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Changing the Face of Student Teaching Through Co-Teaching

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Abstract

In this article, the authors challenge the status quo of current student teaching practice which has remained relatively unchanged for close to 100 years. This four year study identifies the differences between a co-teaching and a non-co-teaching model of student teaching. Quantitative and qualitative results clearly demonstrate the positive impact of co-teaching on learners. This emerging practice of co-teaching in student teaching holds great promise in transforming the world of teacher preparation.

Keywords: student teaching, co-teaching, student achievement, collaboration

Introduction

In the world of teacher preparation, student teaching has long been the culmination of a teacher candidate's journey to becoming a licensed classroom teacher. Student teaching is a widely accepted component of teacher preparation programs with all states requiring prospective teachers to have some clinical experience in the classroom. While the length and expectations of student teaching experiences vary widely across teacher preparation programs, the traditional model of student teaching has not changed significantly since the 1920's (Guyton & McIntyre, 1990). The student teaching experience is the most prevalent way in which colleges and universities link the theory of educational preparation with the reality of daily classroom practice. Wentz (2001) stated that the basic purpose of any student teaching program is to provide a situation in which student teachers learn and practice various techniques of teaching while working with real students under the direction of a certified teacher in a public school. Field experience directors across the country are experiencing increasing difficulty in securing high quality student teaching placements, with cooperating teacher wary of exiting the classroom especially during the term in which state mandated NCLB tests are given (Ellis & Bogle, 2008). Historically, teacher candidates spend their initial weeks as a silent observer, gradually assuming the role of teaching, leading up to full responsibility for the classroom. Often, teacher candidates are left alone or at a minimum, unassisted in a classroom as they take on this full responsibility. Given the increasing diversity of today's schools and the prevalence of teacher accountability issues, this model of learning to teach in isolation should no longer be an unquestioned practice.

A current challenge in teacher education is that very little data exists connecting success in a student teaching experience with student learning outcomes. Cochran-Smith and Zeichner (2005), in leading the AERA panel on the study of teacher education, maintain that more data is

needed on the impact of student teaching on P-12 learners. This paper examines the impact of a

co-teaching model of student teaching on the math and reading achievement of K-6 learners.

Additionally, the perceptions from these learners about their experience in a co-taught classroom

will be shared.

<center>Background</center>

St. Cloud State University (SCSU) enrolls 18,000 students and is the largest preparer of

teachers in the state of Minnesota, graduating over 400 prospective teachers a year. For the past

four years, SCSU has been piloting a co-teaching model of student teaching through a Teacher

Quality Enhancement Partnership grant from the U.S. Department of Education.

The co-teaching model of student teaching developed and studied at SCSU is grounded in

the theory and research of many educators. As early as 1973 Miller and Trump define co-

teaching "…as an arrangement in which two or more teachers…plan, instruct, and evaluate in

one or more subject areas" (p.354). Cook and Friend (1995) assert that co-teaching is, "two or

more professionals delivering substantive instruction to a diverse or blended group of students in

a single physical space" (p. 14). Taking it further, other writers concur that co-teaching is two or

more individuals working together "…for the outcome of achieving what none could have done

alone" (e.g., Wenzlaff, Berak, Wieseman, Monroe-Baillargeon, Bacharach & Bradfield-Kreider,

2002, p. 14).

While co-teaching has been employed frequently in the special education domain, its use

during student teaching is a practice in its infancy. Co-teaching was originally proposed as an

administrative arrangement facilitating the full inclusion of special education students into

general education classrooms (Cook & Friend, 1995). Co-teaching has frequently been applied,

with mixed results, combining the efforts of special- and general educators (Bauwens &

Hourcade, 1995; Platt, Walker-Knight, Lee & Hewitt, 2001; Vaughn, Schumm & Arguelles, 1997). The use of co-teaching among university faculty members has also been documented and discussed (Bacharach, Heck, & Dahlberg, 2007; York-Barr, Bacharach,Salk, Frank & Beniek, 2004). In addition, co-teaching has been studied by Roth and Tobin (2004) who suggested that co-teaching, or teaching at another teacher's elbow, assists in the development of becoming a better teacher. There is a plethora of research that describes what co-teaching is and how it has been utilized in P-12 classrooms and institutions of higher education. However, Zigmond and Magiera (2001) note, "The research base on the effectiveness of co-teaching is woefully inadequate. While there are many resources available to tell practitioners how to do it, there are virtually no convincing data that tell the practitioner that it is worth doing" (p. 4). Murawski and Swanson (2001), in completing a meta-analysis of the literature on co-teaching, concur that very little empirical research on the impact of co-teaching is available.

<div align="center">Co-Teaching in Student Teaching</div>

The student teaching experience, a mainstay of teacher preparation, does vary significantly across institutions. Historically, student teaching typically reflected a "sink or swim" approach where a student is placed in a classroom, observes for several days or weeks, and is then expected to take over the classroom as the teacher exits or remains largely uninvolved in the instruction. In this scenario, a teacher candidate either survives or fails on their own. Research by Linda Darling-Hammond and John Bransford (2005) urge teacher education programs to find connections between course and field work and to support teacher candidates throughout their student teaching experience. While many institutions have moved toward a more supportive student teaching program, for the purposes of this paper, we will compare and contrast co-teaching to a non-teaching model.

The St. Cloud Teacher Quality Enhancement (TQE) initiative has taken literature-based definitions of co-teaching and modified them to fit the student teaching arena, defining co-teaching in student teaching as "Two teachers (a cooperating teacher and a teacher candidate) working together with groups of students; sharing the planning, organization, delivery and assessment of instruction, as well as the physical space" (Heck, Bacharach, Mann, Ofstedal, 2005).

The student teaching experience is as unique as the institution and individuals involved. To better understand the differences between a co-taught and non-co-taught model of student teaching, we have identified and compared several key components. Within each component there is a wide continuum of practice. The components include:

- *Preparation.* In a non-co-teaching model of student teaching, there is typically little preparation for the participants. In some cases, student teachers are "dropped" into a classroom and cooperating teachers are expected to guide their growth with little support from the university. When co-teaching, all members of the triad (cooperating teacher, teacher candidate, and university supervisor) are provided specific information about the roles of each member, expectations for the experience, co-teaching and co-planning approaches and strategies for how to build a strong partnership.

- *Introduction.* A critical element in the success of any student teaching experience is how the teacher candidate is viewed by the students. In co-teaching, cooperating teachers are instructed to introduce their candidate as a teacher candidate or co-teacher, rather than a student teacher so the first word the students hear is teacher. Cooperating teachers in co-taught settings are expected to incorporate the teacher candidate into the classroom routines and instruction from the very first day. In contrast, the non-co-teaching model

typically has the student teacher observing with minimal participation in the classroom until later in the experience.

- *Involvement.* One clear difference between a non-co-taught and a co-taught student teaching experience is the level of involvement of the participants. In a non-co-taught model, one teacher is generally passive while the other leads instruction. In other words, one teacher tends to be "on" while the other teacher is "off." In co-teaching, teachers work together to remain actively involved with students and their learning. Co-teaching provides opportunities for both teachers to be "on," working with students to best meet their needs.

- *Relationship Building.* In non-co-taught student teaching models, the cooperating teacher and teacher candidate typically have little opportunity to build a relationship before beginning their work together. In contrast, co-teaching participants are brought together at the beginning of their shared experience to establish a foundation of professional trust and respect, and are supported as they continue to nurture this relationship throughout the student teaching experience.

- *Communication and Collaboration.* In non-co-taught student teaching, candidates are expected to inherently possess the communication and collaboration skills necessary to succeed in today's complex teaching and learning environment. Participants in co-teaching receive guidance on the importance of strong communication and collaboration skills. In addition, they receive instruction and opportunities to purposefully practice both effective communication and collaboration strategies with each other.

- *Planning.* In a non-co-taught student teaching experience, teacher candidates typically plan lessons in isolation, presenting them to their cooperating teacher in advance of

delivering the lesson. In co-teaching, however, the cooperating teacher and teacher

candidate are expected to identify a specific planning time where the primary focus

includes the details of how, when, and which co-teaching strategies to use for upcoming

lessons. Teacher candidates will spend additional time planning on their own to prepare

for their part in each lesson. In the early stages of the experience the cooperating teacher

leads the planning. As the experience progresses the teacher candidate assumes more

responsibility, ultimately taking the lead in planning. Pairs of cooperating teachers and

teacher candidates are not expected to use co-teaching for every lesson, but determine

during co-planning time when and which strategies would be most useful in assisting

student learning.

- *Solo vs. Lead.* In the non-co-taught model, teacher candidates typically observe (often

  from a stationary position) for a period of time, eventually taking over a variety of tasks

  or portions of lessons. At some point the cooperating teacher exits, leaving the teacher

  candidate fully in charge (solo) of the classroom with the expectation that they will meet

  the needs of all students on their own. With co-teaching, the cooperating teacher provides

  the teacher candidate time to develop and practice all aspects of teaching with mentoring

  and support. The classroom teacher partners with the teacher candidate rather than giving

  away responsibility. As the experience progresses, the pair is expected to collaboratively

  plan for instruction and evaluation; ultimately, the teacher candidate becomes fully

  responsible for the entire classroom. During this time, the cooperating teacher remains

  actively engaged in the classroom, with the teacher candidate leading all aspects of

  teaching, including directing the activities of the cooperating teacher and other adults in

  the classroom. In a co-teaching experience, the paradigm shifts from the teacher

candidate gaining experience through solo teaching to gaining experience in being the

lead teacher. Certainly, all co-teaching candidates must have opportunities to solo teach

to ensure they have the ability to meet the challenges of tomorrow's classroom.

- *Modeling and Coaching.* Often in non-co-taught student teaching, cooperating teachers

  expect teacher candidates to enter the experience skilled in various instructional

  strategies, lesson planning, and classroom management techniques, possessing the ability

  to take over all aspects of the teaching day after weeks of observation. When co-teaching,

  the cooperating teacher provides ongoing modeling and coaching, making the invisible

  visible by explicitly sharing their rationale for instructional, curricular and management

  decisions. Co-teaching allows teacher candidates the time to develop instructional and

  management strategies with the support of their cooperating teacher, preparing them meet

  the challenges of the classroom on their own.

- *Power Differential.* In any student teaching model a power differential between the

  cooperating teacher and teacher candidate exists. This power differential is rarely

  addressed in a non-co-teaching student teaching experience. In a co-teaching model,

  however, cooperating teachers and teacher candidates are taught to address issues of

  parity and to gain experience in how to work as a team. Teacher candidates are provided

  with strategies to find their voice and contribute to the partnership while cooperating

  teachers are expected to be open to the ideas and contributions of the candidate.

  Given the complexities of moving to a co-teaching model of student teaching, additional

support was necessary for all participants. A cornerstone of our success in shifting paradigms has

been providing professional development and ongoing support for cooperating teachers, teacher

candidates, and university supervisors. The initial co-teaching workshop establishes a

fundamental understanding and common language, as well as provides the theoretical and historical perspective of co-teaching. The co-teaching strategies used at SCSU were developed by Cook and Friend (1995) and have been modified for use in a student teaching experience (see Table 1). In addition, the workshop incorporates co-planning strategies, research findings on co-teaching, and the roles and expectations of members of the co-teaching triad. A second workshop attended by cooperating teacher and teacher candidate pairs provides background in relationship building, communication and collaboration, and includes ways to incorporate co-teaching and co-planning strategies into the student teaching experience. Further information on these workshops has been described elsewhere (Bacharach & Heck, 2009; Heck, Bacharach, Dahlberg, Wellik, Ofstedal, Mann, & Dank, 2007).

Methods

The initial research focused on the difference in math and reading achievement between K-6 students in co-taught and non-co-taught settings. While those findings were informative, additional research questions emerged in the second year. This led to the current research questions which are:

1.   Are there differences in the math and reading achievement of K-6 students in co-taught student teaching settings as compared to non-co-taught student teaching and classrooms where there is a single licensed teacher?

2.   Are there differences in math and reading achievement of K-6 students eligible for special services (special education, free and reduced lunch and English language learners) in co-taught student teaching settings as compared to non-co-taught student teaching and classrooms where there is a single licensed teacher?

Sample

Although co-teaching occurred in a number of school districts in Central Minnesota, the study of academic impact took place in the St. Cloud Area School district over four years (2004-2008). This district has 9,800 students enrolled in 13 buildings. At the outset of the study, the student enrollment in this district included 33% eligible for free-reduced lunch, 17% special education, 8% English language learners (ELL) and 16% students of color. The demographics of this district are continuing to change and, in the four years of study, increased to 45% eligible for free-reduced lunch, 19% special education, 12% English language learners and 24% students of color.

Co-teaching pairs, for the purpose of this study, were defined as those teacher candidates placed with cooperating teachers in which both members had participated in the two co-teaching workshops. This group consisted of 149 pairs in Year One, 203 pairs in Year Two, 231 pairs in Year Three, and 243 pairs in Year 4, for a total of 826 pairs.

Measures

In order to thoroughly examine the impact of co-teaching on K-6 learner outcomes, two academic measures were employed: the Minnesota Comprehensive Assessment (MCA) and the Woodcock Johnson III (Research Edition). The MCA is a standardized test administered every year in the state of Minnesota to measure students' performance toward meeting state standards. The MCA complies with the No Child Left Behind (NCLB) Act of 2001, and is aligned with what students are expected to know and do in a particular grade. This test is used to determine levels of proficiency and the degree to which the student is on track to pass the required Minnesota Basic Skills Tests in later grades.

For this study, the MCA has three limitations: the Reading and Math portions are only administered at certain grade levels; it is a group administered assessment; and it is administered

one time every year (rather than pre and post), which only allows comparisons between cohorts of students.

To compensate for the limitations inherent in the MCA data, the study also employed the research edition of the Woodcock-Johnson Psychoeducational Battery (WJIII-RE) tests of academic achievement (McGrew & Woodcock, 2001). The WJIII-RE is individually administered, has been normed for all grade levels, and can be used as a pre and post intervention measure. Pre testing occurred in September and post testing occurred in May, using the same test. The WJIII-RE included four individually administered subtests: Letter-Word Identification, Passage Comprehension, Calculation and Applied Problems. The reported median reliability ranged from .86 for the Calculation subtest to .94 for the Letter Word Identification subtest (McGrew & Woodcock, 2001). Composite scores for Broad Reading and Broad Math were calculated to reflect the clusters provided on the clinical edition. On the WJIII-RE, raw scores were converted to W scores. W scores are a special transformation of the Rasch ability scale. Because tests on the WJIII-RE tap such a wide range of ability in each competence area, scores vary greatly and the use of the Rasch scale allows researchers to record changes in actual ability within or across years. A pre-post test design was employed for this study, with subjects serving as their own control.

The Woodcock-Johnson testing was done using a stratified random sample, selected with a random numbers table, to determine the classrooms in which testing would occur. Classrooms were identified by primary and intermediate elementary level, as well as by whether they were in a "high-need" building (based on proportion of student population eligible for free/reduced lunch). Need and grade level served as strata for the sampling. District substitute teachers were trained to administer the WJIII-RE.

K-6 students in the co-taught group received primary instruction from a classroom teacher and a teacher candidate, using co-teaching strategies. Classroom teachers individually identified students that received co-taught instruction in either reading or math to account for cross classroom ability grouping. The comparison classrooms were selected by building principals, based on similarities in grade level, student demographics, and experience of teachers. The students in the comparison classrooms were exposed to whatever teaching styles and strategies their teacher employed during the school year. No training was provided to teachers in the comparison group.

The following dependent variables were measured:

- Broad Reading and Math gains as measured by the Woodcock Johnson, using composite W scores described above.

- Reading and Math proficiency levels, as measured and defined by the Minnesota Comprehensive Assessment.

<div align="center">Results</div>

Woodcock Johnson Findings

The initial research questions focused on the difference in academic achievement of K-6 students in co-taught and non-co-taught settings. In keeping with that research question, a dichotomous variable was established that reflected whether a student was co-taught or not co-taught. The analysis of variance of the reading gains based on the composite W scores proved to be statistically significant in each of the four years (see Table 2).

Consistent with the reading analyses, the math scores were also converted to W scores. Again, a dichotomous variable was established that reflected whether a student was co-taught or

not co-taught. The analysis of variance of the math gains based on the composite W scores proved to be statistically significant in two of the four years (see Table 3).

MCA Findings

Since all students in pre-determined grades take the Minnesota Comprehensive Assessment, data were available on all elementary students who were tested. Again, the initial research question focused on differences between co-teaching and any other classroom configuration, resulting in the same dichotomous variable (Co-taught v. Non-Co-taught) described above. The State of Minnesota reports NCLB data in terms of the percent of students reaching proficiency in each subject area. A chi square analysis was undertaken (co-taught or not co-taught vs. proficient or not proficient), which is presented in Table 4. A dichotomous variable was established for proficiency due to the fact that the cut scores defining proficiency vary by grade. Chi Square analyses found a statistically significant positive effect for co-teaching on reading proficiency each year.

Consistent with the analyses of the MCA reading data, a chi square analysis was undertaken on math results, which is presented in Table 5. Chi Square analyses found a statistically significant positive effect for co-teaching on math proficiency in each of the four years.

To further study the differences between co-teaching and non-co-teaching in student teaching, researchers returned to the original data set to gain an understanding of the variance associated with these groups. The MCA data, which included all children tested, were disaggregated further, to create a three-level variable for Type of Classroom (co-taught student teaching, non-co-taught student teaching, and a traditional classroom with one experienced teacher). This enabled researchers to examine the effect of student teaching on both reading and

math proficiency. Students in co-taught student teaching settings attained higher mean proficiency levels than either of the other groups. A Chi Square was performed, the results of which are described in Tables 6 and 7. There were only two classrooms in the test district during 2006-2007 that utilized a non-co-taught model of student teaching, providing insufficient data to analyze. In the remaining three years, the type of classroom had a statistically significant effect on reading and math proficiency.

The third research question pertaining to the academic achievement of students receiving services for special education, English language learners, and those eligible for free/reduced lunches was analyzed by aggregating the data from four years. Again, Chi Square analyses were conducted to evaluate the effect of co-teaching in student teaching. Tables 8 and 9 outline the findings, which were statistically significant in both Reading and Math for special education students and those eligible for free/reduced lunch. There was a strong positive trend for ELL students in Reading, where the findings approached statistical significance, but in Math there was not a difference between co-teaching and other classrooms.

Focus Group Findings

As another source of data, over 400 students in grades K-6 were interviewed in focus groups over the course of the four-year project. Students overwhelmingly identified getting help when they need it as the number one benefit of co-teaching. Students noted that there was less time spent waiting and more materials were covered.

In addition to getting help when they need it, students in all focus groups identified other benefits to being in a co-taught classroom, including exposure to two different styles of teaching, fewer classroom disruptions (for passing out papers and other routine classroom tasks), and improved student behavior. Additionally, students pointed out that they got their assignments and

grades returned more quickly, felt more connected to school, and were able to do a variety of activities that weren't possible with just one teacher.

Discussion

Although co-teaching is not a new phenomenon, its application in the student teaching experience is a new area of study. Co-teaching in student teaching provides two professionally prepared adults in the classroom, actively engaged with students for greater periods of time than does a non-co-taught student teaching experience. The co-teaching model of student teaching allows children increased opportunities to get help when and how they need it. It affords teachers an opportunity to incorporate co-teaching strategies, grouping, and teaching students in ways that are not possible with just one teacher. The co-teaching model has been used at all grade and content levels and works with any curriculum.

While the data on co-teaching in student teaching are very promising, there are two limitations to the current study that must be addressed. First, the study, while spanning four academic years, occurred in only one school district in the Midwest, limiting the ability to generalize to other locales. The second limitation lies in the voluntary nature of the co-teaching program. Although using volunteers could be viewed as a threat to external validity, cooperating teachers volunteering to host a teacher candidate is the norm for most student teaching programs.

A strength of this study is that two independent measures of student academic performance were utilized over a four-year period. Results from the Minnesota Comprehensive Assessment and the Woodcock-Johnson III-Research Edition were analyzed separately and yielded very similar results regarding the effect of co-teaching on achievement. In each of the four years, the MCA indicated a statistically significant increase in academic performance in reading and math proficiency for students in a co-taught classroom as compared to students in a

non-co-taught classroom. The Woodcock-Johnson III (Research Edition) showed a statistically significant gain in all four years in reading and in two of the four years in math.

While the results comparing the achievement of students in co-taught classrooms to the achievement of students in non-co-taught classrooms is convincing, possibly the most compelling data lie in the comparison between the academic achievement of students in three different types of classrooms. Using the MCA data, students in a classroom that utilized the co-teaching model of student teaching statistically outperformed their peers in classrooms that were taught by either a single teacher or a cooperating teacher and teacher candidate using a non-co-teaching model of student teaching.

Qualitative research also supports the use of co-teaching. Feedback received from students in focus groups indicated that co-teaching was a positive experience. They reported that co-teaching provided increased opportunities for engagement and additional and timely support in meeting their individual learning needs.

The achievement gap attributed to socio-economic and special education status has been well documented (Conger, Conger, & Elder, 1997; Eamon, 2002; McLoyd, 1998). Findings from this study highlight the benefits of co-teaching in student teaching for these special populations. This is a promising practice in raising academic outcomes for at risk students and warrants further research.

This study has clearly established the positive impact of the co-teaching model of student teaching. Teacher candidates, when paired with cooperating teachers and trained in co-teaching, increase the academic achievement of students in the classroom. Since adopting the co-teaching model, St. Cloud State University now has more cooperating teachers willing to host candidates

than available candidates in most licensure areas. Cooperating teachers recognize the "value added" that exists by hosting a teacher candidate using the co-teaching model.

Teacher preparation institutions should be challenged to rethink the student teaching portion of their programs in order to better prepare teachers to meet the needs of the learners they will serve. Likewise, partner schools that work with teacher preparation institutions are urged to consider the use of co-teaching during the student teaching experience as an academic benefit for students. Implemented at other sites, co-teaching would have a tremendous impact on the academic achievement of learners throughout the United States and has the potential to unequivocally change the face of teacher preparation and student teaching as we know it today.

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Table 1

Strategies of Co-Teaching in Student Teaching

Strategy	Definition
One Teach, One Observe	One teacher has primary instructional responsibility while the other gathers specific observational information on students or the (instructing) teacher. The key to this strategy is to focus the observation on specific behaviors. Both the teacher candidate and the cooperating teacher are able to take on either role.
One Teach, One Assist	One teacher has primary instructional responsibility while the other assists students with their work, monitors behaviors, or corrects assignments, often lending a voice to students or groups who would hesitate to participate or add comments.
Station Teaching	Station teaching occurs when the co-teaching pair divides the instructional content into parts. Each teacher instructs one of the groups. The groups then rotate or spend a designated amount of time at each station. Often independent stations are used along with the teacher led stations.
Parallel Teaching	Parallel teaching occurs when the class is divided with each teacher instructing half of the students. However, both teachers are addressing the same instructional material. Both teachers are using the same instructional strategies and materials. The greatest benefit to this method is the reduction of the student to teacher ratio.
Supplemental Teaching	This strategy allows one teacher to work with students at their expected grade level, while the other teacher works with those students who need the information and/or materials extended or remediated.

Strategy	Definition
Alternative (Differentiated) Teaching	This teaching strategy provides two different approaches to teaching the same information. The learning outcome is the same for all students however the avenue for getting there is different.
Team Teaching	Team teaching incorporates an invisible flow of instruction with no prescribed division of authority. Using a team teaching strategy, both teachers are actively involved in the lesson. From the students' perspective, there is no clearly defined leader – as both teachers share the instruction, are free to interject information, and available to assist students and answer questions.

Table 2

*Statistics for Co-Teaching Interactions (K-6 **Reading** W scores)*

Year	Effect/Level	N	Pre-test mean (SD)	Post-test mean (SD)	Mean gain (SD)	F
2004-2005	Co-Teaching	223	466.42 (43.25)	482.39 (33.41)	15.74 (15.47)	10.16**
	Non-Co-Teaching	99	483.87 (23.28)	493.76 (19.61)	9.89 (12.11)	
2005-2006	Co-Teaching	228	457.34 (46.11)	480.78 (32.49)	23.44 (20.13)	5.16*
	Non-Co-Teaching	125	472.99 (33.78)	491.65 (23.94)	18.67 (15.28)	
2006-2007	Co-Teaching	322	476.46 (29.16)	491.28 (22.37)	14.83 (13.11)	6.76*
	Non-Co-Teaching	172	481.44 (28.05)	493.22 (24.59)	11.79 (10.91)	
2007-2008	Co-Teaching	245	466.14 (37.52)	485.77 (27.46)	19.64 (15.41)	12.24**
	Non-Co-Teaching	182	479.27 (27.72)	494.06 (22.86)	14.79 (12.26)	

*$p < .05$

**$p < .01$

Table 3

*Statistics for Co-Teaching Interactions (K-6 **Math** W scores)*

Year	Effect/Level	N	Pretest mean (SD)	Post-test mean (SD)	Mean gain (SD)	F
2004-2005	Co-Teaching	221	477.78 (34.9)	494.98 (29.11)	17.2 (13.28)	4.30*
	Non-Co-Teaching	99	490.37 (21.25)	504.28 (20.59)	13.90 (12.76)	
2005-2006	Co-Teaching	229	474.85 (35.28)	495.42 (28.84)	20.57 (14.61)	3.41
	Non-Co-Teaching	166	483.45 (28.86)	501.36 (27.93)	17.91 (13.35)	
2006-2007	Co-Teaching	313	484.57 (23.71)	498.85 (22.80)	14.3 (11.53)	4.02*
	Non-Co-Teaching	182	491.49 (23.65)	503.59 (23.88)	12.1 (11.94)	
2007-2008	Co-Teaching	250	476.15 (26.36)	493.93 (23.30)	17.78 (11.34)	2.27
	Non-Co-Teaching	177	486.89 (25.42)	502.99 (24.03)	16.10 (11.43)	

*p < .05

**p < .01

Table 4

*Descriptive Statistics for K-6 **Reading** Proficiency*

	Co-taught		Not co-taught		
MCA Reading	N	Percent proficient	N	Percent proficient	χ^2
2004-2005	318	82.1%	1035	74.7%	7.37**
2005-2006	484	78.7%	1757	72.7%	7.06**
2006-2007	398	74.9%	1937	64.1%	17.16**
2007-2008	261	80.8%	2246	61.4%	37.95**

* p < .05

** p < .01

Table 5

*Descriptive Statistics for K-6 **Math** Proficiency*

MCA Reading	Co-taught		Not co-taught		χ^2
	N	Percent proficient	N	Percent proficient	
2004-2005	317	82.3%	1032	75.3%	6.78**
2005-2006	524	68.9%	1831	64.1%	4.19*
2006-2007	364	69.0%	1984	61.5%	7.32**
2007-2008	314	75.4%	2217	60.1%	23.04**

* p < .05

** p < .01

Table 6

*Descriptive Statistics – Type of Classroom on K-6 **Reading** Proficiency*

MCA Reading	Co-taught student teaching		Not co-taught student teaching		Classroom with one experienced teacher		χ²
	N	Percent proficient	N	Percent proficient	N	Percent proficient	
2004-2005	318	82.1%	101	65.3%	934	75.7%	12.79**
2005-2006	462	78.8%	140	62.9%	1419	73.0%	14.98**
2006-2007	398	74.9%	42	N/A	1895	64.0%	17.63**
2007-2008	347	71.8%	297	64.0%	1863	61.8%	12.46**

*p < .05

** p < .01

Table 7

*Descriptive Statistics – Type of Classroom on K-6 **Math** Proficiency*

MCA Reading	Co-taught student teaching		Not co-taught Student teaching		Classroom with one experienced teacher		χ²
	N	Percent proficient	N	Percent proficient	N	Percent proficient	
2004-2005	317	82.3%	105	70.5%	927	75.8%	8.31*
2005-2006	524	68.9%	171	57.9%	1660	64.7%	7.35*
2006-2007	364	69.0%	43	N/A	1941	61.4%	7.98*
2007-2008	314	74.5%	278	62.6%	1939	59.5%	26.04**

*p < .05

** p < .01

Table 8

*Cumulative Findings – Type of Classroom on K-6 **Reading** Proficiency*

MCA Reading (4 year cumulative)	Co-taught student teaching		Not co-taught student teaching		Classroom with one experienced teacher		χ^2
	N	Percent proficient	N	Percent proficient	N	Percent proficient	
OVERALL	1461	78.8%	572	64.0%	6403	67.2%	81.3**
Free/Reduced Lunch	477	65.0%	222	49.5%	2684	53.1%	25.6**
Special Education	433	74.4%	179	46.4%	1945	52.9%	73.8**
English Language Learners	76	44.7%	31	25.8%	515	30.7%	6.6*

*$p < .05$

**$p < .01$

Table 9

*Cumulative Findings – Type of Classroom on K-6 **Math** Proficiency*

MCA Reading (4 year cumulative)	Co-taught student teaching		Not co-taught student teaching		Classroom with one experienced teacher		χ^2
	N	Percent proficient	N	Percent proficient	N	Percent proficient	
OVERALL	1519	72.9%	597	63.0	6467	63.7%	46.9**
Free/Reduced Lunch	513	54.2%	232	45.7%	2778	47.3%	8.86*
Special Education	472	72.0%	180	48.9%	1906	54.7%	52.3**
English Language Learners	118	30.5%	41	26.8%	671	28.8%	.20

*p < .05

**p < .01