of paraprofessional involvement in supporting inclusion of students with autism. *Focus on Autism and Other Developmental Disabilities, 12*(1), 31-38.
- Zieky, M., & Perie, M. (2006). *A primer on setting cut scores on tests of educational achievement*. Princeton, NJ: Educational Testing Service.

Zigmond, N. (2003). Where should students with disabilities receive special education services? Is one place better than another? *Journal of Special Education, 37*(3), 193-199.

## Appendices

**Appendix A: KAMM Eligibility Criteria**

**KAMM Eligibility Criteria**

Name \_\_\_\_\_

Date \_\_\_\_\_

**Required components:**

Grade \_\_\_\_\_

1. The student has a current IEP.
2. Student is not eligible for the alternate assessment in the content area being considered. (Eligibility must be determined for each content area separately.)
3. The decision to determine a student's eligibility to participate in the KAMM may **NOT RESULT PRIMARILY** from: excessive or extended absence, any specific categorical label nor social, cultural, or economic differences.

<b>Criteria</b>	<b>Data</b>
<b>All</b> criteria must be met to identify a student as eligible for participation in the KAMM.	<i>Supporting evidence for meeting these criteria</i>
<b><i>Intensive Individualized Instruction</i></b> <i>Does the student need <b>significant</b> changes in the complexity and scope of the general standards to show progress in the curriculum?</i>	
Requires intensive specially designed instruction AND	
Requires intensive individualized supports AND	
Requires extensive instruction AND	
<b><i>Classroom Assessment</i></b> <i>Does the student need supports to significantly reduce the complexity or breadth of assessment items?</i>	
Requires differentiated content for classroom assessment AND	
Needs to show what they know differently AND	
Accommodations alone do not allow the student to fully demonstrate knowledge AND	
<b><i>Student Performance</i></b> <i>Is the student <b>multiple</b> years behind grade level expectations?</i>	
Consistently requires instruction in pre-requisite skills to the grade level indicators being assessed AND	
Despite the provision of research based interventions, the student is not progressing at the rate expected for grade level AND	
<i>Student classroom achievement and performance is significantly below grade level peers</i>	
<i>Previous State Assessment Tests</i> <i>Regular with accommodations</i> <i>KAMM</i>	<i>Rating/Score</i>

**Appendix B: District Internal Research Application Request**

## Research Application Request-Internal

INSTRUCTIONS: Please provide the following information so that your project can be considered in relation to district criteria. Allow a minimum of two (2) weeks for completion of the review process.

PLEASE NOTE: Your final application should include submission of the following requirements:

- (1) the application,
- (2) a copy of your Human Experimentation Committee project review and approval (if applicable),
- (3) the Project Outline
- (4) a letter from your academic advisor/committee indicating that your research project has been reviewed and approved.

Send application to [REDACTED] Instructional Resource Center

### APPLICATION

**Applicant(s) Name:** Elaine Bertels Fasulo

**Position:** Director of Special Services

**School/Location:** Instructional Resource Center

**Telephone:** (913) 780-7344

**Email:** efasuloirc@[REDACTED]

**Project Title:** The Relationship between Paraeducator Support and Student Scores on the Kansas Assessment of Modified Measures

**The proposed research is for:** Doctoral Dissertation in partial fulfillment of the requirements for the degree of Doctor of Education in Educational Leadership

**Anticipated Dates:**

**Beginning Date:** 9/1/2013 **Ending Date:** 5/30/2014 **Date Final Report Available:** 12/30/2014

**Participant Description:**

**Number of Schools involved in the study:** No school will be directly involved as archived data will be used.

**Number of teachers involved in the study:** No teachers will be directly involved as archived data will be used.

**Number of students involved in the study:** Archived data from students' IEPs and Kansas Assessment of Modified Measures during the 2011-12 and 2012-13 school year will be used for all students taking the KAMM Read and/or Math

Has the project been submitted to a Human Experiment Committee?  YES  
 NO

**If no, please explain why your project has not been submitted to a committee on human experimentation.** The use of archived information only will be utilized in the present study. A Proposal for Research will be submitted to the Baker University Institutional Review Board once district approval has been granted.

**PROJECT OUTLINE:**

**1. Brief Review of the Literature**

In urban and suburban school districts in Kansas, paraeducators comprise a large classified employee group in school districts, many times outnumbering the certified special education staff. Districts invest a great amount of local, state, and federal funding into salaries, benefits, and training of paraeducators for the purpose of providing support to students with disabilities in general education classrooms. Concerns arise when paraeducators are used as the primary and sometimes only, instructional and behavioral support for students who qualify for special education services (Giangreco, Edelman, Broer, & Doyle, 2001; Hemmingsson, Borell, & Gustavsson, 2003; Skar & Tamm, 2001):

- Paraeducators may have the least educational qualifications but are delivering the majority of instruction to the students who have the greatest academic and behavioral needs.
- Retention of paraeducators is challenging due to low wages, inadequate training, lack of role clarification and supervision by certified teaching staff, and perceived lack of respect among educators, administrators, and students.
- Overuse of paraeducator support has been associated with negative results for students such as poor relationship development with age-level peers, less engagement with the classroom teacher, stigmatization due to the association with an adult for extended periods of time, and low acquisition of independence and over-reliance on adults (Giangreco, 2003).

Given the declining funding appropriated to the public schools in Kansas over the past five years, it is imperative that districts ensure that available financial resources are allocated to programs and services which have the greatest positive impact on student success in the classroom. Currently, little research in the field of special education has been conducted to support the position that use of paraeducators results in increased achievement for students with disabilities (Giangreco & Doyle, 2002).

## 2. Major Research Questions

To investigate whether the amount of paraeducator support received by a student with a moderate disability impacts achievement in school, the following major research question was developed:

To what extent is there a relationship between the minutes of paraeducator support students identified with moderate disabilities receive each day and scores on the Kansas Assessment of Modified Measures (KAMM)-Reading and/or Mathematics?

## 3. Methodology

The population for the study will include students in the [REDACTED] in grades 3, 4, 5, 6, 7, 8, and 10 or 11 receiving special education services and whose achievement in reading and/or mathematics was measured by the KAMM during the 2011-12 and 2012-13 school years. Students from 35 elementary schools, nine middle schools, and four high schools in the district will comprise the sample. For the present study, the researcher will utilize purposive sampling. Students will participate in the present study if they meet the following criteria:

- 1) The student is enrolled in grades 3, 4, 5, 6, 7, 8, and 10 or 11;
- 2) The student is eligible for and in need of special education services;
- 3) The student was assessed in the 2011-12 and/or 2012-13 school years using the Kansas Assessment of Modified Measures (KAMM) for reading and/or mathematics.

## 4. Method of Summary

Prior to collecting data, the researcher will submit the research proposal form to obtain permission from the [REDACTED]. Following approval, the researcher will initiate the process to obtain permission from Baker University by submitting an Institutional Review Board (IRB) request to Baker University. Following approval for the study from both the [REDACTED] and Baker University, the district's Assessment Department will send a report to the researcher listing the information for each student taking the KAMM for reading and/or mathematics during the 2011-12 and/or 2012-13 school years. The report will include the following information: student first and last name, school, grade, score for reading and/or mathematics, and achievement level (academic warning, approaches standard, meets standard, exceeds standard, or exemplary).

The Special Services Management Information System (MIS) data clerk will provide the researcher with a report containing the 2011-12 and 2012-13 Service Delivery pages of the IEP for each student whose achievement was assessed with the KAMM. The student assessment data received from the Assessment Department and the paraeducator time for each student as outlined on the Service Delivery page of each student's IEP will be compiled into a Microsoft

Excel spreadsheet with identifying information removed to protect student anonymity.

#### **5. Research Design/Data Analysis**

The present study will utilize a quantitative research design. Additionally, it will measure the association between two quantitative variables, specifically a correlation research method. The two variables to be examined include paraeducator minutes per day as outlined on students' Individualized Education Programs (IEP) and student achievement in reading and mathematics as measured by the KAMM.

The present study will use quantitative methods of data analysis. Once the quantitative data are collected (KAMM scores and Para time on the IEP) and organized in a Microsoft Excel worksheet, the researcher will check the information for accuracy for import into the current version of the IBM® SPSS® Statistics Faculty Pack 21 for Windows. The researcher will determine if a relationship exists between the minutes of paraeducator support for students identified with moderate disabilities receive each day and scores on the KAMM-Reading and/or Mathematics. In order to analyze the relationship between the minutes of paraeducator support students with moderate disabilities receive each day and scores on the KAMM-Reading and/or Mathematics, a Pearson product-moment correlation coefficient will be calculated. The researcher will analyze the correlation coefficient to determine the strength and direction of the linear relationship between the amount of paraeducator support received and student achievement in reading for students. A one-sample t test will be conducted to test for the statistical significance of the correlation coefficient with the level of significance set at .05.

#### **6. Perceived Benefits of the Project**

In reviewing professional literature from 1991 to 2000 on the use of paraeducators in supporting students with special needs, Giangreco, Edelman, & Broer (2001) identified gaps in the published research. While all types of research associated with paraeducator support was recommended, these authors suggested that future studies needed to have a primary emphasis on reporting more student outcome data and its relationship to paraeducator supports. [REDACTED] has a strong commitment to providing excellent instructional programs to all students. The findings from this study have the potential to educate parents, administrators, general education teachers, and special education teachers concerning the effectiveness of using paraeducators as the primary supplemental support for students receiving special education services. The findings may encourage the district to consider current staffing practices in the allocation of paraeducators and special education staff to buildings and special education programs. Furthermore, the findings may assist building teams in establishing and implementing procedures when determining

the amount of paraeducator support needed for individual students and then fading the support as the student demonstrates skills as an independent learner.

#### 7. Project Dissemination Plan

Once completed, the results of this proposed research will be shared with district and special education leadership. Results may assist special education teams determining if a student may benefit from paraeducator support in improving academic achievement.

#### 8. Briefly describe how this research supports the [REDACTED] curriculum, a goal, and/or individual school's improvement plan.

[REDACTED] is currently working on an initiative to increase student independence for students having paraeducator support on the IEP. This study will support district efforts to study the relationship between paraeducator support and student achievement.

***Attach a letter from your faculty advisor/committee indication that your research project has been reviewed and the research has met all requirements necessary to conduct the proposed research.***

This study has been approved by my major advisor, Dr. Susan Rogers, and Chapters One and Three of this study have been drafted and reviewed by Dr. Rogers as well as Margaret Waterman, the research analyst for this study. A separate letter will be sent indicating that the project has been reviewed and met the requirements to conduct the research.

#### District Action:

Building Level Research

District Wide Research

Other

Date Received 8/15/13

Signature: [REDACTED]

Date: 10/24/13

Approved

Not Approved

August 16, 2013

[REDACTED]  
Director of School Improvement and Assessment  
Instructional Resource Center  
[REDACTED]

Dear [REDACTED]:

This letter is written as confirmation that, as Elaine Fasulo's major advisor at Baker University, I have reviewed and approved her study, *The Relationship between Paraeducator Support and Student Scores on the Kansas Assessment of Modified Measures*. Additionally, I can confirm that her study has been reviewed and approved by Baker University School of Education Research Analyst, Peg Waterman. If you have any questions, please contact me.

Sincerely,

Susan K. Rogers, Ph.D.  
Associate Professor  
Baker University Graduate School of Education  
913-344-1226 (Office)  
785-230-2801 (Cell)

**Appendix C: Baker University IRB Proposal for Research Permission Form**



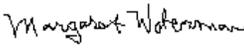
SCHOOL OF EDUCATION  
GRADUATE DEPARTMENT

Date: \_\_\_\_\_  
IRB PROTOCOL NUMBER \_\_\_\_\_  
(IRB USE ONLY)

**IRB REQUEST**  
**Proposal for Research**  
**Submitted to the Baker University Institutional Review Board**

**I. Research Investigator(s)** (Students must list faculty sponsor first)

**Department(s)**      **School of Education Graduate Department**

Name	Signature	
1. Dr. Susan Rogers		Major Advisor
2. Margaret Waterman		Research Analyst
3. Dr. Dennis King		University Committee Member
4. Dr. Erin Dugan		External Committee Member

Principal Investigator: Elaine Bertels Fasulo  
Phone: (913) 706-6257  
Email: ElaineBFasulo@stu.bakeru.edu  
Mailing address: 18307 W. 114<sup>th</sup> St., Olathe, KS 66061

Faculty sponsor: Dr. Susan Rogers  
Phone: 913-344-1226 (office) 785-230-2801 (cell)  
Email: srogers@bakeru.edu

Expected Category of Review:  Exempt     Expedited     Full

**II: Protocol: (Type the title of your study)**

The Relationship between Paraeducator Support and Student Scores on the Kansas Assessment of Multiple Measures

## Summary

### **In a sentence or two, please describe the background and purpose of the research.**

The purpose of this research is to determine if the amount of paraeducator support provided to [REDACTED] students identified with moderate disabilities impacts academic performance as measured by standardized state assessments. The current study will investigate to what extent there is a relationship between the minutes of paraeducator support students in grades 3, 4, 5, 6, 7, 8 and 10 or 11 identified with moderate disabilities receive each day and scores on the Kansas Assessment of Modified Measures (KAMM) in reading and mathematics for the 2011-12 and 2012-13 school years.

### **Briefly describe each condition or manipulation to be included within the study.**

There are no conditions or manipulations in this study.

### **What measures or observations will be taken in the study? If any questionnaire or other instruments are used, provide a brief description and attach a copy.**

**Will the subjects encounter the risk of psychological, social, physical or legal risk? If so, please describe the nature of the risk and any measures designed to mitigate that risk.**

The investigator has received written permission from the [REDACTED] to use archived data for this study (see attached approval). For the variable of paraeducator support each student receives each day, time will be used as the measurement. The number of minutes for paraeducator support documented on the Service Delivery page of the Individualized Education Program (IEP) will be recorded for each student taking the KAMM in reading and/or math during the 2011-12 and 2012-13 school years. The KAMM will be the instrument to measure the variable of student achievement in reading and math.

There are no psychological, social, physical, or legal risks involved in this study.

### **Will any stress to subjects be involved? If so, please describe.**

There will be no stress to subjects involved in this study.

### **Will the subjects be deceived or misled in any way? If so, include an outline or script of the debriefing.**

The participants will not be deceived or misled in this study.

### **Will there be a request for information which subjects might consider to be personal or sensitive? If so, please include a description.**

There will be no requests for personal or sensitive information for this study.

**Will the subjects be presented with materials which might be considered to be offensive, threatening, or degrading? If so, please describe.**

There will be no materials that might be considered offensive, threatening, or degrading presented to study participants.

**Approximately how much time will be demanded of each subject?**

There will be no additional time demanded of participants in this study as archival data will be used for this study.

**Who will be the subjects in this study? How will they be solicited or contacted? Provide an outline or script of the information which will be provided to subjects prior to their volunteering to participate. Include a copy of any written solicitation as well as an outline of any oral solicitation.**

Subjects will be students in the [REDACTED] who were assessed with the KAMM in either reading and/or math during the 2011-12 and/or 2012-13 school years. Subjects will not be contacted as the data collected is archival in nature.

**What steps will be taken to insure that each subject's participation is voluntary? What if any inducements will be offered to the subjects for their participation?**

Student's state assessment scores and IEP records are archival data; therefore, steps for voluntary participation are not warranted.

There are no inducements to participate in this study.

**How will you insure that the subjects give their consent prior to participating? Will a written consent form be used? If so, include the form. If not, explain why not.**

Archival district data will be used; therefore, a written consent form is not necessary.

**Will any aspect of the data be made a part of any permanent record that can be identified with the subject? If so, please explain the necessity.**

In this study, there will be no permanent record that can be identified with the subject.

**Will the fact that a subject did or did not participate in a specific experiment or study be made part of any permanent record available to a supervisor, teacher or employer? If so, explain.**

There will be no permanent record that will be made available to a supervisor, teacher, or employer.

**Appendix D: Baker University IRB Approval to Conduct Research Letter**



April 3, 2014

Elaine Fasulo,

The Baker University IRB has reviewed your research project application regarding your proposal and has approved it under Expedited Review. As described, the project complies with all the requirements and policies established by the University for protection of human subjects in research. Unless renewed, approval lapses one year after approval date.

The Baker University IRB requires that your consent form must include the date of approval and expiration date (one year from today). Please be aware of the following:

1. At designated intervals (usually annually) until the project is completed, a Project Status Report must be returned to the IRB.
2. Any significant change in the research protocol as described should be reviewed by this Committee prior to altering the project.
3. Notify the IRB about any new investigators not named in original application.
4. Any injury to a subject because of the research procedures must be reported to the IRB Chair or representative immediately.
5. When signed consent documents are required, the primary investigator must retain the signed consent documents for at least three years past completion of the research activity. If you use a signed consent form, provide a copy of the consent form to subjects at the time of consent.
6. If this is a funded project, keep a copy of this approval letter with your proposal/grant file.

Please inform Office of Institutional Research (OIR) or myself when this project is terminated. As noted above, you must also provide OIR with an annual status report and receive approval for maintaining your status. If your project receives funding which requests an annual update approval, you must request this from the IRB one month prior to the annual update. Thank you for your cooperation. If you have any questions, please contact me.

Sincerely,

*Thomas Peard*  
Chair, Baker University IRB