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How Does Inclusion With Co-Teaching Affect Student Performance on Summative  
Assessments?

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June 12, 2015

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## ABSTRACT

Schools have been pushed toward inclusive practices with an emphasis on co-teaching models (Yeung, 2012), yet reservations exist and little is known about the effects of inclusive practices. The questions this study aims to answer are: 1. Does inclusion with an emphasis on co-teaching affect performance of newly transitioning students with disabilities on district and teacher made summative assessments?, and 2. Does inclusion with co-teaching have a carry-over effect on typically-developing students' assessment scores? This study aims to investigate the effect of inclusive practices on student summative assessment scores. Results from the district pre-assessment were gathered for all students in both the comparison and intervention group. Using statistical analyses (SPSS), students with disabilities in the inclusion with co-teaching group were found to not test statistically significantly higher compared to students with disabilities in the control group except for one chapter test. When compared to typically developing peers, students with disabilities did not score statistically significantly lower on summative assessments and there did not appear to be a positive or negative carry over effect on typically-developing peer assessment scores.

## INTRODUCTION

Special education has come a long way since the 1966 amendment to the Elementary and Secondary Education act, which provided funding to assist states with the improvement of programs and projects for handicapped children. Since 1996, many prescriptive laws have been enacted, with the intention to serve and include students identified as having a “learning disability.” Historically, the Education for all Handicapped Children Act of 1975 was the first to mandate that students be educated as much as possible with nondisabled peers and that they receive these services free of charge.. The current version of the Education for all Handicapped Children Act of 1975 is the Individuals with Disabilities Education Improvement Act of 2004, better known as IDEA. This federal statute, revised many times since 1970, outlined two major changes in special education: a free and appropriate public education (FAPE) and education of students with disabilities in the least restrictive environment (LRE). The FAPE provision ensures that students with disabilities are provided with a public education that is appropriate to their needs, free of charge. The LRE provision applies to the student’s educational setting. Specifically, LRE mandates that students with disabilities spend as much instructional time as possible with non-disabled peers.

According to the Supreme Court case, *Carlisle Area Schools v. Scott P.*, the least restrictive environment is the one that, “to the greatest extent possible, satisfactorily educates disabled children together with children who are not disabled, in the same school the disabled child would attend if the child were not disabled.” (*Carlisle Area Sch. v. Scott P.*,1995). This can be interpreted as a variety of educational settings and there are situations where varying amounts of time in the general education setting, or even no time at all, meet a student’s LRE. A student’s LRE is individualized and specific for that learner. The nature of the student’s disability will

determine how much time is appropriate to spend in the general education setting, and what supports s/he receive in that setting. There are currently four settings that apply to the education of students with disabilities in a traditional public school. Hocutt (1996) describes the four levels as: 1. Attendance in a general education class, without supplementary instructional supports, and with or without medical supports; 2. Attendance in a general education class with supplementary instructional services delivered in the general classroom, better known as inclusion; 3. Part-time attendance in a special education class or resource room; and 4. Full-time attendance in a special education class. In more recent years, schools have been pushed toward inclusive practices with an emphasis on a co-teaching model, where two teachers share the instructional responsibilities for the students (Yeung, 2012). A study focused on inclusion defined it as the following: “Inclusion is about engendering a sense of community and belonging and encouraging mainstream and special schools and others to come together to support each other and pupils with special educational needs” (Fredrickson et al., p. 106, 2007).

There have been reservations on implementing inclusion. One possible reason is due to lack of professional development and training on how to effectively implement inclusive practices in the general education classroom (Holmes, 1999). Another pushback from schools implementing inclusion is centered on high-stakes testing. As a general education teacher, you are sharing the responsibilities of teaching special education students who are on your classroom roster. In a merit-based pay system, general education teachers may be reluctant to move forward with inclusion because, as many studies have shown, students with disabilities are often not meeting progress targets established by states (for example see Klehm, 2014).

Although students with disabilities are not limited in the content area where they are included, in my experience, science appears to be an area where students with disabilities

struggle most. A combination of technical reading and content vocabulary has proven to be a challenge for all students, not just those students with disabilities. According to the Ohio Department of Education, only 77.4% of 10th grade students who took the science Ohio Graduation Test in March 2014 scored in the proficient and above bands, the lowest of all five subject areas (Ohio Department of Education, 2010).

Although there have been many reservations to implementing inclusion, there are many observed benefits for students. In my experience, the benefits of having a co-teacher to support this effort are monumental compared to the general education setting without a co-teacher. In a classroom of 30 students, with 5-7 of them on IEP or 504 plans needing additional supports, the presence of a co-teacher to help guide the discussion and redirect misconceptions could be essential to student success.

In my current district of employment, incoming students with disabilities are placed in one of two settings from the levels Hocutt (1996) described: full time special education classes or full time in the general education classroom. As a special educator, I feel that many of my students are at a disadvantage in their special education placement because they have the potential to be successful in the general education classroom with supports from a special education instructor. However, there have been no attempts to implement inclusion with co-teaching until this year. My district has granted the opportunity to pilot one section of an inclusion science class, which began in the fall of 2014. This piloted class will serve as a model for experimenting with inclusion models across subject areas. The district has asked for data and teacher reaction to the pilot study. Negative results or inconclusive results could lead to the termination of this pilot program and return to conventional resource room and general education classes.

Although there have been many studies about special education students' test scores and the effect of inclusion on testing performance (Brucker, 1994; Dessementet, Bless & Morin, 2012; Fletcher, 2010), there is little known about the effect of inclusive practices on newly transitioned students' district and classroom summative assessment performance (Banerji & Dailey, 1995). The research question this Capstone project examined is as follows: Does inclusion with an emphasis on co-teaching affect the performance of newly transitioned students with disabilities on district and teacher made summative assessments compared to students in the self-contained resource setting? A secondary question of this project is: Does inclusion with co-teaching have a carry-over effect on typically-developing students' assessment scores (that is, does inclusion with co-teaching increase, decrease or have no effect on typically-developing assessment scores)?

## LITERATURE REVIEW

### **A Push to Include**

Philosophies regarding the education of children with special needs have changed dramatically over the past two decades and several countries including the United States, the United Kingdom, and New Zealand have led in the effort in implementing policies which foster the inclusion of students with special needs into the mainstream education system (Rombo, 2006). With increasing pressures from legislation such as the Individuals with Disabilities Education Act, many school districts are moving toward implementation of inclusion. The “inclusive setting” has become a popular way to ensure schools are meeting the mandates of Least Restrictive Environment. There are many ideas and interpretations of what inclusion means and looks like in the context of the general education setting. For the purposes of this study, inclusion will be defined as the placement and education of students with disabilities in the general education classroom (Brucker, 1994).

A common approach to inclusion is to employ one of the co-teaching models. Co-teaching involves two or more certified professionals who contract to share instructional responsibility for a single group of students primarily in a single classroom or workspace for specific content or objectives with mutual ownership, pooled resources, and joint accountability (Friend & Cook, 2000). Friend (2014) identifies six approaches to co-teaching, including: one teach-one observe, one teach-one assist, parallel teaching, station teaching, alternative teaching, and team teaching.

1. One teach-One observe: This occurs when one teacher, typically the general education teacher, continues teaching in his/her traditional manner. The second teacher, typically the

intervention specialist/special education teacher, observes students to ensure they are engaged in the lesson.

2. One teach-One assist: One teacher (typically the general education teacher) keeps primary responsibility for teaching while the other teacher (typically the intervention specialist/special education teacher) circulates through the room providing assistance to students as needed.

3. Parallel teaching: Parallel teaching occurs when the class is divided into two groups. Both groups of students are receiving the same instruction, but from different teachers. This style of co-teaching is typically used with large classes, where students may need more supervision by the teacher and/or more opportunity to respond during instruction.

4. Station teaching: Content and students are divided into smaller groups. Each teacher facilitates a group and provides that content to each group of students circulating around the stations.

5. Alternative teaching: Alternative teaching occurs when some students, not always students with learning disabilities, need specialized attention. In this situation, one teacher instructs the large group (typically the general education teacher) and the other teacher works with a smaller group (typically the special education teacher).

6. Team teaching: The team teaching approach to co-teaching involves both teachers delivering the same content simultaneously to one group of heterogeneous students.

Often, schools implement co-teaching with little to no experience and training for their staff. For example, results from a recent survey of 138 school leaders in the Southeastern United States indicate that school leaders were limited in their training and experience relative to special

education and inclusive practices, and that their attitudes toward inclusion were slightly negative (Ball & Green, 2014; Forlin, 1995).

There are many reported problems facing the implementation of inclusion in the public school system. Examples include: lack of professional development, lack of support from administration and degree of appropriateness for the individual student. Many of these studies have looked at teacher suggestions for assisting the implementation process and found that professional development workshops and seminars on special and inclusive education would improve knowledge and enhance the qualifications of practitioners (Ball & Green, 2014; Gokdere, 2012; Myklebust, 2002).

Perhaps the most challenging of these issues surrounding inclusion is appropriate placement for each individual student. There has been much debate over whether inclusion is appropriate for students with all disability types. While some say “inclusion for all”, others are reserved in their claims. Chris Forlin’s (1995) findings indicate that degree of acceptance in the general education setting by the educator varied inversely with the severity of the disability across physical and cognitive categories, and placement should be part time in regular classrooms for many students. Many teachers and administrators may think that full time inclusion provides students with disabilities more opportunities for access to the general education curriculum. However, Forlin’s findings that full-time inclusion may not be for all students with disabilities have led educational leaders to realize that there is a discrepancy in what many teachers and administrators believe to be best for students, and what may actually be appropriate.



## **Teacher Attitude Toward Inclusion**

Teachers are particularly reluctant to implement inclusion, as there is an increasing emphasis on teacher effectiveness, which may be linked to pay in the near future. On one hand, merit-based pay and demand for high test scores have put off many teachers to the idea of inclusive practices (Solmon & Podgursky, 2000). On the other hand, many studies have shown teacher willingness to participate in inclusion because they feel it is a positive experience for students (Ball & Green, 2014; Gokdere, 2012; Klehm, 2014).

Teacher attitude toward inclusion has been shown to greatly impact the overall success and achievement of students with disabilities in the inclusion setting (Klehm, 2014). With this being said, effective pairings of teachers implementing one or more of the co-teaching models of inclusion are essential to ensuring success of the students with disabilities in the general education classroom; thus, effective pairings of co-teachers must be achieved. Willingness to participate in collaboration has also been recorded as a factor to success in this setting (David & Kuyini, 2012). Students with disabilities, on average, test significantly lower than their typically developing peers (Gronna, Jenkins & Chin-Chance, 1998). This reduced performance on testing could be a turn off for teachers looking to take on an inclusion classroom.

## **Outcomes of Inclusion**

As inclusion has grown in popularity, many have discovered the advantages and disadvantages it presents to our educational system. Perhaps the more obvious advantages are for those students with learning disabilities. Documented benefits of inclusion include increased academic achievement, improved behaviors, and increased social development.

### *Academic and Instructional Outcomes of Inclusion*

According to the opinion of disciplinary experts Stevens and Slavin (1995), students with disabilities are more likely to be at instructional level and have positive learning outcomes when their peers provide explanations and models. Students with disabilities are more engaged in classroom content when cooperative learning structures are in place, such as those in an inclusive setting. One instructional advantage of inclusion is ease of assessment and clarification of misconceptions. When students are participating in discussion with one another, teachers are better able to assess understanding and intervene if needed (Bucalos & Lingo, 2005; Dessementet, Bless & Morin, 2012).

There have been many studies on the academic benefits for students with disabilities educated in an inclusive environment. Of these, a key study found that when comparing students in a special school (self-contained setting) and fully included school, students with disabilities in a fully included school made more progress in literacy skills compared to the students attending the special schools (Dessementet, Bless & Morin, 2012).

Another benefit of inclusion impacting typically developing peers has been presented. According to Huber, Rosenfeld & Fiorelle (2001), after implementing inclusive practices, not only did students with disabilities make progress academically, low achieving typically developing peers appeared to benefit academically as well. These described carry-over effects result when typically developing students experience a positive or negative impact, academically or behaviorally, resulting from the exposure and integration of students with disabilities and/or the presence of a co-teacher. Although a positive carry-over effect for typical students is an exciting finding that supports implementation of inclusion, there has been evidence that supports the notion that inclusion of students with learning disabilities adversely affects the learning of

typically developing peers. One study in particular found that following the implementation of inclusion, higher achieving students were not making the same gains they were pre-inclusion (Huber, Rosenfeld & Fiorello, 2001). Another study also showed a negative carry-over effect for typically developing students participating in inclusion settings (Fletcher, 2010).

A question then arises, at what point do the negative impacts on typically developing students outweigh the benefits for students with disabilities in the inclusion model? This question has left many school districts reluctant to implement a full inclusion style model.

### *Social Outcomes of Inclusion*

When students with disabilities are educated in the inclusion setting, studies have also shown impacts on behavior and peer acceptance and other social improvements for students with disabilities. One noted advantage of inclusion is that students with disabilities are given time to engage with their typically developing peers in an academic setting. In a study conducted on social behavior and peer acceptance, researchers found that students with disabilities who transferred from special schools to those who were mainstreaming and practicing inclusion experienced positive social outcomes and little peer group rejection (Frederickson, Simmonds, Evans & Soulsby, 2007). Typically, students with disabilities who are included in the general education setting demonstrate a reduced rate of disruptive behaviors, due to feeling a need to conform to the norms of the typically developing peer group (Banerji & Dailey, 1995). Another study found that parent and teacher surveys showed improved self-esteem in students with disabilities, and, in some cases, improved motivation (Banerji & Dailey, 1995).

### **Students with Disabilities and Performance Assessments**

As previously mentioned, students with disabilities often receive accommodations for testing. Although these students are provided with accommodation to make testing more

accessible for them, these tests are often far above their current reading level. In my school district, the intervention specialist provides all testing accommodations, whether in a self-contained or inclusive environment. Accommodations provided by the state of Ohio on Ohio Graduation Tests and Ohio Achievement Tests include those pertaining to test setting, response, presentation and timing (Ohio Department of Education). However, these accommodations are not always available on each test. Accommodations vary by test and cannot change the content or structure of the test, nor change or enhance the student's response in anyway. Clarification of directions or questions are not allowed on any test for any reason. This proves to be difficult for students with disabilities who may need clarification of a phrase or directions due to low reading level or cognitive delay.

## METHODS

### **Setting & Participants**

This study takes place in a central Ohio career and technical school that services many surrounding school districts. The school district examined covers 700 square miles, and is one of the largest career and technical districts in the state. The district offers nearly 40 high school programs designed for junior and senior students. In addition to traditional career and technical programs, such as Automotive Technology, Welding, and Cosmetology, the school also offers many programs designed specifically for students who intend to continue their education at a college or university.

The school examined in this study services 654 students, with a special education population of just under 20%. Currently, the school district offers only two placement settings for students who fall under the umbrella of special education: self-contained (resource room) and the general education setting. The self-contained or resource room setting is a small group (typically fewer than 12 students) where instruction is provided by a licensed Intervention Specialist. In the resource room, curriculum content is the same as the general education setting, but instructional supports are built into the curriculum to support students who qualify for special education services. In contrast, the general education setting is composed of a much larger group (20-25 students on average) where instruction is provided by a general education teacher only. No intervention specialist is present to provide additional supports to students with disabilities. Rather, it is put on the plate of the general education teacher to provide the student with these instructional supports.

This year, the school district granted the opportunity to pilot one section of inclusion with co-teaching (IWCT), where an intervention specialist and general educator would collaborate

and deliver instruction in the same setting. I was selected to serve as the intervention specialist working with the general education teacher in the content area of science. The general education science teacher selected to participate in this study was a year 7 teacher. He had some experience working with children with disabilities, including his personal experiences with his special needs daughter. General education science teachers were asked whether they would be interested in participating in this pilot, and the selected teacher responded willing with a vested interest in co-teaching.

Before permission was given to pilot the IWCT section of the science class, the students with identified disabilities (and all other students) were required to take a standardized district pretest in science. This district pre-test served as the baseline data for the study. As mentioned previously, students receiving special education services, on average, test significantly lower than their typically developing peers (Gronna, Jenkins & Chin-Chance, 1998). This is important to consider as the study includes a standardized district assessment.

The focus IWCT class (experimental group) was composed of 21 students, 7 of which were identified as receiving services under an IEP or 504 plan. The comparison group (control group), taught exclusively by the general education teacher, was composed of 21 students, 8 of which were identified as receiving services under an IEP or 504 plan. The students receiving supports from IEP/504 plans in both the experimental and control groups were classified under mild/moderate disability types. However, it is important to note that the students in the experimental group required reading supports that those in the control group did not. For this study, the focus IWCT group and the comparison group received the same content and pacing for each section, with the same general education science teacher. The key difference came in the presence of a co-teacher. As previously mentioned, there are six models of co-teaching. For this

study, the team teaching approach to co-teaching was used. In the team teaching approach, students receive simultaneous instruction from both the general educator and intervention specialist. Although this is the most difficult approach described by teachers, many consider it the most satisfying way to approach co-teaching (Friend, 2014).

### **Instructional Cycles, Assessments, and Measurement**

This study follows a quasi-experimental design using pre and posttest with a comparison group (Campbell & Stanley, 1963). For the intervention group, students began the year in the resource room until they had taken the district pre-test. The students that were in the self-contained room at the start of the year were placed in this setting due to below grade level reading scores. Students from the self-contained resource room were then merged with the typically developing peers of the general education classroom. The classes remained merged for the entire school year. Data collected for this study's purpose focuses on the pre-test, chapter assessments, and midterms through the third grading period (August, 2014- March, 2015).

As mentioned above, the baseline data for both classes, focus and comparison groups, was gathered from the student scores on the standardized district pretest. Students were administered the pretest during the first week of school and scores were recorded in percentage format. It is essential to note that all students, in both classes, who were allowed testing accommodations were provided with appropriate accommodations on all assessments. Testing accommodations varied by individual, but included: small group setting for testing, allowable portions read aloud, extended time (not to exceed double time within 24 hours), and clarification of instructions (not permitted on statewide assessments but permitted on a district test).

Instructional cycles were divided by textbook chapter. During an instructional cycle, students in both the comparison group and experimental group received the same pacing and

content, as well as assignments. The essential difference came from the presence of a co-teacher during delivery and structured practice time, compared to the control group who only received instruction from the general education teacher during delivery and practice time. Both groups were given the same teacher-made summative assessments for each chapter. The results of student performance on each assessment were reported in percentage format to account for point value differences between chapter assessments. The test scores from students' chapter tests (teacher made summative assessments) from August 2014-March 2015 were recorded from the teacher's gradebook for comparison.

A variety of comparisons between classes and within classes were conducted using the Statistical Package for the Social Science, SPSS. First, a Shapiro-Wilk test was conducted to determine if the data in the experimental and control groups were normally distributed. Before data comparison, the data set was checked for outliers as a precondition for conducting an independent-samples t-test. Then, an independent samples t-test was used to ensure the groups were not significantly different at the start of the study by comparing student performance on the district pre-test. Students with IEP/504 plans in both the experimental and control group were isolated to determine if there was a significant difference between group pretest scores using a t-test, and the same was done for typically developing students. After analysis of the pretest data, the individual teacher-made summative assessments were analyzed using SPSS. Overall, a whole population t-test was conducted to determine if the experimental group achieved higher test scores on any summative assessment compared to the control group. Finally, students with IEP/504 plans in both the experimental and control group were compared to typically developing peers in both groups to see if students on an IEP/504 plan tested significantly different compared to their typically developing peers.



## RESULTS

There were 21 participants in the experimental group and 20 participants in the control group. Assessment scores for both the experimental and the control groups were normally distributed, as assessed by Shapiro-Wilk's test ( $p > .05$ ). An independent-samples t-test was run to determine if there were differences in student performance on the district pre-test prior to the study. There was one outlier in the control group and no outliers in the experimental group, as assessed by inspection of box plots for both the experimental and the control group. This outlier in the control group was removed prior to further data analysis.

Following removal of the outlier, there was no statistically significant difference between the experimental and control groups on the district pre-test. This indicates that the experimental and control groups are comparable. There was no significant difference between the experimental and control groups on chapter summative assessments as a whole, i.e., students with and without IEP/504 plans. This study showed that there was no significant effect of IWCT on student performance on summative assessments.

The students on IEP/504 plans from both the control group and experimental group were compared to the typically developing students from both groups (Table 2, Figure 2). There was no statistically significant difference in scores on the teacher-made assessments between students with disabilities and their typically developing peers, except for chapter 2, ( $t=2.93$ ,  $df=39$ ,  $p < .01$ ) and chapter 3/4 ( $t=2.46$ ,  $df=39$ ,  $p < .05$ ). Generally speaking, students with disabilities did not test statistically significantly higher or lower compared to their typically developing peers.

The students with disabilities in the experimental group were isolated and compared to students with disabilities in the control group (Table 3, Figure 3). The students with disabilities in the experimental group generally did not test statistically significantly higher compared to

students with disabilities in the control group. However, there was a statistically significant difference between students on IEP/504 plans in the experimental group ( $\bar{x}=77.86 \pm 3.80$ ,  $n=7$ ) for the chapter 3/4 test, as they tested statistically significantly higher than the students in the control group ( $\bar{x}=63.63 \pm 3.80$ ,  $n=8$ ) with IEP/504 plans (Fig. 3,  $p < .05$ ).

Typically developing students in both the experimental and control groups were also isolated and examined. There was no statistically significant difference between typically developing students in the experimental group and typical students in the control group, except for the chapter 2 test (Table 4, Figure 4;  $t=2.56$ ,  $df=24$ ,  $p < .05$ ). On the chapter 2 test, the students in the control group scored statistically significantly higher compared to the typical students in the experimental group.

## DISCUSSION

### **Whole-group Comparison**

The results of this study showed that there was no statistically significant effect of IWCT on student performance on summative assessments, as the overall experimental group did not test significantly better or worse compared to the entire control group. Although there has been a huge push toward inclusion for students with disabilities, there has been some research that suggests ineffective implementation of inclusion with co-teaching is worse than no inclusion at all (Burstein, Sears, Wilcoxon, Cabello & Spagna, 2004). In this particular study, no training or professional development was provided to the general education teacher or intervention specialist. More useful outcomes of inclusion are likely to result when the staff of a school works together and participates in professional development and training to build the necessary relationships to make inclusion successful (Sailor & Roger, 2005). The sample size, (experimental group n=21, control group n=20) could have contributed to the large measurement error which negatively affected the statistical significance of the study.

### **Students with disabilities versus typically developing peers**

The district pretest revealed no difference between typically developing students and students with disabilities. Through the school year, chapter tests continued to reveal no difference between typically developing students and students with disabilities except in chapters 2 and 3/4. There has been research suggesting that students with disabilities typically do not perform as well on achievement tests compared to their typically developing peers (Gronna, Jenkins & Chin-Chance, 1998). However, this was not the case for my students. One possible source of explanation for this lack of difference between students with disabilities and typical students is that the intervention was successful and the students with disabilities who were in the

IWCT class were benefiting from the supports put in place. Another explanation could be that this particular experimental group could have been a higher academically inclined group of students, even though they were receiving supports from IEP/504 plans. This possible explanation is supported by the fact that students with disabilities in the experimental group scored the same on the pretest, on average, compared to typically developing students. This atypical testing performance by students with disabilities could also contribute to the lack of effectiveness of IWCT as a result of the data being skewed by the participants' level of academic achievement.

### **Students with disabilities in experimental versus control group**

The students with disabilities in the experimental group did not score statistically significantly higher compared to students with disabilities in the control group, with the exception of the chapter 3/4 summative assessment. Perhaps there was something special about the chapter 3/4 content that allowed for high academic achievement.

### **Typically developing peers in experimental versus control group**

There was no statistically significant difference between the typical students in the experimental group and the control group, except for the chapter 2 test. On this chapter assessment, the control group statistically significantly outscored the experimental group. Research has presented potential positive impacts for typical students in the inclusion setting, as the accommodations that are built into instruction can be beneficial to all. However, there has been some research that suggests there is a negative carry-over effect for typically developing students participating in the inclusion setting (Fletcher, 2010). It is possible that the typically developing students in the experimental group were at a disadvantage by being served in the IWCT setting, as demonstrated on their performance on the chapter 2 test. Overall there was no

effect of the intervention on the experimental group. Students with disabilities often require remediation of content and may display some problematic behaviors that utilize the teacher's attention and focus. Because of this, the typically developing students in the IWCT class could have received less teacher attention, causing them to score lower on this single chapter assessment.

Although this study did not reveal any positive achievement results, more research needs to be conducted on the effectiveness of IWCT and best practices for implementation. It is important to note that the students involved in the IWCT experimental group would have carried out their year in the self-contained resource setting due to below grade level reading scores. The fact that the students with disabilities were able to successfully complete the general education course, and show no significant difference from the control IEP/504 students should be recognized. This study could be conducted with the same co-teachers and content and with a different group of students next year. We could re-examine test scores after the second year of teacher pairings to see if setting was more effective after a better relationship was established between co-teachers.

This study's results were presented to my current school district's administration in an effort to continue the program next year, and possibly expand the content areas where IWCT is offered. As of this writing, the school district plans to implement two sections of science using IWCT. To improve effectiveness of instruction, the co-teachers will receive a shared planning period for allocated collaboration time during the school day.

## LIMITATIONS

Overall, the IWCT setting did not directly affect students with disabilities performance on assessments. Although there has been a huge push toward inclusion for students with disabilities, it still faces many hurdles to successful implementation. In fact, there has been some research that suggests ineffective inclusion implementation is worse than no inclusion at all (Burstein et al., 2004). In this particular study, no training or professional development was provided to the general education teacher or intervention specialist. More useful outcomes of IWCT are likely to result when the staff of a school works together and participates in professional development and training to build the necessary relationships to make inclusion successful (Sailor & Roger, 2005). This could explain the lack of effect of IWCT in this study, as both the co-teacher and intervention specialist had never participated in co-teaching before and experienced no formal training or professional development. As the research suggests, there are many needs of an inclusive school, including administrative support, at both district and school levels, professional development for general education teachers and special educators, time for teachers to plan, meet, create and evaluate the students together, professional skill development in areas such as cooperative learning, peer tutoring, adaptive curriculum, and varied learning styles, and collaboration between parents, teachers, and administrators (Burstein et al., 2004). Perhaps increased professional development and a common planning time for the co-teachers to construct meaningful, inclusive lessons could contribute to the successfulness of IWCT.

Teacher attitudes toward the implementation of inclusion can also affect the co-teaching process. Teachers who are guided by their values, beliefs, and attitudes toward change must be convinced that a particular change is worthwhile and understand the reasons behind it (Burstein et al., 2004). If one, or both co-teachers were not fully invested in the process, the effectiveness

of the co-teaching could be jeopardized. The pairings of teachers also needs to be strategic, ensuring that there is a chemistry and common belief system among the co-teachers. In order to make this a more successful opportunity for all students, teachers may benefit from a common planning time not only for lesson building, but to help the teachers build a trusting relationship with one another.

Another limitation to this study is the sample size, as this study only examined two isolated classes. Also, this study only examined the quantitative data produced through test scores. As an additional facet, qualitative data (i.e., surveys, interviews, etc.) could have been included to substantiate the quantitative data and provide additional information about student experiences.

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