The Effect of Special Education Inclusion on Achievement in Mathematics

A Special Project

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ABSTRACT

The researcher conducted a study about the effects of special education mathematics instructional delivery models. Special education students were divided into two groups, those receiving mathematics instruction in an inclusion classroom, and those receiving mathematics instruction in a self-contained classroom. The researcher used pre- and post-test data from the mathematics portion of the Measures of Academic Progress test.

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CHAPTER 1

Introduction

Background for the Project

The boundaries between general education and special education had become blurred in recent years as the education reform known as inclusion became more predominant in public schools. Special education students were receiving services in many different formats.

In 1975, the Education for All Handicap Children Act (EAHCA) became law. In 1990, it was renamed Individuals with Disabilities Education Act, or IDEA. In both 1997 and 2004, IDEA was reauthorized and amended to include even more students. The IDEA required students to receive a Free Appropriate Public Education (FAPE) in the least restrictive environment (LRE) possible, leading the way for inclusion of students with disabilities. Inclusion consisted of placing students with learning disabilities in general education classrooms and combining their learning experience with students in the general education classes.

With the reauthorization of IDEA and the No Child Left Behind Act (NCLB) of 2001, inclusion had been a topic of debate. The NCLB act required students with disabilities to take the same assessments as general education students. Proponents of inclusion argued that special education students should be fully included into general education classrooms so they could have the same learning experiences as their peers.

Statement of the Problem

The special education students in the researcher’s school were significantly behind the state average in terms of scores on the state Measurements of Student Progress (MSP) in mathematics. The school started to use an inclusion model for mathematics instruction with the goal of increasing mathematics scores on the MSP. In 2010, the state average for middle school special education mathematics MSP scores was 14.07% passing. In the researcher’s middle school, the same students had an average of 1.9% passing (Office of Superintendent of Public Instruction [OSPI], 2011). If special education mathematics scores on the MSP did not improve, the school faced the continued consequences of not making Adequate Yearly Progress (AYP).

Purpose of the Project

As a result of the project, the researcher wanted to find out if inclusion was an effective instructional model to provide support for special education students. If the model was effective, the researcher would have recommended continued use of inclusion to meet the needs of special education students.

Delimitations

The researcher conducted the study at a middle school in a rural town in Southeastern Washington with a population of 59,781, according to the 2010 US Census data (U.S. Census Bureau, 2010). The middle school served students in grades six through eight. According to OSPI in 2010, the school had an enrollment of 934 students in May of 2011 with 53.7% male and 46.3% female. The demographics of the middle school revealed that 94.8% of the students were Hispanic, 2.7% were White, 1.5% were Black, American Indian had 0.3%, and Asian/Pacific Islander were 0.2%. Of the 934 students, 96.7% of them qualified for free and reduced lunch and 17.3% qualified for special education services. Upon continued analysis, it was revealed that 42.6% were classified as transitional bilingual and 18.4% of the students had a migrant status (OSPI, 2011).

Participants in the study were selected based upon their special education placement. Data was gathered that compared students in self-contained mathematics classes and students that were in an inclusion mathematics class in order to determine if students in inclusion classrooms made higher gains than students in self-contained classrooms.

Assumptions

The researcher collected data over the course of two years. Results were compared using different groups of students who had different teachers. The researcher assumed that students in 2009 were comparable to students in 2010. Another assumption was that all students in inclusion and self-contained rooms experienced the same instructional materials. The researcher also assumed that all teachers who taught special education students were highly qualified to teach their respective classes.

Hypothesis

Special education students who received mathematics instruction in inclusion classrooms made more significant gains on the mathematics portion of the Measures of Academic Progress (MAP) test than students who were taught in a self-contained classroom.

Null Hypothesis

Special education students who received mathematics instruction in inclusion classrooms did not make more significant gains on the mathematics portion of the Measures of Academic Progress (MAP) test than students who were taught in a self-contained classroom.

Significance of the Project

The purpose of this project was to determine if special education mathematics inclusion was a better instructional model than the self-contained model. The school district in which the researcher worked did not have a preferred model for delivery of special education instruction in mathematics. One middle school used only inclusion, one middle school used only self-contained classrooms, and the researcher's middle school used a combination of both models. If the results showed that special education students in inclusion mathematics classrooms made significant gains over their peers in self-contained classrooms, then the researcher would have recommended to her district that a district-wide model of inclusion be used for mathematics instruction of special education students.

Procedure

In order to collect and analyze data, the researcher had to establish procedures. Special education students were sorted into two groups of students: those students who were in an inclusion classroom and those students who were in a self-contained room. The researcher then gathered MAP test scores for every special education student who had been identified. The MAP tests were taken in the fall and spring of each school year. If a special education student did not have a pre- and post-test, then they were removed from the pool of students. The researcher then compared mean growth of all special education students according to fall-to-spring MAP mathematics scores and conducted t-tests to determine if there were significant differences in the means of each group.

Definition of Terms

inclusion. Inclusion was defined as the integration of students with special educational needs into the regular education setting. Inclusion classes were co-taught with one general education teacher and one special education teacher who both shared equal responsibility for teaching and learning.

self-contained. A self-contained classroom was composed of special education students in the same categorical grouping who were not educated in a regular classroom and was characterized by highly individualized, closely supervised specialized instruction.

Acronyms

AYP. Adequate Yearly Progress.

EAHCA. Education for All Handicap Children Act.

FAPE. Free and Appropriate Public Education.

IDEA. Individuals with Disabilities Education Act.

LRE. Least restrictive environment.

MAP. Measures of Academic Progress.

MSP. Measurements of Student Progress.

NCLB. No Child Left Behind.

OSPI. Office of Superintendent of Public Instruction.

CHAPTER 2

Review of Selected Literature

Introduction

The idea of full inclusion of students with disabilities was a deeply debated topic. With the renewal of IDEA in 2004, even more attention was paid to placing all students in inclusive classrooms to varying degrees. The question became, should all students with disabilities have been included in mainstream classrooms, or should they have received separate services in resource rooms?

Within the past 20 years, teachers and researchers had begun considerable discussion regarding the most appropriate setting in which to provide education for students with disabilities. Many had advocated for the integration of all students with disabilities into regular classrooms. Many educators labeled this movement inclusion. Inclusion for all students with disabilities was rapidly becoming the solution for many school systems. There was a mounting body of research that illustrated the benefits of inclusion for some students. In spite of the ongoing debate, research was primarily focused on the social benefits of inclusion for those with disabilities and had not effectively addressed the possible effects on nondisabled students.

Effective Teaching Practices

Smith (1998) concluded that effective teaching practices permeated across both content area subjects and grade levels. The skills required for effective instruction were essentially similar regardless of the content or grade level being taught.

While there was a large body of research regarding effective teaching practices, many researchers noted four aspects of pedagogy that contributed to increased student learning. Planning for instruction, cooperative learning, frequent monitoring of student learning, and establishing relationships with students were common themes among researchers (Dalton, 1998; Fabry, 2010; Marzano, Pickering, & Pollock, 2001; Nieto, 2009; Wiggins & McTighe, 2008).

According to Fabry (2010), in order for instruction to be effective, teachers needed to understand the connection between effective teacher characteristics and research-based instructional strategies. Planning for instruction involved time management and identifying learner outcomes. Prior to instruction, activities should have been carefully planned in order to meet clearly defined learning targets, require student collaboration, and help students make meaning of the content (Wiggins & McTighe, 2008). Furthermore, planning also needed to consider factors such as classroom setting, developing language, and involving activities that promoted complex thinking (Dalton, 1998).

A second area that researchers discussed was cooperative learning. According to Marzano and others (2001), cooperative learning was ranked six out of nine teaching strategies that yielded high student learning outcomes. Cooperative learning helped students not only acquire important information and skills, it also helped them develop a deeper understanding of the material that was being taught (Wiggins & McTighe, 2008). Dalton (1998) further stated that cooperative learning helped students see the whole picture as the basis for understanding the parts which contributed to higher level thinking and learning.

Frequent monitoring of student learning was paramount to student success. Fabry (2010) concluded that feedback, homework, and students being aware of whether or not they were meeting learning objectives was critical to student success. Teachers and students should have both been responsible for this monitoring. Marzano (2009) concluded that the focus must always be on student learning, and instructional strategies were just a means to an end. Furthermore, Dalton (1998) added that clear and timely feedback could strengthen student's attitude toward the subject matter they were learning.

Establishing relationships with students helped students view the teacher as a person and also helped foster mutual respect (Fabry, 2010). Strong relationships needed to focus on academic as well as nonacademic interactions while maintaining a professional focus. Dalton (1998) further concluded that teacher and student relationships helped to establish real-world connections and fostered community relationships. Teachers needed to learn about the social realities of their students and the conditions in which they lived in order to deepen their relationships and establish mutual understanding and trust. Once relationships were established, students were more open to taking risks, working harder, and accepting feedback (Nieto, 2009).

Inclusive Practices

"The debate about how to best deliver educational services to students with disabilities continues without substantial research on model efficacy" (Marston, 1996, pg. 121). Since the passage of Public Law 94-142 (1975), reauthorized as the Individuals with Disabilities Act (IDEA), students with disabilities had participated in a range of school programs with their nondisabled peers. The debate among parents, teachers, and advocates of inclusion focused on the concept of least restrictive environment (LRE) and how it should be interpreted. The IDEA (2004) stated that, to the maximum extent appropriate, children with disabilities should be educated with their nondisabled peers. The reality was that special education students were receiving three different types of services: inclusion, combined services, and pull-out only (Marston, 1996).

Research in the area of inclusion was contradictory at times. DuPuis and others (2006) concluded that students with disabilities who were in an inclusion classroom reported increases in motivation and a desire to work harder to learn. Furthermore, general education peers reported that they were unable to identify students with disabilities in their inclusive classroom and that inclusion was mutually beneficial to the attitudes of both students with disabilities and their general education peers (DuPuis et al., 2006). Other research in favor of inclusion argued that students with disabilities who were in inclusive classrooms benefitted from greater communication skills, greater social competence, and greater developmental skills (Savich, 2008).

Other studies had shown that students with disabilities preferred a pull-out delivery model. Students reported that pull-out was better for learning but that an inclusive setting was better for making friends (Klingner, Vaughn, Schumm, Cohen, & Forgan, 1998). Furthermore, parents of children in inclusion classrooms reported a higher degree of concerns with their children’s program than did parents of students placed in non-inclusion classrooms (Daniel & King, 1997).

Regardless of the special education delivery model, in order for inclusion to be successful there were many factors that were involved. Administrative support, teachers with a positive attitude toward inclusion, professional development for teachers, research-based delivery models, and support in instruction and curriculum were all critical factors in the success of any inclusion program (Idol, 2006).

Co-teaching Model of Inclusion

Co-teaching was defined as a model in which the special education teacher and the general education teacher had shared responsibility for teaching a classroom of special education and general education students. Bauwens and Hourcade (1997) focused on two types of co-teaching. First was team teaching in which the initial presentation of new content was shared between two teachers jointly. Second was complementary teaching in which one teacher led the majority of the class while the other teacher worked with small groups of students. Other models of co-teaching involved parallel teaching in which both teachers provided small group instruction, station teaching where students rotated between teachers, and team teaching which involved both teachers delivering instruction at the same time (Knackendoffel, 2007).

Regardless of the co-teaching model that was used, there were some considerations to be made when co-teaching. Teams of co-teachers needed to be selected and monitored closely. Co-teachers who volunteered for their positions reported higher levels of job satisfaction (Pugach & Winn, 2011). Magiera, Smith, Zigmond, and Gebauer (2006) also stated that both teachers needed to exercise caution so that the general education teacher did not become the perceived lead teacher while the special education teacher became the assistant. Finally, co-teaching needed to involve a common planning time and focused professional development in order to be most effective (Pugach & Winn, 2011).

Studies showed the most significant benefits to co-teaching were social benefits. According to Smoot (2010), the more time students with disabilities spent in a general education classroom, the higher their level of social acceptance. Furthermore, the author claimed that having special education support in the general education classes resulted in higher achievement for students with disabilities (Smoot, 2010). In terms of academic achievement, research suggested that co-teaching was most effective in elementary school. Achievement in reading and language arts resulted in the highest gains of students in co-taught classrooms compared to students in pull-out classes (Murawski & Swanson, 2001).

Summary

In conclusion, in order for any instruction to have been effective, teachers needed to pair effective teacher characteristics with research-based pedagogy (Fabry, 2010). Furthermore, careful consideration needed to be placed on inclusive teaching of special education students based on the reauthorization of IDEA in 2004. One model for inclusive teaching was the co-teaching model in which two teachers, one general education and one special education, cooperatively taught a heterogeneous group of students in order to provide the maximum support to special education students in the least restrictive environment.

CHAPTER 3

Methodology and Treatment of Data

Introduction

In 1975, the Education for All Handicap Children Act (EAHCA) became law. In 1990, it was renamed Individuals with Disabilities Education Act, or IDEA. In both 1997 and 2004, IDEA was reauthorized and amended to include even more students. The IDEA required students to receive a Free Appropriate Public Education (FAPE) in the least restrictive environment (LRE) possible, leading the way for inclusion of students with disabilities. Inclusion consisted of placing students with learning disabilities in general education classrooms and combining their learning experience with students in the general education classes.

With the reauthorization of IDEA and the No Child Left Behind Act (NCLB) of 2001, inclusion had been a topic of debate. The NCLB act required students with disabilities to take the same assessments as general education students. Proponents of inclusion argued that special education students should be fully included into general education classrooms so they could have the same learning experiences as their peers.

Methodology

The researcher used a quasi-experimental research design. The study explored the effects of special education students who were placed in a self-contained mathematics classroom versus special education students who were placed in an inclusion mathematics classroom. Pre- and post-test data from the Measures of Academic Progress (MAP) mathematics assessment was the instrument used to determine whether students in an inclusion mathematics classroom made more significant mathematical gains over students in a self-contained mathematics classroom.

Participants

Special education placement determined the participants involved in the study. Participants included sixth, seventh, and eighth grade students who qualified to receive special education services in mathematics. After the students were identified, they were separated into two groups. Group A consisted of special education students who received their mathematics instruction in a self-contained mathematics classroom. Group B contained special education students who received their mathematics instruction in an inclusion classroom.

Instrument

The instrument used to determine whether special education students in a mathematics inclusion classroom made higher gains than special education students in a self-contained mathematics class was the mathematics portion of the MAP.

The mathematics MAP test was found to have both validity and reliability. Validity referred to "the degree to which a test measures what it is supposed to measure and, consequently, permits appropriate interpretation of scores" (Gay, Mills, & Airasian, 2009, p. 154). Furthermore, reliability was defined as "the degree to which a test consistently measures whatever it is measuring" (Gay, Mills, & Airasian, 2009, p. 158).

The sixth, seventh, and eighth grade mathematics portion of the MAP had reliability coefficients of .93, .93, and .85 respectively (Reliability & Validity estimate, 2004). Validity coefficients ranged from .79 to .88 (Reliability & Validity estimate, 2004).

Design

The researcher used a nonequivalent control group quasi-experimental design. In nonequivalent control group design, "two (or more) treatment groups are pretested, administered a treatment, and posttested" (Gay, Mills, & Airasian, 2009, p. 259). In the researcher's study, the pre- and post-test was the MAP. Group A, the control group, received special education mathematics instruction in a self-contained classroom. Group B, the experimental group, received mathematics instruction in an inclusion classroom. Sources of invalidity that were factors in the nonequivalent control group design were regression and selection interactions. Statistical regression was defined as “the tendency of participants who score highest on a pretest to score lower on a posttest and the tendency of those who score lowest on a pretest to score higher on a posttest” (Gay, Mills, & Airasian, 2009, p. 264). A selection interaction was defined as:

> …factors related to maturation, history, and testing. If already-formed groups are included in a study, one group may profit more (or less) from a treatment or have an initial advantage (or disadvantage) because of maturation, history, or testing factors. (Gay, Mills, & Airasian, 2009, p. 264)

Procedure

To conduct this study, the researcher identified all students in grades six through eight that qualified for special education services in mathematics. Once all the students had been identified, any student who did not have a pre-test and a post-test score was eliminated from the pool. Next, any student who qualified for instruction in a language other than English was also eliminated. Finally, any student who was in a life skills classroom was removed.

Once the researcher had eliminated any student who did not qualify for the study, the students were then sorted into two groups. Group A was the control group and contained students who received mathematics instruction in a resource room. Group B was the experimental group and they received mathematics instruction in an inclusion classroom.

Mathematics MAP scores were obtained for students in both groups. Spring 2010 scores were used as a pre-test for each student. Spring 2011 scores were used as a post-test. The researcher then used mean growth to determine mathematical gains. The researcher then ran tests for significance to determine if Group B made more significant gains than Group A.

Treatment of the Data

A t-test for non-independent samples was used to determine significance by using the STATPAK statistical analysis program (Gay, Mills, & Airasian, 2009). This test allowed the researcher to compare pre- and post-test MAP mathematics scores. Significance was determined for $p \geq$ at 0.05, 0.01, and 0.001 levels.

Summary

A quasi-experimental research design was used to determine whether there was support for the researcher's hypothesis. The researcher gathered pre- and post-test data from the mathematics portion of the MAP test that was administered to the two groups of students. The mean gains for both groups of students were determined and tested for significance using a t-test.

CHAPTER 4

Analysis of the Data

Introduction

The special education students in the researcher's school were significantly behind the state average in terms of scores on the state Measurements of Student Progress (MSP) in mathematics. The school started to use an inclusion model for mathematics instruction with the goal of increasing mathematics scores on the MSP. In 2010, the state average for middle school special education mathematics MSP scores was 14.07% passing. In the researcher's middle school, the same students had an average of 1.9% passing (Office of Superintendent of Public Instruction [OSPI], 2011). If special education mathematics scores on the MSP did not improve, the school faced the continued consequences of not making Adequate Yearly Progress (AYP).

Description of the Environment

The researcher conducted the study at a middle school in a rural town in Southeastern Washington with a population of 59,781, according to the 2010 US Census data (U.S. Census Bureau, 2010). The middle school served students in grades six through eight. According to OSPI in 2010, the school had an enrollment of 934 students in May of 2011 with 53.7% male and 46.3% female. The demographics of the middle school revealed that 94.8% of the students were Hispanic, 2.7% were White, 1.5% were Black, American Indian had 0.3%, and Asian/Pacific Islander were 0.2%. Of the 934 students, 96.7% of them qualified for free and reduced lunch and 17.3% qualified for special education services. Upon continued analysis, it was revealed that 42.6% were classified as transitional bilingual and 18.4% of the students had a migrant status (OSPI, 2011).

Participants in the study were selected based upon their special education placement. Data was gathered that compared students in self-contained mathematics classes and students that were in an inclusion mathematics class in order to determine if students in inclusion classrooms made higher gains than students in self-contained classrooms.

Hypothesis

Special education students who received mathematics instruction in inclusion classrooms made more significant gains on the mathematics portion of the Measures of Academic Progress (MAP) test than students who were taught in a self-contained classroom.

Null Hypothesis

Special education students who received mathematics instruction in inclusion classrooms did not make more significant gains on the mathematics portion of the Measures of Academic Progress (MAP) test than students who were taught in a self-contained classroom.

Results of the Study

The researcher conducted a t test for non-independent samples to test for significance. Group A, the control group, did not make statistically significant mathematical gains as determined by a calculated value of t, which was 2.051. Group B, the experimental group, had statistically significant gains for $p \geq 0.05$. The calculated value of t, which was 2.024, was larger than the threshold value of t, which was 2.021, at 0.05. Therefore, the null hypothesis was rejected at $p \geq 0.05$ and there was support for the hypothesis. The null hypothesis was accepted at $p \geq 0.01$ and $p \geq 0.001$ as outlined in table 2, which meant there was no support for the hypothesis at those levels.

Table 1

Distribution of t for group A

	p		
df	.05	.01	.001
27	2.052	2.771	3.690

Table 2

Distribution of t for group B

	p		
	.05	.01	.001
df			
38	2.021	2.704	3.551

Findings

The researcher found support for the hypothesis at $p \geq 0.05$. Special education students who received mathematics instruction in inclusion classrooms made more significant gains on the mathematics portion of the MAP test than students who were taught in a self-contained classroom. Further analysis of the data, using descriptive statistics, revealed that group A had a mean decrease in mathematics MAP scores from spring 2010 to spring 2011 of -3.94. Group B had a mean increase in mathematics MAP scores from spring 2010 to spring 2011 of 4.95. Table 3 and Figures 1 and

2 displayed the pre- and post-test MAP data for the control group, group A, and the experimental group, group B. Table 4 outlined the descriptive statistics for groups A and B.

Table 3

Pre- and Post-Test MAP Mathematics Scores

Group A			Group B		
Student Number	Spring 2010	Spring 2011	Student Number	Spring 2010	Spring 2011
12100	192	203	12738	191	205
13355	191	186	39125	203	207
11902	189	177	12450	198	202
12611	198	179	13207	192	192
12138	181	174	12465	208	206
12963	186	194	11983	193	208
13275	170	168	30101	189	203
675286	195	198	12429	214	210
13511	188	177	17266	196	225
11996	190	193	12265	202	204
16437	188	179	32109	204	213
241218	188	186	30097	202	192
241222	185	172	70097	196	196
10260	184	185	10998	203	206
10674	193	173	70098	205	204
10396	187	195	23052	201	202
10496	195	194	10447	192	201
			10650	197	204
			10527	223	226
			75058	205	207

Table 4

Descriptive statistics of pre- and post-test scores

Group A pre-test		*Group A post-test*	
Mean	188.2352941	Mean	184.2941
Standard Error	1.551871289	Standard Error	2.525989
Median	188	Median	185
Mode	188	Mode	186
Standard Deviation	6.398529243	Standard Deviation	10.41492
Sample Variance	40.94117647	Sample Variance	108.4706
Kurtosis	3.288592715	Kurtosis	-1.16136
Skewness	-1.305088441	Skewness	0.191689
Range	28	Range	35
Minimum	170	Minimum	168
Maximum	198	Maximum	203
Sum	3200	Sum	3133
Count	17	Count	17

Group B pre-test		*Group B post-test*	
Mean	200.7	Mean	205.65
Standard Error	1.846903525	Standard Error	1.919807
Median	201.5	Median	204.5
Mode	203	Mode	204
Standard Deviation	8.259603661	Standard Deviation	8.585637
Sample Variance	68.22105263	Sample Variance	73.71316
Kurtosis	1.521967408	Kurtosis	1.698985
Skewness	0.984809443	Skewness	0.91982
Range	34	Range	34
Minimum	189	Minimum	192
Maximum	223	Maximum	226
Sum	4014	Sum	4113
Count	20	Count	20

Figure 1. Pre- and post-test data of group A

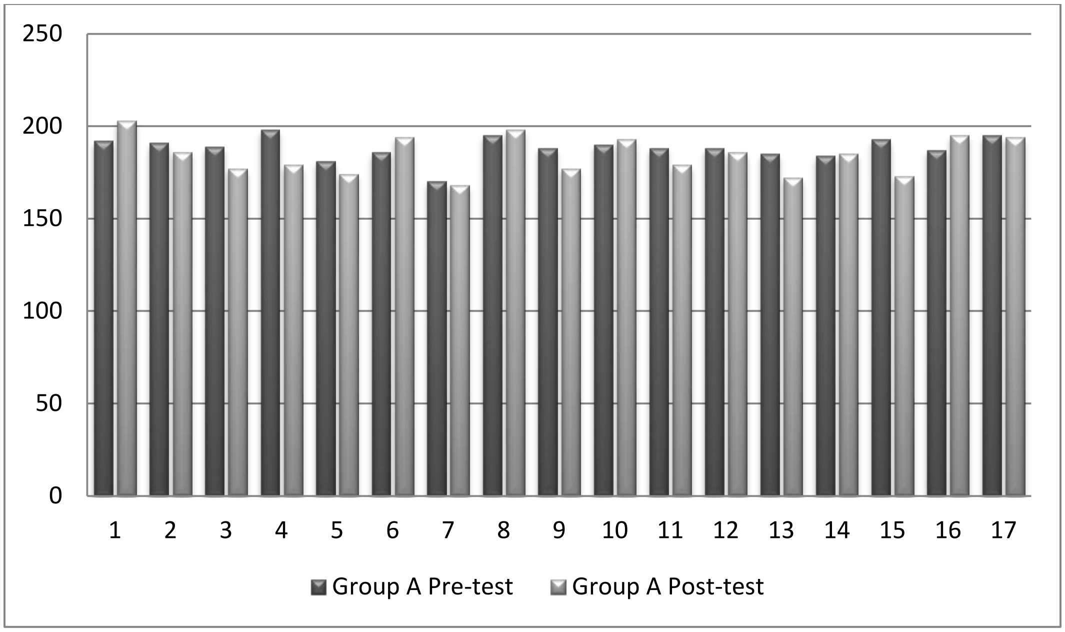
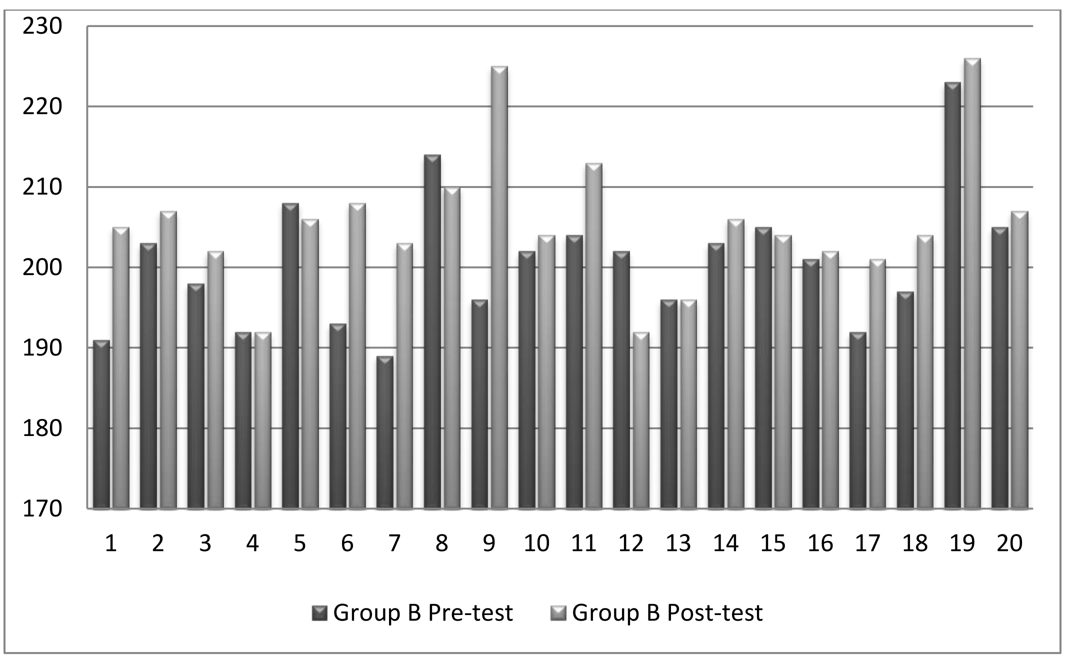


Figure 2. Pre- and post-test data of group B



Discussion

The statistics obtained from the analysis of data confirmed the researcher's belief that special education students in inclusive classrooms would make more significant mathematical gains than special education students in self-contained classrooms. This was supported by research that showed special education students in inclusion classrooms reported increases in motivation and a desire to work harder to learn (DuPuis et al., 2006). Further research that also supported the researcher's findings claimed that having special education support in the general education classes resulted in higher achievement for students with disabilities (Smoot, 2010).

As a result of the project, the researcher wanted to find out if inclusion was an effective instructional model to provide support for special education students. Based on the data analysis, inclusion was an effective delivery model for special education students in mathematics.

Summary

As a result of the data analysis, the researcher found support for the hypothesis at $p \geq 0.05$. At $p \geq 0.01$ and $p \geq 0.001$ levels, there was no support for the hypothesis; therefore the null hypothesis was accepted at those levels. Data revealed that students who received mathematics instruction in an inclusion classroom made more significant gains than students who received mathematics instruction in a self-contained classroom.

CHAPTER 5

Summary, Conclusions and Recommendations

Introduction

The special education students in the researcher's school were significantly behind the state average in terms of scores on the state Measurements of Student Progress (MSP) in mathematics. The school started to use an inclusion model for mathematics instruction with the goal of increasing mathematics scores on the MSP. In 2010, the state average for middle school special education mathematics MSP scores was 14.07% passing. In the researcher's middle school, the same students had an average of 1.9% passing (Office of Superintendent of Public Instruction [OSPI], 2011). If special education mathematics scores on the MSP did not improve, the school faced the continued consequences of not making Adequate Yearly Progress (AYP).

Summary

The researcher investigated whether a special education inclusion model was a more effective way to deliver mathematics instruction over a self-contained delivery model. The researcher divided the students who qualified for special education in mathematics into two groups. Group A consisted of students in a self-contained mathematics classroom and group B was made up of students who received mathematics instruction in an inclusion classroom. Using spring 2010 and spring 2011 MAP scores, the researcher conducted tests for statistical significance to determine whether students in a mathematics inclusion classroom made more significant gains over students in a self-contained mathematics classroom.

Conclusions

Based on t tests, the researcher concluded that special education students who received mathematics instruction in an inclusion classroom made more significant gains than special education students who received mathematics instruction in a self-contained classroom.

Recommendations

Based on the results of the study the researcher recommends continuing the use of the inclusion model to deliver special education mathematics instruction. The researcher also recommends future research in the area of inclusion. Future studies might focus on the effects of inclusion on general education students in terms of both academic and perceptual data. Furthermore, given the number of students included in this study, it would increase the reliability of the results if the study were repeated on a larger scale. Finally, additional instruments and data points, perhaps MSP scores, need to be used to repeat the study and strengthen the results.

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