AFFECT OF CO-TEACHING ON CURRICULUM BASED MEASUREMENT SCORES

By

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ABSTRACT

The purpose of this study was to examine the effectiveness of co-teaching based on student curriculum based measurement scores. The research findings answered two questions: “Is there a difference in growth on curriculum based measurement scores between students in a co-taught class and students in a class with one teacher?” and “Is there a difference in growth on curriculum based measurement scores between students with disabilities in a co-taught class and students with disabilities in a class with one teacher?” Participants in the study included 23 students in a non-co-taught classroom and 21 students in a co-taught classroom. Research was conducted throughout the school year by collecting MAZE and MCOMP CBM data at the fall, winter, and spring benchmark periods. Data was entered to Microsoft Excel spreadsheets and analyzed using A Statistical Package software. Findings indicated that there was a statistical difference in student MAZE scores between the non-co-taught and co-taught classrooms, but not in student MCOMP scores. It would be interesting to conduct research on a larger study group. Further professional development and pilot co-taught classrooms would be a worthwhile investment of district resources.
INTRODUCTION TO THE STUDY

Background, Issues and Concerns

As an increasing number of students with disabilities are being included in the general education classroom, teachers and school districts are turning toward more effective ways of meeting the needs of students with disabilities in the general education classroom. As such, co-teaching is on the rise. The co-teaching partnership, or collaboration, is defined by Friend and Cook as “joint planning, decision making, and problem solving directed toward a common goal” (Stanovich, 1996, p. 39). Many researchers on the topic of co-teaching cite concerns about the difficulties of co-teaching for educators, the use of co-teaching simply as a means to meet the mandates of No Child Left Behind, and the lack of research on the effectiveness of co-teaching practices. Proponents of co-teaching cite the benefits of co-teaching for the co-educators and students with and without disabilities. Because there was a need for further research, I implemented co-teaching for a year in a 4th grade general education classroom to analyze the effectiveness of co-teaching on academic achievement as indicated by curriculum based measurement tools.

Practice under Investigation

The practice under investigation was the effectiveness of co-teaching in a general education classroom.

School Policy to be Informed by Study

With large class sizes and an oftentimes overwhelming abundance of available resources, teachers frequently attend meetings and professional development, then return to their classrooms, shut the door, and continue to use the same, old, ineffective strategies in isolation.
The lack of collaboration between professionals or use of current best-practice, research-based teaching strategies are hindering the academic achievement of the students. The aim of this study was to change the closed-door and closed-mindedness of teachers and encourage a collaborative approach to teaching.

*Conceptual Underpinning*

The conceptual underpinning for this study was based on research completed by Friend and Cook. Friend and Cook, as well as other researchers in the area of co-teaching, purport that co-teaching is an effective method for increasing the achievement of students with disabilities in inclusive classrooms. Benefits of co-teaching for teachers include: learning from each other, mutual problem solving, and a support network. Benefits of co-teaching for students include: increased self-esteem and self-concept, increased peer interaction, and increased grades for students with and without disabilities. During this study, co-teaching and collaborative teaching are used interchangeably and defined as “two (or more) educators possessing distinct sets of skills work in a coordinated fashion to teach academically heterogeneous groups of students together in the general classroom” (Bauwens & Hourcade, 1997, p. 81). This study attempted to confirm that co-teaching was an effective teaching strategy and increased the curriculum based measurement scores of students more than students in a single-teacher class.

*Statement of the Problem*

There is a lack of conclusive, quantitative evidence about the effectiveness of co-teaching on academic achievement. Studies about co-teaching have mostly consisted of surveys of students and teachers, but have not cited empirical data proving the effectiveness. This study addressed the quantitative evidence about the effectiveness of co-teaching on academic achievement by analyzing curriculum based measurement scores. This study was important
because it attempted to answer the questions about the effectiveness of co-teaching. If the study proved that co-teaching is effective, the aim was to change teaching strategies used in classrooms.

*Purpose of the Study*

The purpose of the study was to analyze the effectiveness of co-teaching in a general education classroom. The research gained will help educators decide if co-teaching is a method that should be implemented in the classroom as a more effective means of inclusion for students with disabilities. The independent variable in the study was co-taught vs non-co-taught students. The dependent variable in the study was AIMSWEB curriculum based measurement scores, specifically MAZE reading comprehension and MCOMP math computation fluency.

*Research Questions*

*RQ 1:* Is there a difference in growth on curriculum based measurement scores between students in a co-taught class and students in a class with one teacher?

*RQ 2:* Is there a difference in growth on curriculum based measurement scores between students with disabilities in a co-taught class and students with disabilities in a class with one teacher?

*Null Hypothesis*

*H₀₁:* There is no difference in growth on curriculum based measurement scores between students in a co-taught class and students in a class with one teacher.

*H₀₂:* There is no difference in growth on curriculum based measurement scores between students with disabilities in a co-taught class and students with disabilities in a class with one teacher.
Anticipated Benefits of the Study

At the conclusion of the study, it was anticipated that the null hypothesis would be rejected. The researcher hoped to find that there was a difference in growth on curriculum based measurement scores between students in co-taught and non-co-taught classrooms.

Definition of Terms

CBM – Curriculum Based Measurement
IEP – Individualized Education Plan
MAZE – MAZE Assessment
MCOMP – Math Computation Assessment
NCLB – No Child Left Behind
RtI – Response to Intervention

Summary

Co-teaching in inclusive classrooms is a practice that is becoming more common in recent years. Although co-educators may face difficulties with collaborative teaching, the benefits of co-teaching for teachers and students with and without disabilities are numerous. Benefits include a support network and increased test scores. However, there was a need for further research and a lack of quantitative data to support the theory. As such, I implemented co-teaching for one year and analyzed the growth on curriculum based measurement scores between my co-taught classroom and a non-co-taught classroom.
REVIEW OF LITERATURE

Co-teaching is a quickly increasing fad in the world of education as a model of inclusion for students with disabilities. Educators know that students with disabilities and from diverse backgrounds must be included in the general education classroom, and co-teaching is a model that provided differentiated instruction for all students in the same classroom. Teachers are quick to jump on the co-teaching bandwagon because they heard it was easy or fun or more effective, but they lack a true understanding of the definition of co-teaching or the requirements of a good co-teaching partnership.

There are many methods of co-teaching, so it is important to clarify what leading researchers indicate is the appropriate definition. Bauwens and Hourcade (1997) define cooperative teaching as “two (or more) educators possessing distinct sets of skills work[ing] in a coordinated fashion to teach academically heterogeneous groups of students together in the general classroom” (p. 81). It is essential that co-teaching partners remember that each educator is equally responsible for the growth and development of the children. According to Friend, Cook, Hurley-Chamberlain, and Shamberger (2010), “co-teaching may be defined as the partnering of a general education teacher and a special education teacher or another specialist for the purpose of jointly delivering instruction to a diverse group of students, including those with disabilities or other special needs, in a general education setting and in a way that flexibly and deliberately meets their learning needs” (p. 11). Stanovich (1996) reminds her readers of Friend and Cook’s early defining characteristics of successful co-teaching: voluntary, parity among participants, based on mutual goals, shared resources and accountability.

Ideally a co-teaching partnership would consist of a general education teacher and a specialized teacher, such as a reading support teacher, special education teacher, or a teacher for
English as a Second or Other Language; however, a general education teacher and a special education teacher are not a requirement. Dettmer, Thurston, Knackendoffel, and Dyck (2009), also provide a clear definition for co-teaching: “two or more teachers planning and implementing instruction, and monitoring and assessing student achievement, typically in an inclusive classroom” (p. 57). They continue to point out that co-educators are “persons who collaborate, consult, and work in teams to provide appropriate learning experiences for students’ diverse needs. Co-educators can be school-based such as teachers and related services or support personnel, home-based such as family members or caregivers of students, and community-based in support roles” (Dettmer, et al., 2009, p. 81). Co-teaching does not simply consist of two adults in the same classroom, such as a teacher and parent volunteer or student teacher. The educators must have specific skill sets that are being utilized to meet the needs of the students. For the purposes of this research, the co-educators were both general education teachers with knowledge of special education strategies and techniques.

Co-teaching or collaborative teaching has been evolving for decades. Classroom teachers, special education teachers, reading interventionists, paraeducators, speech-language pathologists, occupational therapists, physical therapists, parents, counselors, administrators, and others all make educational decisions for children. Special education teachers and paraeducators have worked together. Physical therapists and occupational therapists often collaborate. General education teachers and parents regularly communicate about student progress. However, these relationships were likely limited to special education and therapeutic settings.

Beginning in the 1950s, team teaching became a trend as the United States questioned the efficiency and effectiveness of traditional teaching practices. Teams of teachers, mostly in middle and high schools, would teach up to 100 students at a time. The “expert” teacher on the
content to be taught would deliver a lecture, while the other teaching staff assisted. Then, the class would break out into small groups for discussions, assignments, and assessments. In elementary schools, a team of four teachers would plan together and teach in an open classroom to up to 100 students. These methods required educators to work together closely to divide up teaching responsibility (Friend, et al., 2010).

The concept of team teaching has changed over time. Now, in elementary schools, team teaching usually refers to two teachers sharing a double-sized classroom and collaborating and teaching their combined classes. In middle school, team teaching looks like four or five teachers collaborating to plan instruction for 100 to 125 students. In high school, team teaching is often interdisciplinary; educators from different departments collaborate to teach their combined classes. For example, a history teacher and an English teacher might collaborate to teach history through literature to their combined classes.

The 1960s gave rise to increased rights for students with disabilities and the special education movement in the United States. Parents and educators were no longer satisfied with students with disabilities attending separate schools than their able bodied peers. General education teachers and special education teachers began to cross those barriers to provide education for students with disabilities in the least restrictive environment. Special education services were more often delivered in the general education setting (Friend, et al., 2010).

As inclusive teaching practices began to increase during the 1980s, co-teaching developed. Educators were concerned about peer interactions between students with disabilities and nondisabled students. In addition, teachers were forced to meet the mandates of educating students with disabilities in the least restrictive environment and by highly qualified teachers. Increased academic achievement expectations for students with disabilities powered another
argument for provided special education services in the general education classroom when appropriate (Friend, et al., 2010).

Interest in co-teaching was renewed and intensified after the passage of the No Child Left Behind Act of 2001 and the reauthorization of the Individuals with Disabilities of Education Act of 2004. Teachers thought of better methods to meet the requirements of NCLB that state that “all students, including those with disabilities, access the general curriculum; be taught by highly qualified teachers; and be included in professionals’ accountability for achievement outcomes” and the mandates of IDEA that require students with disabilities participate in the least restrictive environment (Friend, et al., 2010, p. 10). Friend, et al. (2010) believe “co-teaching seems to be a vehicle through which legislative expectations can be met while students with disabilities at the same time can receive the specially designed instruction and other supports to which they are entitled” (p. 10). Currently, the goal of co-teaching is for educators with specific skill sets to work together to meet the diverse needs of all learners, including those with disabilities or other needs, in a general education classroom.

Research about the effects of co-teaching through the years has been mostly anecdotal. Researchers assert that co-teaching has many benefits for students, which will be discussed later in this paper, but do not provide any empirical data. Experts in the education field also claim that peer-tutoring leads to clear gains for students, again, without giving any data.

Kohler-Evans (2006) analyzed studies conducted by several groups of researchers. She determined the findings to be very inconclusive and contradictory regarding student improvement in co-taught classrooms. Kohler-Evans (2006) cited research by Bear and Proctor that indicated students with disabilities made greater gains in reading and equal gains in math compared to students receiving pull out services. A second study showed that for high risk-
students and students with disabilities, co-teaching is effective; however, no data was given to prove that statement. Another researcher found that children with high incidence disabilities showed decreased performance after co-teaching.

In 2007, Scruggs, Mastropieri, and McDuffie conducted a metasynthesis of qualitative research on co-teaching in inclusive classrooms. The article begins with a review of previous co-teaching research done by other authors, who have cited the need for further research about co-teaching. The authors explain that “the purpose [of metasynthesis] is to integrate themes and insights gained from individual qualitative research into a higher order synthesis that promotes broad understandings of the entire body of research, while still respecting the integrity of the individual reports” (Scruggs, et al., 2007, p. 395). Literature about co-teaching was collected and qualitative and quantitative data was coded using computer software. The authors then listed the metasynthesis of the following information: benefits of co-teaching for teachers, students with disabilities, students without disabilities, and student skill level; needs of co-teachers, such as administrative support, volunteerism, planning time, training, and compatibility; teacher roles in various models of co-teaching. The authors concluded that the literature on co-teaching indicates that although there are many benefits of co-teaching, the true collaborative nature of co-teaching as equal partners has not been met.

In order to provide clear quantitative data, McDuffie, Mastropieri, and Scruggs (2009) conducted research on the effects of peer-tutoring interventions on 203 7th grade science students in co-taught and non-co-taught teaching settings over an 8-week period. They felt the students would make greater gains when peer-tutoring and co-teaching were combined. The authors assessed the impact of peer-tutoring using a 2 condition by 2 settings by 2 types of students analysis of covariance with pretests as covariates. The study consisted of two co-taught and
peer-tutored classrooms, two co-taught and non-peer-tutored classrooms, two non-co-taught and peer-tutored classrooms, and two non-co-taught and non-peer-tutored classrooms. The co-taught classrooms had a regular education teacher and a special education teacher, and a higher percentage of students with disabilities than the non-co-taught classrooms. Instructional periods followed a similar pattern in all classrooms, with a 10 minute warm up, teacher instruction, then guided and independent practice. The peer-tutored classrooms substituted the 10 minute warm up with a peer-tutoring intervention each day.

Students in the peer-tutored classrooms outperformed students in the traditional classrooms on unit assessments. Students in the co-taught classrooms also statistically outperformed students in non-co-taught classrooms on both unit assessments and cumulative assessments. McDuffie, Mastropierie, and Scruggs’ (2009) hypothesis that a combination of co-teaching and peer-tutoring would greatly impact students’ scores was proven incorrect. There was no statistical difference between the peer-tutored and non-peer-tutored classrooms. At the conclusion of the study, students took a survey about their perceptions of science, peer-tutoring, and co-teaching. Students’ perceptions were generally positive regarding science, co-teaching, and peer-tutoring.

Co-teaching research shows numerous benefits for students. Bauwens and Hourcade (1997) show illustrations for many different models of co-teaching which are utilized in the classroom for including students with and without disabilities, each of which give specific benefits for students. Various models of co-teaching allow for different modalities of presentation, such as one teacher present information in a lecture style while the other teacher displays illustrations, models, or written notes. This allows students to learn from the style that is best for them. Students may be split into heterogeneous groups for pre-teaching or
supplementing the lesson or skill based groups. Smaller groups tailored to a group of students’
needs prevent students from being overwhelmed by too much information or bored because they
already know the content. Another common model of co-teaching is one teach, one assist, in
which one teacher presents the lesson and the other teacher monitors students, paraphrases to a
small group, and answers individual questions. Dettmer, et al., (2009) cite reduced referrals for
special education and retention as benefits to students who experience successful collaboration.
Murawski and Hughes (2009) added that co-taught students with disabilities benefit from
improved academics, behavior, social skills, and self-esteem. As previously discussed,
according to current research, the academic benefits from co-teaching are still being debated and
are inconclusive.

Collaboration between general education teachers and special education teachers helps
general education teachers become more equal partners during Individualized Education Plan
(IEP) meetings. Teachers benefit because they are more involved in the IEP process. According
to Stanovich (1996), other benefits of collaborative teaching are: “teachers learn from observing
each other, engage in mutual problem solving, and have a sense of support and shared
experiences” (p. 40). Special education teachers are able to use their expertise to help general
education teachers develop accommodations and modifications so all students can access the
curriculum. Co-teaching draws on the skills of more than one educator and places specialized
instruction in the context of the general education classroom. In addition, problem behaviors are
easily addressed when there are more than one adult in the room who are working together
collaboratively.

Due to the collaborative nature of co-teaching, parents and administrators also become
key players in the education of students. Stanovich (1996) explains ways that parents become
more equal partners, especially during the IEP meeting: “collaboration as joint planning, decision making, and problem solving aimed at a common goal is equally fitting as a description of a successful IEP conference” (p. 41). Parents are made to feel like valuable members of the IEP meeting by being encouraged to share their long term goals for their child and communicating information that only they can provide about their child. Frequent, if not daily, contact with parents aids in their contribution to their child’s education. Parents can also collaborate with teachers by volunteering at school or joining the Parent Teacher Association.

Collaboration and co-teaching are no easy feat to be tackled without preparation. Dettmer, et al., (2009) list twelve key areas to be addressed within four essential elements of successful collaboration. The first element is preparation, which requires preservice education, graduate certification and degree programs, and professional development about co-teaching. The second element is role delineation, which involves role clarification, role parity, and role expectations. Role parity is one of the most difficult aspects of the co-teaching relationship, as special education teachers sometimes feel like they are more of an aid than an asset to the classroom. The third element is the framework for collaboration and co-teaching, which “calls for structures that provide adequate blocks of time, management of schedules, suitable facilities in which to meet, and organization of details so that the interactive processes are carried out as conveniently and nonintrusively as possible” (Dettmer, et al., 2009, p. 48).

Friend, et al., (2010) noted the complexity of the co-teaching relationship. They listed that for a successful co-teaching partnership to exist, co-teaching must be voluntary. Co-teachers also cited common planning time as essential to their experience. Friend, et al., (2010) agreed that continued staff development about planning and collaboration is a needed supports for co-educators.
Keefe, Moore, and Duff (2004) specifically addressed the challenges for teachers in secondary school levels. Obstacles in the high schools involve greater emphasis on content, independent study skills, fast paced instruction, high stakes testing, wider gap in student achievement, and negative teacher attitudes about accommodations and modifications for students with disabilities. They suggested several ways for teachers to overcome challenges of co-teaching at the secondary level. One who is considering co-teaching should reflect on their own beliefs and consider how much they are willing to share with another teacher, such as lesson planning and modifications, classroom management and organizational control, discipline and grading. Co-teachers need to have open communication about their beliefs and get to know their partners. Knowing the needs of the students, how to meet their needs, and who can meet their needs best is also important. Maintaining an open mind and continuing professional development about co-teaching is also essential to help co-educators be successful.

There are many models for co-teaching that are used in classrooms, oftentimes more than one in the same day. Depending on the objective, each model of co-teaching has a specific purpose that can be tailored to reach a targeted group of students. The “team teaching” model is useful for introducing new content to a whole group. Bauwens and Hourcade (1997) describe team teaching as “the initial presentation of new content is shared between two teachers who jointly plan and present the targeted academic subject content to all students as clearly and concisely as possible” (p. 82). Teachers may take turns presenting information using their strengths to highlight certain parts of the lecture. In one of the most powerful models of team teaching according to Bauwens and Hourcade (1997), one teacher presents while the other moves around the room to paraphrase, clarify, and monitor.
Another co-teaching option is called “supportive learning activities,” in which “cooperative teaching partners identify, develop, and lead student activities designed to reinforce, enrich, and/or enhance learning for all students” (Bauwens & Hourcade, 1997, p. 82). Supportive learning activities can be used before, during, or after primary instruction. Students are grouped based on ability or skill area and provided with activities that meet their needs. Educators monitor or instruct different groups.

“Complimentary instruction” models are good for mini-lessons. The first teacher’s primary responsibility is teaching the specific content matter. The cooperative teaching partner’s duty is “teaching students the functional how-to skills necessary to acquire the material, including such learning and study skills as taking notes, identifying main ideas, and analysis and evaluation” (Bauwens & Hourcade, 1997, 84). “Test day” models are helpful when there are students who require accommodations on an assessment. One teacher monitors or administers an assessment while the other provides accommodations to a small group.

Response to Intervention, or RtI, is a current trend in special education. RtI is a process used to provide supported and increasing levels of intervention for at-risk students before testing them for disabilities. If students respond to the intervention, then educators can conclude that the child does not have a learning disability. Because the interventions are administered in the general education classroom, “the RTI emphasis on proactive instruction, ongoing assessment, data-based decision making, and intensive instruction greatly affects the general education teacher and classroom” (Murawski & Hughes, 2009, p. 268). Co-teaching is a powerful means for meeting the needs for RTI implementation because teachers need to actively collaborate with their colleagues for a number of reasons. Co-educators implementing RtI need to make sure that:
(a) lessons are research based, (b) lessons address the wide variety of needs in the general education classroom, (c) lessons ensure access to the general education curriculum for diverse learners, (d) ongoing data collection and progress monitoring is occurring, and (e) students in Tiers II and III are able to receive specialized and more individualized instruction in small groups. (Murawski & Hughes, 2009, p. 269)

Co-teaching brings the qualities of a special education teacher into the general education classroom to help ensure that all students are receiving research based instruction and best practices. Special educators generally specialize in assessment and differentiated instruction. With two teachers, it is possible to group and regroup students based on assessment data to provide intense differentiated instruction that meets the requirements of RtI.
RESEARCH METHODS

Research Design

The research design consisted of ongoing data gathering. A series of t-Tests were run that compared the mean CBM scores (MAZE, MCOMP) of students in co-taught and non-co-taught classroom at each benchmark period (fall, winter, spring). T-tests also compared the significance in growth from each benchmark period to another, and from the beginning of the year to the end of the year. A third series of t-Tests was performed to analyze the differences between students who received special education or reading services in co-taught and non-co-taught classrooms. For the third series of t-Tests, students who received special education or reading services were grouped together. The independent variable was co-taught and non-co-taught classes. The dependent variable was CBM scores.

Study Group Description

The independent variable of co-taught or non-co-taught consisted of two classrooms. The co-taught classroom consisted of 45 students in a co-taught classroom with two general education teachers, one teacher with 15 years of experience and a completed master’s in special education, and one teacher with 3 completed years of experience and a master’s in special education in progress. The CBM data used was only from the researcher’s classroom, which consisted of 21 students, four with learning disabilities who received pull out services from a special education teacher and three who received pull out reading support services. The non-co-taught classroom to be compared consisted of 22 students, from which two received special education services and five received reading support. The non-co-taught classroom did experience push in reading services for students who qualified for reading support but not special
education. To minimize variables between the two classrooms, both used small group
differentiated instruction throughout the day in both communication arts and mathematics.

Data Collection and Instrumentation

AIMSWEB CBM data was collected three times during the fall, winter, and spring
benchmark windows. The MAZE CBM consisted of a 3-minute reading comprehension
assessment in which students circled the word that best fit in the sentence. The MCOMP CBM
was a 4-minute mixed math computation assessment. Administration of CBMS followed a
standard set of procedures. Data was entered into Microsoft Excel and recoded for co-taught and
non-co-taught classes.

Statistical Analysis Methods

Descriptive statistics were computed in Microsoft Excel. The t-Tests were computed
using ASP (A Statistical Package) software.
FINDINGS

This study compared the growth in student CBM scores between a co-taught class and a non-co-taught class. Independent t-Tests were run to determine if there was a significant difference between the growth in the class’s mean CBM scores.

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<td>-0.76</td>
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Note: significant when $p<=0.25$

Table 1 shows the t-Test analysis results for non-co-taught and co-taught classrooms’ fall MAZE scores. There were 22 students in the non-co-taught classroom, who received a mean score of 13.59 points on the MAZE. There were 20 students in the co-taught classroom who received a mean score of 15.20 points on the MAZE. The difference in means was -1.61 points. The t-Test was -0.76 and the df was 40. The $p$-value of 0.45 was greater than the alpha level of 0.25, meaning there was not a statistical difference in fall benchmark MAZE scores between the non-co-taught and the co-taught classrooms.

<table>
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Note: significant when $p<=0.25$
Table 2 shows the t-Test analysis results for non-co-taught and co-taught classrooms’ fall MCOMP scores. The mean MCOMP score for the non-co-taught classroom was 30.45 points. The mean MCOMP score for the co-taught classroom was 33.80 points. The difference in means was -3.45 points. The t-Test was -0.72 and the df was 40. The p-value of 0.48 was greater than the alpha level of 0.25, meaning there was not a statistical difference in fall benchmark MCOMP scores between the non-co-taught and the co-taught classrooms.

Table 3 shows the t-Test analysis results for non-co-taught and co-taught classrooms’ winter MAZE scores. There were 24 students in the non-co-taught classroom and 21 students in the co-taught classroom in the winter benchmark testing period. The mean MAZE score for the non-co-taught classroom was 23.04 points. The mean MAZE score for the co-taught classroom was 20.90 points. The mean difference was 2.13 points. The t-Test was 0.85 and the df was 43. The p-value of 0.39 was greater than the alpha level of 0.25, meaning there was not a statistical difference in winter benchmark MAZE scores between the non-co-taught and the co-taught classrooms.

<table>
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<tr>
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<td>2.13</td>
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Note: significant when p<=0.25
Table 4 shows the t-Test analysis results for the non-co-taught and co-taught classrooms’ winter MCOMP scores. The mean MCOMP score for the non-co-taught classroom was 42.58 points and the mean MCOMP for the co-taught classroom was 48.29 points. The mean difference was -5.70 points. The t-Test was -1.22 and the df was 43. The $p$-value of 0.23 was less than the alpha level of 0.25, meaning there was a statistical difference in winter benchmark MCOMP scores between the non-co-taught and the co-taught classrooms.

Table 5 shows the t-Test analysis results for non-co-taught and co-taught classrooms’ spring MAZE scores. There were 23 students in the non-co-taught classroom in the spring who received a mean score of 18.65 points on the MAZE. There were 21 students in the co-taught classroom in the spring who received a mean score of 22.24 points on the MAZE. The difference in means was -3.59 points. The t-Test was -1.51 and the df was 42. The $p$-value of 0.12 was less than the alpha level of 0.25, meaning there was a statistical difference in spring benchmark MAZE scores between the non-co-taught and the co-taught classrooms.
Table 6

<table>
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<tr>
<td>Co-taught (n=21)</td>
<td>50.33</td>
<td>-0.16</td>
<td>-0.04</td>
<td>42</td>
<td>0.97</td>
</tr>
</tbody>
</table>

Note: significant when $p<=0.25$

Table 6 shows the t-Test analysis results for non-co-taught and co-taught classrooms’ spring MCOMP scores. The mean score for the non-co-taught classroom was 50.17 points. The mean score for the co-taught classroom was 50.33 points. The mean difference was -0.16 points. The $p$-value of 0.97 was greater than the alpha level of 0.25, meaning there was not a statistical difference in spring benchmark MCOMP scores between the non-co-taught and the co-taught classrooms.

Table 7

<table>
<thead>
<tr>
<th>Source</th>
<th>Mean</th>
<th>Mean D</th>
<th>t-Test</th>
<th>df</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-co-taught (n=22)</td>
<td>10.77</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Co-taught (n=20)</td>
<td>6.60</td>
<td>4.17</td>
<td>3.37</td>
<td>40</td>
<td>0.002</td>
</tr>
</tbody>
</table>

Note: significant when $p<=0.25$

Table 7 shows the independent t-Test results comparing the growth in MAZE scores from the fall to the winter benchmark periods for the non-co-taught and the co-taught classrooms. The non-co-taught classroom consisted of 22 students in the winter. The co-taught classroom consisted of 20 students in the winter. The mean growth in MAZE scores for the non-co-taught classroom was 10.77 points, and the mean growth in MAZE scores for the co-taught classroom was 6.60 points. The mean difference between the two classrooms was 4.17 points. The t-test
result was 3.37 and the df was 40. After conducting a t-test to compare the mean growth from fall to winter MAZE benchmark testing periods of the non-co-taught and the co-taught classrooms, with the alpha level set at 0.25, the \( p \)-value was 0.002. The first null hypothesis states that there is no difference in growth on MAZE scores from fall to winter benchmark periods based on type of classroom. Since the \( p \)-value of 0.002 was less than the alpha level of 0.25, there was a statistical difference in growth on MAZE scores and the null hypothesis was rejected. There was a difference in growth from fall to winter benchmark periods on MAZE scores between the non-co-taught and the co-taught classrooms. The students in the non-co-taught classroom made greater growth from fall to winter on the MAZE than the students in the co-taught classroom.

Table 8

<table>
<thead>
<tr>
<th>Source</th>
<th>Mean</th>
<th>Mean D</th>
<th>t-Test</th>
<th>df</th>
<th>( p )-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-co-taught (n=22)</td>
<td>13.45</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Co-taught (n=20)</td>
<td>16.35</td>
<td>-2.89</td>
<td>-0.87</td>
<td>40</td>
<td>0.39</td>
</tr>
</tbody>
</table>

Note: significant when \( p \leq 0.25 \)

Table 8 shows the independent t-Test results comparing the growth in MCOMP scores from the fall to the winter benchmark periods for the non-co-taught and the co-taught classrooms. The mean growth in MCOMP scores for the non-co-taught classroom was 13.45 points, and the mean growth in MCOMP scores for the co-taught classroom was 16.35 points. The mean difference between the two classrooms was -2.89. The t-test result was -0.87 and the df was 40. After conducting a t-test to compare the mean growth from fall to winter MCOMP benchmark testing periods of the non-co-taught and the co-taught classrooms, with the alpha level set at 0.25, the \( p \)-value was 0.39. The first null hypothesis states that there is no difference.
in growth on MCOMP scores from fall to winter benchmark periods based on type of classroom. Since the $p$-value of 0.39 was greater than the alpha level of 0.25, there was no statistical difference in growth on MCOMP scores and the null hypothesis was not rejected. There was no difference in growth from fall to winter benchmark periods on MCOMP scores between the non-co-taught and the co-taught classrooms.

Table 9

<table>
<thead>
<tr>
<th>Source</th>
<th>Mean</th>
<th>Mean D</th>
<th>t-Test</th>
<th>df</th>
<th>$p$-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-co-taught (n=23)</td>
<td>-5.09</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Co-taught (n=21)</td>
<td>1.24</td>
<td>-6.33</td>
<td>-5.34</td>
<td>42</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Note: significant when $p$ <= 0.25

Table 9 shows the independent t-Test results comparing the growth in MAZE scores from the winter to the spring benchmark periods for the non-co-taught and the co-taught classrooms. The non-co-taught classroom consisted of 23 students in the spring. The co-taught classroom consisted of 21 students in the spring. The mean growth in MAZE scores for the non-co-taught classroom was -5.09 points, and the mean growth in MAZE scores for the co-taught classroom was 1.24 points. The mean difference between the two classrooms was -6.33 points. The t-test result was -5.34 and the df was 42. After conducting a t-test to compare the mean growth from winter to spring MAZE benchmark testing periods of the non-co-taught and the co-taught classrooms, with the alpha level set at 0.25, the $p$-value was 0. The first null hypothesis states that there is no difference in growth on MAZE scores from winter to spring benchmark periods based on type of classroom. Since the $p$-value of 0 was less than the alpha level of 0.25, there was a statistical difference in growth on MAZE scores and the null hypothesis was rejected. There was a difference in growth from winter to spring benchmark periods on MAZE scores
between the non-co-taught and the co-taught classrooms. The students in the co-taught classroom made greater growth from winter to spring on the MAZE than the students in the non-co-taught classroom. The students’ MAZE scores in the non-co-taught classroom decreased, while the students’ MAZE scores in the co-taught classroom increased from the winter to spring benchmark periods.

Table 10

| t-Test Analysis Results for Non-Co-Taught and Co-Taught Classrooms Spring-Winter Growth in MCOMP scores |
|---------------------------------|----------------|----------|--------|------|---|---|
| Source                          | Mean | Mean D  | t-Test | df   | p-value |
| Non-co-taught (n=23)            | 5.87 |         |        |      |       |
| Co-taught (n=21)                | 2.62 | 3.25    | 0.94   | 42   | 0.35   |

Note: significant when \( p \leq 0.25 \)

Table 10 shows the independent t-Test results comparing the growth in MCOMP scores from the winter to the spring benchmark periods for the non-co-taught and the co-taught classrooms. The mean growth in MCOMP scores for the non-co-taught classroom was 5.87 points, and the mean growth in MCOMP scores for the co-taught classroom was 2.62 points. The mean difference between the two classrooms was 3.25. The t-test result was 0.94 and the df was 42. After conducting a t-test to compare the mean growth from winter to spring MCOMP benchmark testing periods of the non-co-taught and the co-taught classrooms, with the alpha level set at 0.25, the \( p \)-value was 0.35. The first null hypothesis states that there is no difference in growth on MCOMP scores from winter to spring benchmark periods based on type of classroom. Since the \( p \)-value of 0.35 was greater than the alpha level of 0.25, there was no statistical difference in growth on MCOMP scores and the null hypothesis was not rejected. Although the mean growth for the non-co-taught classroom was higher than the growth for the
mean growth for the co-taught classroom, there was no statistical difference in growth from winter to spring benchmark periods on MCOMP scores.

<table>
<thead>
<tr>
<th>Source</th>
<th>Mean</th>
<th>Mean D</th>
<th>t-Test</th>
<th>df</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-co-taught (n=22)</td>
<td>5.36</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Co-taught (n=20)</td>
<td>7.90</td>
<td>-2.54</td>
<td>-2.14</td>
<td>40</td>
<td>0.04</td>
</tr>
</tbody>
</table>

Table 11 shows the independent t-Test results comparing the overall growth in MAZE scores for the non-co-taught and the co-taught classrooms. The mean growth in MAZE scores for the non-co-taught classroom was 5.36 points, and the mean growth in MAZE scores for the co-taught classroom was 7.90 points. The mean difference between the two classrooms was -2.54 points. The t-test result was -2.14 and the df was 40. After conducting a t-test to compare the mean overall MAZE growth of the non-co-taught and the co-taught classrooms, with the alpha level set at 0.25, the p-value was 0.04. The first null hypothesis states that there is no difference in growth on MAZE scores based on type of classroom. Since the p-value of 0.04 was less than the alpha level of 0.25, there was a statistical difference in growth on MAZE scores and the null hypothesis was rejected. There was a difference in overall growth on MAZE scores between the non-co-taught and the co-taught classrooms. The students in the co-taught classroom made greater growth from the fall to the spring on the MAZE than the students in the non-co-taught classroom.
Table 12 shows the independent t-Test results comparing the overall growth in MCOMP scores for the non-co-taught and the co-taught classrooms. The mean growth in MCOMP scores for the non-co-taught classroom was 19.05 points, and the mean growth in MCOMP scores for the co-taught classroom was 18.60 points. The mean difference between the two classrooms was 0.45. The t-test result was 0.12 and the df was 40. After conducting a t-test to compare the mean overall growth on the MCOMP of the non-co-taught and the co-taught classrooms, with the alpha level set at 0.25, the p-value was 0.90. The first null hypothesis states that there is no difference in growth on MCOMP scores based on type of classroom. Since the p-value of 0.90 was greater than the alpha level of 0.25, there was no statistical difference in growth on MCOMP scores and the null hypothesis was not rejected. The non-co-taught class had a slightly higher gain in MCOMP scores from the fall to the spring than did the co-taught class.

Next, students with disabilities and students who received reading services were isolated to examine the differences in gains between that subgroup. The non-co-taught and the co-taught class both had 6 or 7 students with learning disabilities or who received reading services throughout the year. Independent t-Tests were run to determine if there was a significant difference between the growth in the subgroup’s mean CBM scores.

<table>
<thead>
<tr>
<th>Source</th>
<th>Mean</th>
<th>Mean D</th>
<th>t-Test</th>
<th>df</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-co-taught (n=22)</td>
<td>19.05</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Co-taught (n=20)</td>
<td>18.60</td>
<td>0.45</td>
<td>0.12</td>
<td>40</td>
<td>0.9</td>
</tr>
</tbody>
</table>

Note: significant when p<=0.25
Table 13 shows the t-Test analysis results for non-co-taught and co-taught classrooms’ special education and reading students fall MAZE scores. There were 6 students in the non-co-taught classroom, who received a mean score of 12.17 points on the MAZE. There were 6 students in the co-taught classroom who received a mean score of 9.33 points on the MAZE. The difference in means was 2.83 points. The \( p \)-value of 0.49 was greater than the alpha level of 0.25, meaning there was not a statistical difference in fall benchmark MAZE scores between the special education and reading students in the non-co-taught and the co-taught classrooms.

Table 14 shows the t-Test analysis results for non-co-taught and co-taught classrooms’ special education and reading students fall MCOMP scores. The mean MCOMP score for the non-co-taught classroom was 22.00 points. The mean MCOMP score for the co-taught classroom was 26.83 points. The difference in means was -4.83 points. The \( p \)-value of 0.56 was greater than the alpha level of 0.25, meaning there was not a statistical difference in fall
benchmark MCOMP scores between the special education and reading students in the non-co-taught and the co-taught classrooms.

Table 15 shows the t-Test analysis results for non-co-taught and co-taught classrooms’ special education and reading students winter MAZE scores. There were 7 students in the non-co-taught classroom and 7 students in the co-taught classroom in the winter benchmark testing period. The mean MAZE score for the non-co-taught classroom was 18.29 points. The mean MAZE score for the co-taught classroom was 14.86 points. The mean difference was 3.43 points. The $p$-value of 0.44 was greater than the alpha level of 0.25, meaning there was not a statistical difference in winter benchmark MAZE scores between the special education and reading students in the non-co-taught and the co-taught classrooms.

Table 16 shows the t-Test analysis results for non-co-taught and co-taught classrooms’ special education and reading students winter MCOMP scores.

Table 15

<table>
<thead>
<tr>
<th>Source</th>
<th>Mean</th>
<th>Mean D</th>
<th>t-Test</th>
<th>df</th>
<th>$p$-value</th>
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<tbody>
<tr>
<td>Non-co-taught (n=7)</td>
<td>18.29</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Co-taught (n=7)</td>
<td>14.86</td>
<td>3.43</td>
<td>0.80</td>
<td>12</td>
<td>0.44</td>
</tr>
</tbody>
</table>

Note: significant when $p$<=0.25

Table 16

<table>
<thead>
<tr>
<th>Source</th>
<th>Mean</th>
<th>Mean D</th>
<th>t-Test</th>
<th>df</th>
<th>$p$-value</th>
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<tbody>
<tr>
<td>Non-co-taught (n=7)</td>
<td>33.43</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Co-taught (n=7)</td>
<td>39.43</td>
<td>-6.00</td>
<td>-0.69</td>
<td>12</td>
<td>0.51</td>
</tr>
</tbody>
</table>

Note: significant when $p$<=0.25
Table 16 shows the t-Test analysis results for the non-co-taught and co-taught classrooms’ special education and reading students winter MCOMP scores. The mean MCOMP score for the non-co-taught classroom was 33.43 points and the mean MCOMP for the co-taught classroom was 39.43 points. The mean difference was -6.00 points. The *p*-value of 0.51 was greater than the alpha level of 0.25, meaning there was not a statistical difference in winter benchmark MCOMP scores between the special education and reading students in the non-co-taught and the co-taught classrooms.

Table 17 shows the t-Test analysis results for non-co-taught and co-taught classrooms’ special education and reading students spring MAZE scores. There were 6 students in the non-co-taught classroom in the spring who received a mean score of 16.17 points on the MAZE. There were 7 students in the co-taught classroom in the spring who received a mean score of 16.14 points on the MAZE. The difference in means was 0.03 points. The *p*-value of 0.99 was greater than the alpha level of 0.25, meaning there was not a statistical difference in spring benchmark MAZE scores between the special education and reading students in the non-co-taught and the co-taught classrooms.
Table 18 shows the t-Test analysis results for non-co-taught and co-taught classrooms’ special education and reading students spring MCOMP scores. The mean score for the non-co-taught classroom was 44.17 points. The mean score for the co-taught classroom was 39.86 points. The mean difference was 4.31 points. The p-value of 0.64 was greater than the alpha level of 0.25, meaning there was not a statistical difference in spring benchmark MCOMP scores between the special education and reading students in the non-co-taught and the co-taught classrooms.

Table 19 shows the independent t-Test results comparing the growth in MAZE scores from the fall to the winter benchmark periods for the special education and reading students in the non-co-taught and the co-taught classrooms. The subgroup in the non-co-taught classroom consisted of 6 students in the winter. The subgroup in the co-taught classroom consisted of 6 students in the winter. The mean growth in MAZE scores for the non-co-taught classroom was
8.00 points, and the mean growth in MAZE scores for the co-taught classroom was 7.50 points. The mean difference between the two classrooms was 0.50 points. The t-test result was 0.31 and the df was 10. After conducting a t-test to compare the mean growth from fall to winter MAZE benchmark testing periods of the special education and reading students in the non-co-taught and the co-taught classrooms, with the alpha level set at 0.25, the \( p \)-value was 0.76. The second null hypothesis states that there is no difference in growth on CBM scores between students with disabilities in a co-taught class and students with disabilities in a class with one teacher. Since the \( p \)-value of 0.76 was greater than the alpha level of 0.25, there was not a statistical difference in growth on MAZE scores and the null hypothesis was not rejected. There was not a difference in growth from fall to winter benchmark periods on MAZE scores between the special education and reading students in the non-co-taught and the co-taught classrooms.

<table>
<thead>
<tr>
<th>Source</th>
<th>Mean</th>
<th>Mean D</th>
<th>t-Test</th>
<th>df</th>
<th>( p )-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-co-taught (n=6)</td>
<td>15.50</td>
<td>-1.83</td>
<td>-0.31</td>
<td>10</td>
<td>0.76</td>
</tr>
<tr>
<td>Co-taught (n=6)</td>
<td>17.33</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: significant when \( p \leq 0.25 \)

Table 20 shows the independent t-Test results comparing the growth in MCOMP scores from the fall to the winter benchmark periods for special education and reading students in the non-co-taught and the co-taught classrooms. The mean growth in MCOMP scores for the non-co-taught classroom was 15.50 points, and the mean growth in MCOMP scores for the co-taught classroom was 17.33 points. The mean difference between the two classrooms was -1.83 points. The t-test result was -0.31 and the df was 10. After conducting a t-test to compare the mean
growth from fall to winter MCOMP benchmark testing periods of the special education and reading students in the non-co-taught and the co-taught classrooms, with the alpha level set at 0.25, the $p$-value was 0.76. The second null hypothesis states that there is no difference in growth on CBM scores between students with disabilities in a co-taught class and students with disabilities in a class with one teacher. Since the $p$-value of 0.76 was greater than the alpha level of 0.25, there was not a statistical difference in growth on MCOMP scores and the null hypothesis was not rejected. There was not a difference in growth from fall to winter benchmark periods on MCOMP scores between the special education and reading students in the non-co-taught and the co-taught classrooms.

Table 21

<table>
<thead>
<tr>
<th>Source</th>
<th>Mean</th>
<th>Mean D</th>
<th>t-Test</th>
<th>df</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-co-taught (n=6)</td>
<td>-4.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Co-taught (n=7)</td>
<td>1.29</td>
<td>-5.29</td>
<td>-3.58</td>
<td>11</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Note: significant when $p$$\leq$$0.25$

Table 21 shows the independent t-Test results comparing the growth in MAZE scores from the winter to spring benchmark periods for the special education and reading students in the non-co-taught and the co-taught classrooms. The subgroup in the non-co-taught classroom consisted of 6 students in the spring. The subgroup in the co-taught classroom consisted of 7 students in the spring. The mean growth in MAZE scores for the non-co-taught classroom was -4.00 points, and the mean growth in MAZE scores for the co-taught classroom was 1.29 points. The mean difference between the two classrooms was -5.29 points. The t-test result was -3.58 and the df was 11. After conducting a t-test to compare the mean growth from winter to spring
MAZE benchmark testing periods of the special education and reading students in the non-co-taught and the co-taught classrooms, with the alpha level set at 0.25, the $p$-value was 0.00. The second null hypothesis states that there is no difference in growth on CBM scores between students with disabilities in a co-taught class and students with disabilities in a class with one teacher. Since the $p$-value of 0.00 was less than the alpha level of 0.25, there was a statistical difference in growth on MAZE scores and the null hypothesis was rejected. There was a difference in growth from winter to spring benchmark periods on MAZE scores between the special education and reading students in the non-co-taught and the co-taught classrooms. The special education and reading students in the co-taught classroom made greater gains on the MAZE than did the same subgroup in the non-co-taught classroom.

Table 22 shows the independent t-Test results comparing the growth in MCOMP scores from the winter to the spring benchmark periods for special education and reading students in the non-co-taught and the co-taught classrooms. The mean growth in MCOMP scores for the non-co-taught classroom was 6.50 points, and the mean growth in MCOMP scores for the co-taught classroom was 0.43 points. The mean difference between the two classrooms was 6.07 points. The t-test result was 0.97 and the df was 11. After conducting a t-test to compare the mean growth from winter to spring MCOMP benchmark testing periods of the special education and
reading students in the non-co-taught and the co-taught classrooms, with the alpha level set at 0.25, the \( p \)-value was 0.36. The second null hypothesis states that there is no difference in growth on CBM scores between students with disabilities in a co-taught class and students with disabilities in a class with one teacher. Since the \( p \)-value of 0.36 was greater than the alpha level of 0.25, there was not a statistical difference in growth on MCOMP scores and the null hypothesis was not rejected. Although the subgroup in the non-co-taught classroom made greater gains, there was not a difference in growth from winter to spring benchmark periods on MCOMP scores between the special education and reading students in the non-co-taught and the co-taught classrooms.

**Table 23**

<table>
<thead>
<tr>
<th>t-Test Analysis Results for Non-Co-Taught and Co-Taught Classrooms Special Education and Reading Students Spring-Fall Growth in MAZE scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source</td>
</tr>
<tr>
<td>---------</td>
</tr>
<tr>
<td>Non-co-taught (n=6)</td>
</tr>
<tr>
<td>Co-taught (n=6)</td>
</tr>
</tbody>
</table>

Note: significant when \( p \leq 0.25 \)

Table 23 shows the independent t-Test results comparing the overall growth in MAZE scores for the special education and reading students in the non-co-taught and the co-taught classrooms. The mean growth in MAZE scores for the subgroup in the non-co-taught classroom was 4.00 points, and the mean growth in MAZE scores for the subgroup in the co-taught classroom was 9.00 points. The mean difference between the two classrooms was -5.00 points. The t-test result was -2.99 and the df was 10. After conducting a t-test to compare the mean overall MAZE growth of the students with disabilities and reading students in the non-co-taught and the co-taught classrooms, with the alpha level set at 0.25, the \( p \)-value was 0.01. The second
null hypothesis states that there is no difference in growth on CBM scores between students with disabilities in a co-taught class and students with disabilities in a class with one teacher. Since the $p$-value of 0.01 was less than the alpha level of 0.25, there was a statistical difference in growth on MAZE scores and the null hypothesis was rejected. There was a difference in overall growth on MAZE scores between the special education and reading students in the non-co-taught and the co-taught classrooms. The students in the co-taught classroom made greater growth from the fall to the spring on the MAZE than the students in the non-co-taught classroom.

Table 24

<table>
<thead>
<tr>
<th>t-Test Analysis Results for Non-Co-Taught and Co-Taught Classrooms Special Education and Reading Students Spring-Fall Growth in MCOMP scores</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Source</strong></td>
</tr>
<tr>
<td>Non-co-taught (n=6)</td>
</tr>
<tr>
<td>Co-taught (n=6)</td>
</tr>
</tbody>
</table>

Note: significant when $p\leq0.25$

Table 24 shows the independent t-Test results comparing the overall growth in MCOMP scores for the special education and reading students in the non-co-taught and the co-taught classrooms. The mean growth in MCOMP scores for the subgroup in the non-co-taught classroom was 22.17 points, and the mean growth in MCOMP scores for the subgroup in the co-taught classroom was 18.17 points. The mean difference between the two classrooms was 4.00 points. The t-test result was 0.69 and the df was 10. After conducting a t-test to compare the mean overall MCOMP growth of the students with disabilities and reading students in the non-co-taught and the co-taught classrooms, with the alpha level set at 0.25, the $p$-value was 0.50. The second null hypothesis states that there is no difference in growth on CBM scores between students with disabilities in a co-taught class and students with disabilities in a class with one
teacher. Since the $p$-value of 0.50 was greater than the alpha level of 0.25, there was not a statistical difference in growth on MCOMP scores and the null hypothesis was not rejected. Although the students who received special education or reading services in the co-taught classroom made greater gains than the students in the co-taught classroom, there was not a significant difference in overall growth on MCOMP scores between the special education and reading students in the non-co-taught and the co-taught classrooms.
CONCLUSIONS AND RECOMMENDATIONS

The null hypothesis 1 stated that there is no difference in growth on curriculum based measurement scores between students in a co-taught class and students in a class with one teacher. The t-Test results indicated that there was a statistical difference in growth on the MAZE reading comprehension assessment at each benchmark period, which resulted in the null hypothesis being rejected regarding MAZE scores and type of classroom. From fall to winter, the students in the non-co-taught classroom made greater growth on the MAZE test than the co-taught classroom. From winter to spring, conversely, the co-taught classroom made greater growth than the non-co-taught class, which made negative growth. Overall, the students in the co-taught classroom made greater growth from the fall to spring on the MAZE CBM test than the non-co-taught classroom.

Mean growth on the MCOMP math computation assessment fluctuated between the two classrooms. From fall to winter the co-taught classroom made greater growth. From winter to spring the non-co-taught classroom made greater growth. Overall, from fall to spring the non-co-taught classroom made greater growth on the MCOMP CBM than did the co-taught classroom. There was not a statistical difference in growth on the MCOMP CBM between the co-taught and non-co-taught classroom. However, the differences in mean growth during each benchmark period were slight, which resulted in the null hypothesis being not rejected in regards to the MCOMP assessment and type of classroom.

After isolating the students who received special education services or reading services from the rest of the class, t-Tests produced similar results. Null hypothesis 2 stated that there is no difference in growth on curriculum based measurement scores between students with disabilities in a co-taught class and students with disabilities in a class with one teacher. From
fall to winter, the subgroup of special education and reading students made slightly greater growth on the MAZE in the non-co-taught classroom than the co-taught classroom, but not enough for there to be a statistical difference. From winter to spring, the co-taught special education and reading students subgroup made positive growth, while the non-co-taught special education and reading students subgroup made negative growth. There was a statistical difference between the growth in MAZE scores during the winter testing period. Overall, from fall to spring, the special education and reading students subgroup in the co-taught classroom made greater growth than the special education and reading students in the non-co-taught classroom. The null hypothesis 2 was rejected in regards to the special education and reading students subgroup and the MAZE assessment.

On the MCOMP assessment, special education and reading students in the non-co-taught classroom made greater growth from the fall to winter testing period than did the same subgroup in the co-taught classroom. From winter to spring and overall from the fall to spring, the co-taught special education and reading students made greater growth on the MCOMP than the non-co-taught students. Nevertheless, the difference in mean growth at each benchmark period was small enough that there was not a statistical difference between the co-taught and non-co-taught special education and reading students’ scores. As a result, the null hypothesis 2 was not rejected in regards to the MCOMP test and the special education and reading students subgroup based on type of classroom.

Based on the data from the non-co-taught class and the co-taught class, co-teaching was more effective at raising student MAZE reading comprehension scores as a class and the special education and reading subgroup than non-co-teaching. Co-teaching was not more effective at
raising MCOMP math computation scores for the class or the special education and reading subgroup than traditional teaching.

As a result, one can determine that co-teaching small reading groups at various skills levels using assessment data to determine level of need was more effective than a class with one teacher. Co-teaching partners were able to each instruct a targeted small reading group at the same time, which resulted in smaller reading groups and more direct interventions. As the literature showed, co-teaching partners were able to provide tier II and special education interventions in the classroom. Multiple co-teaching methods were employed depending on the content of the lesson. The author recommends co-teaching literature blocks in order to increase student reading comprehension across all subgroups in the classroom.

Co-teaching was not statistically more effective at raising MCOMP math computation than non-co-teaching. One can come to the conclusion that small groups are more effective, so more small groups should be utilized in the co-teaching classroom during math time as well as during literature blocks. Although there are difficulties associated with co-teaching, the benefits to students and teachers outweigh drawbacks. The author of this study recommends co-teaching small, targeted, intervention groups to gain increased assessment scores. The school district should consider investing in professional development in the area of co-teaching and piloting classrooms utilizing co-teaching methods and strategies.
REFERENCES


