IMPROVING STUDENT ACADEMIC ACHIEVEMENT USING A CO-TEACHING MODEL OF STUDENT TEACHING

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Abstract

This study examines the implementation of a co-teaching model of student teaching. Two independently administered and analyzed tests of academic achievement demonstrated statistically significant gains for P-12 students. These findings support the utilization of a co-teaching model of student teaching whereby two professionally prepared educators work collaboratively to best meet the diverse learning needs of students. This emerging practice of co-teaching in student teaching holds great promise in transforming the educational landscape for partnering universities and school districts.

CHANGING THE FACE OF STUDENT TEACHING THROUGH CO-TEACHING

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 the most widely accepted component of teacher preparation programs. All states require prospective teachers in traditional programs to have some clinical experience in the classroom as a student teacher. The requirements differ from state to state both in the depth and breadth of the clinical experience. 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). Past practices during the student teaching experience have focused on the teacher candidate spending their initial weeks as a silent observer, gradually assuming the role of teaching, leading up to "full responsibility" in the classroom. Often times, teacher candidates are left alone or at a minimum, unassisted in a classroom as they take on this full responsibility. This practice of learning to teach in isolation may no longer serve the teacher candidate well and is a practice worth questioning for the PreK-12 students in the classroom. An alternative approach to student teaching is to adopt a co-teaching model which allows both adults in the classroom to work collaboratively throughout the student teaching experience to best meet the needs of all learners.

As the move toward increased educational accountability gains momentum (Cochran-Smith, 2005), it is critical that we continue to explore new ways to better prepare tomorrow's teachers to meet the increasingly diverse and challenging needs of P-12 learners. Highly effective teachers in today's classrooms find it advantageous to collaborate with other classroom teachers, paraprofessionals, parent volunteers, community experts and special educators to meet the academic needs of their students (Brownell & Walther-Thomas, 2002). Marilyn Friend

maintains "Classroom teachers and other educators are working with increasingly diverse students; all school personnel are under tremendous pressure to ensure that all students achieve higher academic standards. In this context, collaboration is not a luxury; it is a necessity." (p. 4). Building on this body of knowledge, it is our assertion that teacher preparation programs must provide opportunities for teacher candidates to develop these vital collaboration skills. In October 2003, St. Cloud State University (Minnesota) was awarded a Teacher Quality Enhancement (TQE) Partnership grant from the U.S. Department of Education. The primary focus of the St. Cloud TQE initiative was to develop a new approach to the preparation of future educators by implementing co-teaching strategies in student teaching. The initial investigation of this large-scale application of co-teaching during the student teaching experience is described in this paper.

BACKGROUND

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 state "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) completed a meta-analysis of the literature on co-teaching and agree on the paucity of available research.

Various definitions of co-teaching exist. As early as 1973 Trump and Miller 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, p.2) say 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, Wiesemean,Monroe-Baillargeon, Bacharach & Bradfield-Kreider, 2002 p. 14).

Co-teaching gained momentum as an instructional arrangement in response to the full inclusion movement. Cook & Friend (1995) proposed an administrative arrangement for full inclusion whereby special and general educators taught together in mainstream classrooms. The use of co-teaching for teams of general and special education teachers has been widely supported by the literature (Bauwens & Hourcade, 1995; Vaughn, Schumm & Arguelles, 1997; Platt, Walker-Knight, Lee & Hewitt, 2001). Other authors have studied the use of co-teaching at the university level where preservice courses were co-taught by university faculty and/or P-12 teachers. (Heck, Bacharach, & Dahlberg, 2006; York, Bacharach, Salk, Frank & Beniek, 2002; Harris & Harvey, 2000; Davis-Wiley & Cozart, 1998).

Although co-teaching in special education has been encouraged and used extensively, the use of co-teaching in student teaching has been explored on a very limited basis.

At an Association of Teacher Educators (ATE) presentation in 1999, Perl, Maughmer, and McQueen, presented a project using co-teaching during student teaching developed at Kansas State University. This model incorporated the co-teaching strategies defined by Cook and Friend (1995), and was developed in response to "parental complaints that their children were being taught too often and too long by inexperienced student teachers and not enough by experienced teachers. Teachers complained that they had to give up their classrooms to student teachers too often and for too much time." (pg 1). After incorporating the co-teaching model in student teaching, Kansas State reported that parents began requesting that their children be placed in a classroom that had a student teacher using the co-teaching model, and teachers began requesting student teachers each semester.

Building on the work of these authors, several colleges and universities in Virginia, along with their partner school districts developed the Mid Valley Consortium for Teacher Education (2000). This consortium developed and implemented a cooperating teacher training model that included co-teaching. The Consortium found it necessary to redesign their clinical model so that student teachers provided a value-added service that would *enhance* P-12 student learning, while at the same time gaining the necessary experience to prepare them for their own classrooms.

OUR PROJECT

Building on the co-teaching model used by Kansas State University and the MidValley Consortium, St. Cloud State University (SCSU) developed a similar program for implementing co-teaching strategies in student teaching. During the 2001-2002 academic year, SCSU trained over 200 cooperating teachers to use co-teaching with their teacher candidates during their student teaching experience. Qualitative data collected on the project showed overwhelming support from cooperating teachers (SOURCE). The initial findings of this work provided the impetus to further investigate the implications of a co-teaching model of student teaching.

The St. Cloud Teacher Quality Enhancement (TQE) Initiative has taken literature based definitions and modified them to define co-teaching in student teaching as:

> ***Two teachers (a cooperating teacher and a teacher candidate) working together in a classroom with groups of students; sharing the planning, organization, delivery and assessment of instruction, as well as the physical space.***

In many traditional student teaching models the cooperating teacher and teacher candidate have little opportunity to build a relationship before beginning their work together. 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. They frequently create lessons in isolation and are expected to present them for feedback from the cooperating teacher before the lesson is

taught. At some point the cooperating teacher exits, leaving the teacher candidate fully in charge of the classroom.

In contrast to the traditional student teaching model, cooperating teachers and teacher candidates participating in co-teaching are brought together to get to know each other and begin to establish a professional relationship early in the student teaching experience. In addition, they receive instruction in co-teaching, collaboration, and communication. This is supported by Friend who says "Expecting preservice teachers to learn about collaboration simply by being together in schools is not enough; proximity is a necessary but insufficient condition for collaboration " (Brownell and Walther-Thomas, 2002, p.4).

Teacher candidates typically become involved in the classroom immediately. Lessons are planned and taught by both teachers, resulting in the teacher candidate being seen by students as a "real teacher" from the beginning of the experience. Through the co-planning process, teacher candidates hear and discuss the thoughts and strategies that are used in lesson planning by their cooperating teacher. As the experience continues, a gradual shift in roles occurs, with teacher candidates taking the lead in planning and teaching lessons. Teacher candidates are still given time to be "fully in charge" of the classroom, including directing the cooperating teacher in how they will assist in the delivery of portions of the lessons.

In co-taught classrooms the cooperating teacher and teacher candidate **collaboratively** plan and deliver instruction from the very beginning of the experience. Cooperating teachers are taught to make their instructional decisions more explicit in order to make the invisible workings of the classroom more visible to the teacher candidate. As the experience continues, the pair seamlessly alternate between assisting and/or leading the planning, teaching, and evaluation. As this occurs, the classroom teacher partners with the student teacher rather than "giving away" the responsibility. This enhances the learning opportunities for students, combines the knowledge

and strengths of both teachers, and models a positive adult working relationship. As the term progresses, the student teacher assumes more responsibility, ultimately taking the lead in planning, teaching and assessing, including directing the contributions of the cooperating teacher.

Pairs of cooperating teachers and teacher candidates are not expected to use co-teaching for every lesson but determine when and which strategies would be most useful in assisting student learning. Of course, there are times when the cooperating teacher will leave the classroom allowing the teacher candidate to fly alone. All teachers candidates need time to develop their own teaching and management skills assuring they have the ability to meet the challenges of tomorrow's classroom. Chart 1 shows the co-teaching in student teaching definitions as used for this project.

Chart 1. Co-teaching strategies.

Title of 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 on the observation observing specific behaviors. It is important to remember that either the teacher candidate or the cooperating teacher could take on both roles.
One Teach, One Drift	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, groups then rotate or spend a designated amount of time at each station – often independent stations will be used along with the teacher led stations.
Parallel Teaching	Each teacher instructs half the students, yet they are addressing the same instructional material. The greatest "benefit" to this method is the reduction of the student to teacher ratio and improving the overall learning environment.
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.

Title of 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 well planned, team taught lessons, exhibiting 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 a students' perspective, there is no clearly defined leader in team teaching – as both teachers share the instruction, are free to interject information, and available to assist students and answer questions.

THE STUDY

This project has examined the impact of co-teaching on teacher candidates, cooperating teachers, and P12 learners. We have examined academic performance, attendance, classroom behavior and have reported both quantitative and qualitative data regarding the effects of co-teaching on all stake holders (Bacharach, Dahlberg & Heck, 2006: Heck, Bacharach, & Dahlberg, 2006: Heck, Bacharach, Ofstedal, Mann, Wellik, & Dahlberg, 2006). As we implemented this new model of co-teaching during the student teaching experience, we were particularly interested in the impact of co-teaching on P-12 learners' academic performance. This paper will focus on our findings relative to the academic impact of the use of co-teaching during the student teaching experience.

Method and Sampling

Although co-teaching occurred in five school districts in Central Minnesota, the study of academic impact was limited to one district. The largest of the partner districts was the "high need district" named in the original grant application, and was chosen due to the size and diversity of their student population. This medium sized district has 9,800 students enrolled in 13 buildings. Of the students enrolled in the district, one-third are eligible for free-reduced lunch, 17% receive special education services, 16% are students of color, and 7% are English Language

Learners. The University involved in this study enrolls 16,000 students and is the largest preparer of teachers in the state of Minnesota, graduating over 500 teachers a year.

In the fall of 2004 the university and school district piloted a co-teaching model of student teaching. Participation in the co-teaching initiative was voluntary. Cooperating teachers and teacher candidates interested in co-teaching attended a one-day workshop describing theory and method. Attempts were made in the College of Education's Office of Clinical Experiences to match cooperating teachers who wanted to co-teach with candidates who were also interested. Together, co-teaching pairs attended a half-day workshop early in their experience which focused on communication, collaboration and co-planning.

In order to thoroughly examine the impact of co-teaching on P-12 learner outcomes, two academic measures were employed: the Minnesota Comprehensive Assessment (MCA) and the Woodcock Johnson III (Research Edition). Each assessment offered a unique view of achievement, that together provided the depth and breadth of data desired. The MCA is a standardized test administered every year in the state of Minnesota to students to measure their performance toward meeting state standards. The MCA is aligned with what students are expected to know and do in a particular grade. This assessment is not a "pass/fail" exam, but 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. Math and Reading skills are assessed in grades 3, 5 and 7. (Test specifications at http://education.state.mn.us/mde/static/006367.pdf)

MCA results are reported at the state, district and individual level. For our research purposes, the MCA had three limitations including: the Reading and Math portions were only administered at three grade levels, it was a group administered assessment, and it only allowed comparisons of and between cohorts of students.

To compensate for the limitations inherent in relying solely on the MCA data, the study also employed the research edition of the Woodcock-Johnson Psychoeducational Battery (McGrew & Woodcock, 2001). The Woodcock Johnson is individually administered, has been validated for all grade levels, and can be used as a pre and post intervention measure. The Woodcock Johnson Research Edition (WJIII-RE) included four individually administered subtests: Letter-Word Identification, Passage Comprehension, Calculation and Applied Problems. The reported median reliability ranges from .86 for the Calculation to .94 for the Letter-Word Identification. (See Table 1)

Table 1. Comparison of MCA and Woodcock Johnson tests

Minnesota Comprehensive Assessment (MCA)	**Woodcock Johnson III – Research Edition (WJIII-RE)**
Reading/Math – Grades 3, 5 & 7	Reading/Math – Grades K-12
Group Administered	Individually Administered (more reliable for lower 25th percentile of students)
Compares cohorts	Can use as pre/post intervention
Results reported as scale score, index points and proficiency	Results include raw score and standard score, but can also compute gain scores

The Research Edition of the WJ-III includes about one-third fewer items than does the clinical edition. Because of this, composite scores were calculated to reflect the clusters provided on the clinical edition (Broad Reading and Broad Mathematics). Both raw and standard scores were calculated for all measures. Since a pre-and post-test design was employed, with each subject serving as their own control, raw scores were employed in the analysis, as they are slightly more sensitive to change than are standardized values.

Sampling

Sampling varied for the two assessments utilized and is described below. The MCA results included the entire population of co-taught and non-co-taught students. The WJIII-RE, an individually administered pre and post assessment, utilized a stratified random sampling method

to assure adequate representation of grade level and free and reduced lunch populations. Both assessments focused on the Reading and Math skills of co-taught students verses non-co-taught students.

The MCA Sample

Minnesota Comprehensive Assessment (MCA) results are tabulated at the state level with results returned to the district. Since co-teaching did not occur in grade 7 in our partner school district in the 2004-2005 academic year, our MCA analysis was limited to students in grades 3 and 5. Comparisons were made between co-taught and non co-taught students utilizing the entire MCA population.

MCA data is reported by the state in several distinct ways. For the purposes of this study, raw scores and resulting proficiency levels were examined. Next a bivariate proficiency variable was analyzed (Proficient vs. Not Proficient) based on the definitions established by the state of Minnesota as shown below. The state defines Levels 1 and 2 as "Not Proficient" and Levels 3-5 as "Proficient".

Level 1. Gaps in knowledge and skills

Students at this level are typically working significantly below grade-level in one or more content areas.

Level 2. Partial knowledge and skills

Students scoring at this level are slightly below, grade- level in one or more content areas.

Level 3. Solid grade level skills

Most students in this level are working successfully on grade- level material.

Level 4. Working above grade level

Students at this level are working above grade level.

Level 5. Superior performance beyond grade level

Students at this level demonstrate superior performance, well beyond what is expected at the grade level.

The WJIII-RE Sample

P-12 participants selected for inclusion in the WJIII-RE sample group were chosen by virtue of their placement in a particular classroom. In other words, entire classrooms were randomly selected. To test the impact of co-teaching across grade levels, co-taught classrooms were divided into four subsections: Primary (K-3), Intermediate (4-6), Middle (7-8) and High (9-12). Using a table of random numbers, 7 of 19 primary, 5 of 14 intermediate, and 6 of 15 sections at the high school were selected. There was no middle level co-teaching occurring at the time. A second variable considered in selection was the level of need of the individual schools. High need schools were identified as those with higher percentages of students of color and students eligible for free/reduced lunch. Of the seven K-3 sections, three were high need, of the five intermediate sections, two were high need. There was no discernable demographic difference between the two high school involved in the study. The selection of co-taught classrooms can reasonably be described as stratified random sampling, with grade level and need serving as strata.

While co-taught classrooms were selected via random numbers as described above, comparison classrooms were identified by building principals. Principals were asked to select classes in which the student population would be similar to that of our randomly selected group. Three students were opted out of testing by parental request. Certified substitute teachers were hired to administer the assessments and were required to complete a three-hour workshop on the administration and scoring of the Woodcock-Johnson III. Each K-6 classroom was scheduled for a full day of testing, during which the assessor individually met with as many students as possible in the course of the academic day. Due to the high school schedule, assessments were conducted during the identified class period over the course of eight days. Pre-testing occurred in September 2004, and post-testing was completed in May 2005.

The stratified-random sample well-represented the school district that participated in this study in terms of gender, special education category, proportion of students eligible for free and reduced lunch services, and racial/ethnic makeup (See Table 2). A slightly higher proportion of free-reduced lunch eligible students received services in non-co-taught classrooms. This trend, however, did not attain the level of statistical significance ($?^2$, 1 DF, = 3.12, p = .08). Likewise, special education status and assignment to co-taught groups proved independent ($?^2$, 1 DF = 0.122, p = 0.73).

Table 2: District Demographics and WJIII-RE Sample Demographics

	District Demographics	Sample Demographics
Children of Color	16%	14.8%
Special Education	17%	9.3%
Free-Reduced Lunch (FRL)	33%	28%
English Language Learners	7%	5.5%

FINDINGS

Woodcock Johnson results were used to analyze academic gains resulting from the co-teaching intervention. In the Woodcock-Johnson analyses, raw score differences (post-test minus pre-test) were employed as dependent variables. The effect for age on gain scores was also examined (in interaction with co-teaching) by running two-way ANOVAs with grade and co-teaching status as independent variables and Composite Math and Composite Reading scores as dependent variables. Grade level did not interact with co-teaching status.

MCA data were used to determine the overall proficiency of students in co-taught vs. non-co-taught classrooms, as well as examine the achievement gap between the students eligible for free-reduced lunch and those not eligible.

Reading Gain Scores

The effect of socioeconomic status on learning is well documented (Conger, Conger, & Elder, 1997; Eamon, 2002; McLoyd, 1998). The proportion of students eligible for free and/or reduced lunch (FRL) has a venerable history as a stand-in for socioeconomic status (e.g., Howley, 1999). With this in mind, two-way ANOVAs were utilized looking for interactions between FRL and co-teaching.

As can be seen in Figure 1 the effect of co-teaching on reading gains is statistically significant at the .03 level. In addition, Figure 2 shows that free and/or reduced lunch-eligible students who received services in co-taught classrooms out gained their non-co-taught counterparts by an average of .87 points. This effect approaches significance at the .07 level.

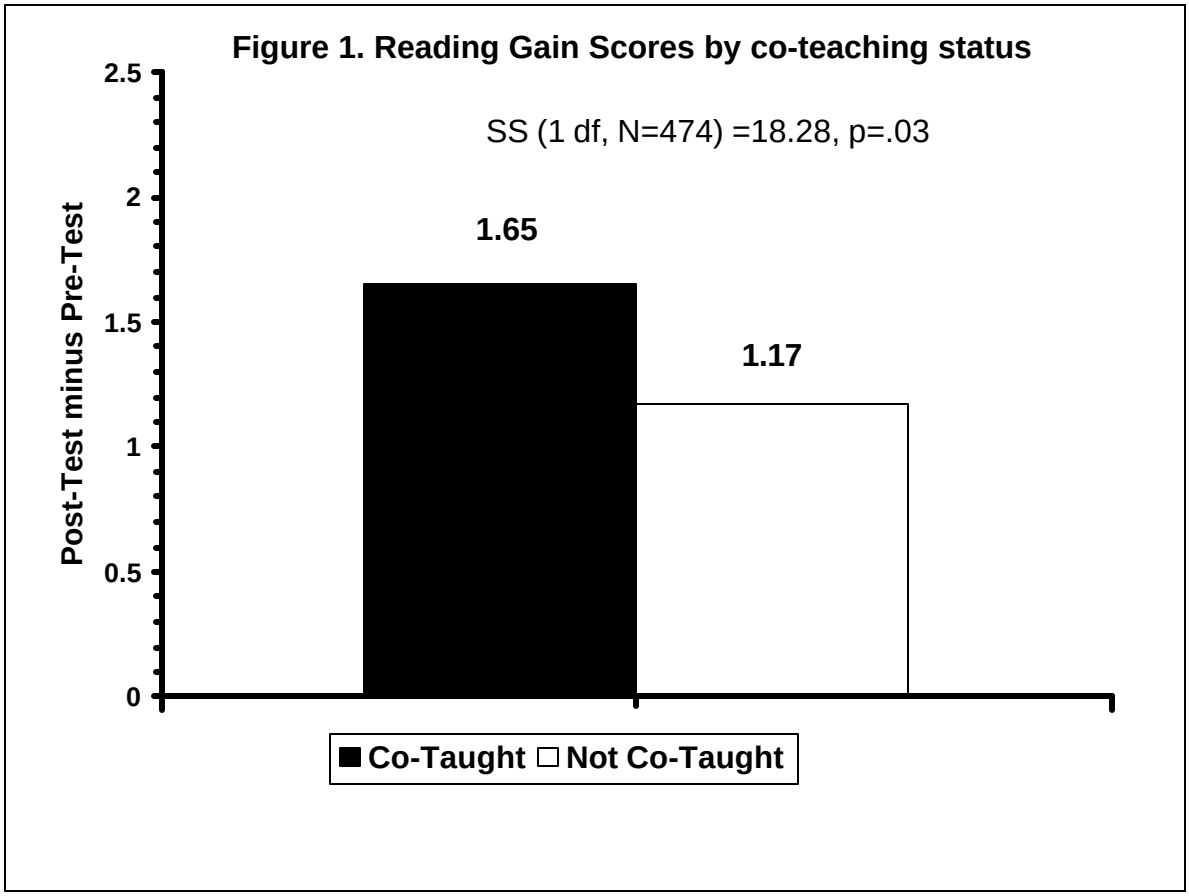
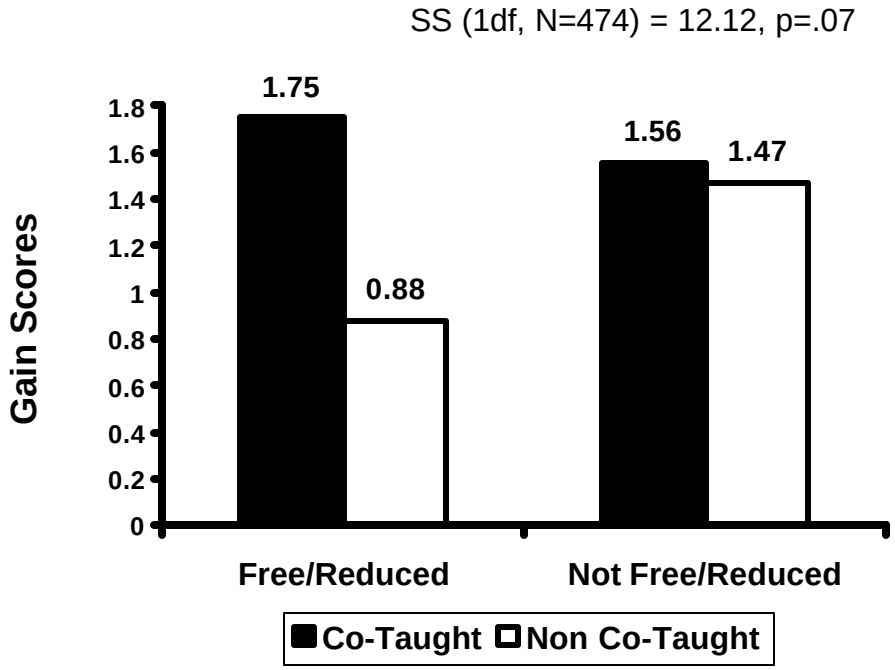


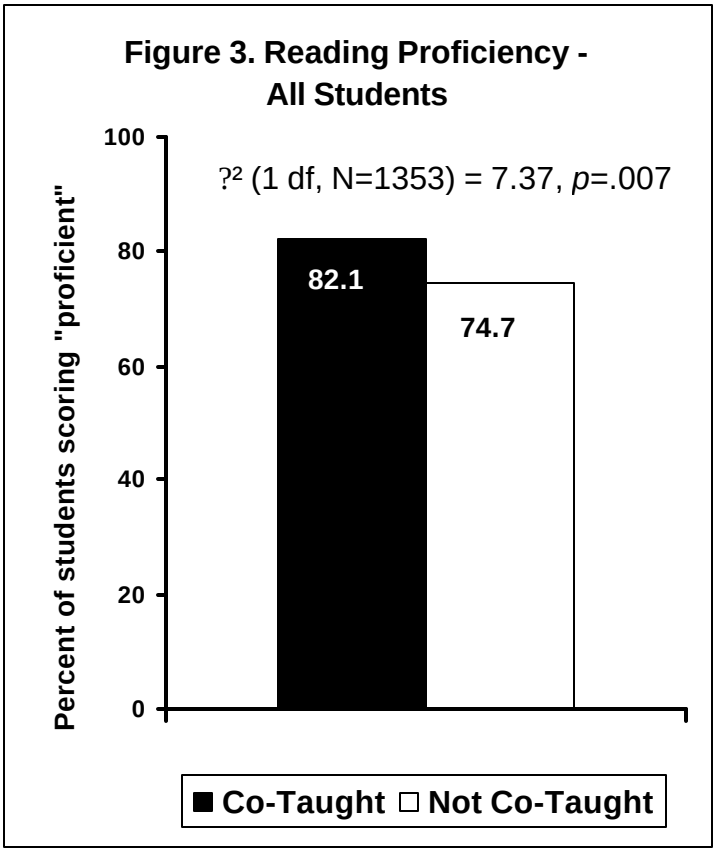
Figure 2. Reading Gain Scores: Free and reduced lunch status by co-teaching status

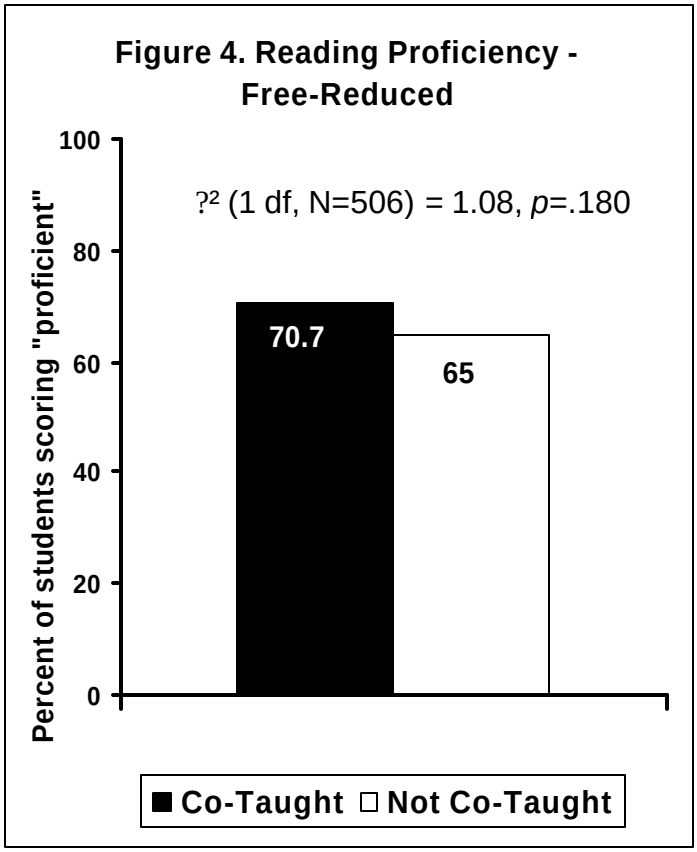


Reading Proficiency

For this analysis, students were categorized as either Proficient or Not Proficient, based on their MCA results. These groups are determined by the State of Minnesota, with Not Proficient being levels 1-2 and Proficient being those students scoring at levels 3-5.

To study the interactions between co-teaching, Free/Reduced Lunch and Proficiency on the MCA reading test, an ANOVA was employed using Proficiency as the dependent variable. As can be seen in Figure 3, the effect for co-teaching on Reading proficiency proved to be significant at the .007 level. Figure 4 shows that a higher proportion of students eligible for FRL in co-taught classrooms achieved proficiency then did their non-co-taught peers but this finding was not statistically significant.





Math Gain Scores

The same approach for math scores was utilized as described above for reading. Figure 5 shows that both co-taught and non-co-taught students had similar gains in math scores, with the non co-taught students realizing slightly higher gains. This result showed no statistical significance.

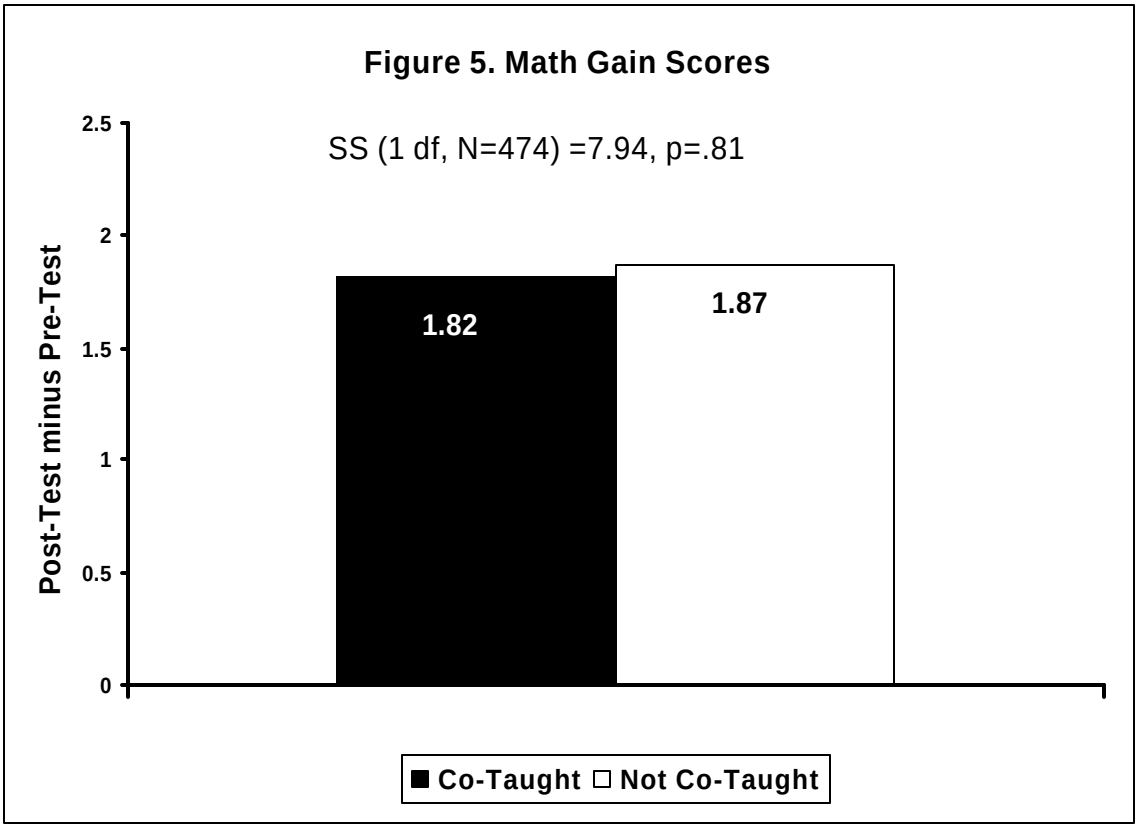
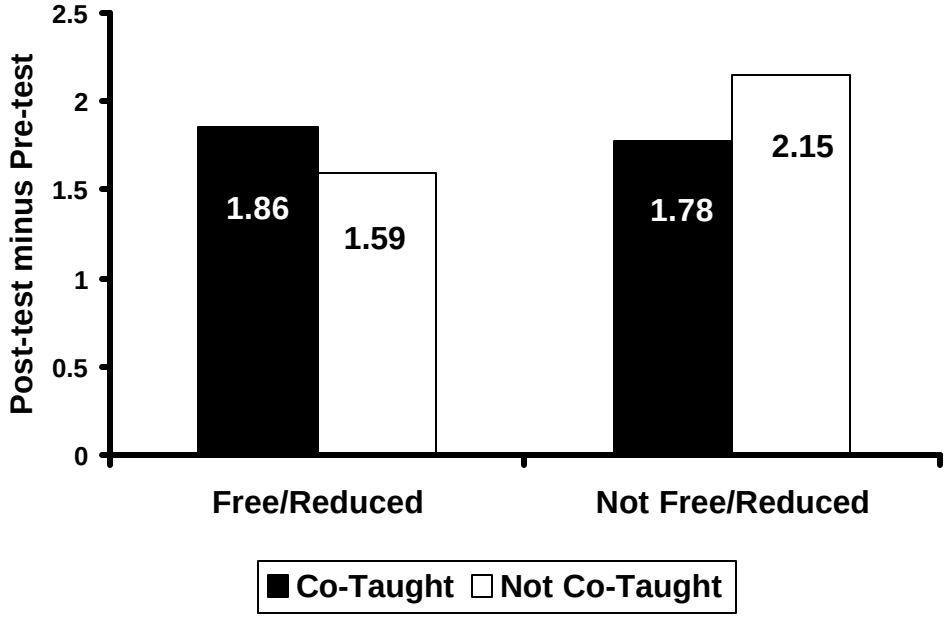


Figure 6, below, shows that free and/or reduced lunch-eligible students who received services in co-taught classrooms out gained their non-co-taught counterparts by an average of .27 points. Strictly speaking, no statistically significant results accrue for math gain scores, but a positive trend exists in terms of the effect of co-teaching by free/reduced lunch on Math gains.

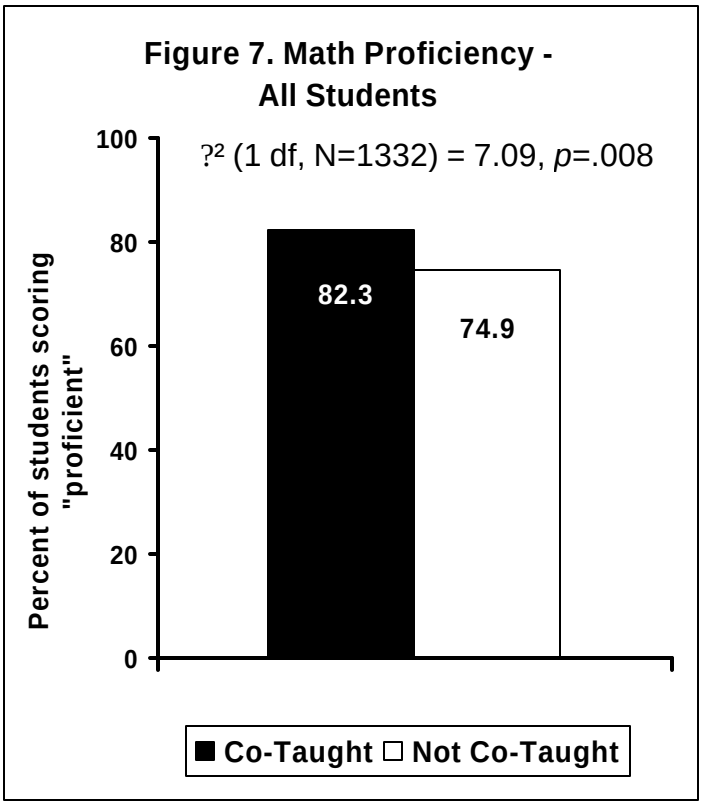
Figure 6. Math Gain Scores: Free and reduced lunch status by co-teaching status

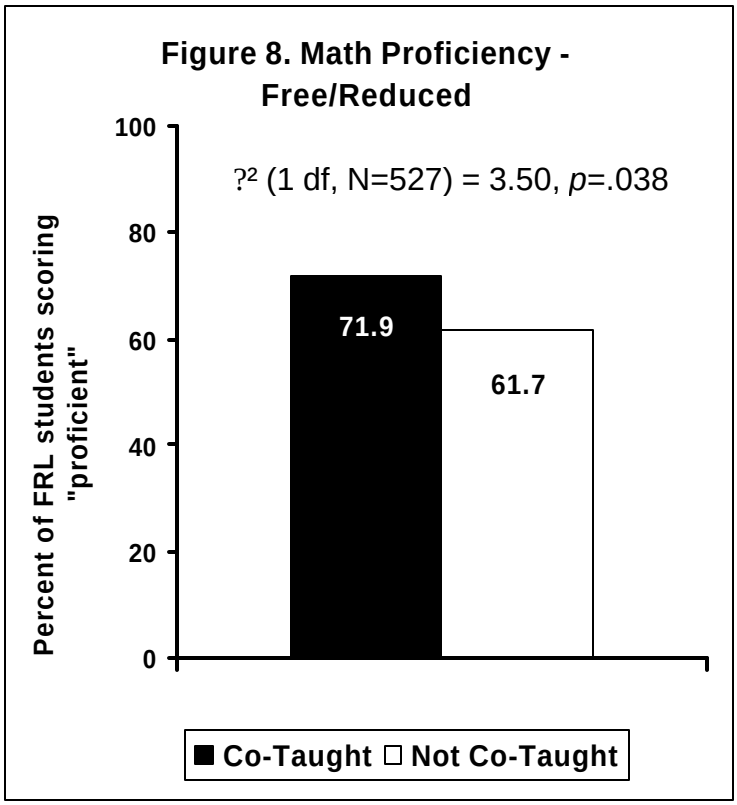
SS (1 df, N=474) = 7.94, p=.15



Math Proficiency

Identical methods were employed in examining the effect of co-teaching on Math proficiency on the Minnesota Comprehensive Assessment as were used to analyze reading proficiency. As can be seen in Figure 7, the effect for co-teaching on Math proficiency proved to be significant at the .008 level. Figure 8 demonstrates that the effect of co-teaching on free-reduced lunch student was also statistically significant at .038.





INTERPRETATION OF RESULTS

Before interpreting the findings, it is important to point out three limitations to the current study. First, the data collected compares the achievement of students in classrooms co-taught by a classroom teacher and teacher candidate, to the achievement of students in traditionally taught classrooms (one primary teacher). The assertion of this study that having two professionally prepared adults in the classroom contributes to the difference in achievement scores is logical given the results. Further study is needed to determine if indeed the presence of any two adults (i.e., a teacher and a paraprofessional, or a parent volunteer) in the classroom would yield the same results or if the professional preparation of the adults is paramount. Further study is needed to determine if in fact co-taught students fare better than students in classrooms where the teacher candidate is prepared using a more traditional model of student teaching. The second limitation is that it employs one year of data from one school district, which may limit the

generalization of the findings. It will be critical in the coming years to determine the replicability of these findings across time and location. The third limitation lies in the voluntary nature of the co-teaching program. Since participation in co-teaching is voluntary on the part of the cooperating teacher, it is possible that the sample is affected by teacher interest in the project.

It is a strength of this study that two separate tests of academic achievement were administered to a large, representative sample. The duality of evaluation instruments was utilized to offset any limitations inherent in the group administered state test. 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. As a general conclusion, co-teaching effects in the expected direction occurred, but occurred more for free/reduced lunch eligible students. In other words, while all students seemed to benefit from participation in a co-taught classroom, the students who benefited the most were those students who qualified for free/reduced lunch.

CONCLUSIONS

A significantly higher proportion of co-taught students scored "proficient" on the Reading portion of the Minnesota Comprehensive Assessment than did their non co-taught peers. The Reading gain scores on the Woodcock-Johnson III-Research Edition also found significantly higher gain scores for co-taught than non co-taught students. These findings indicate that the use of a co-teaching model in student teaching positively impact student achievement.

On the Math portions of the Woodcock-Johnson III – Research Edition, however, there was virtually no difference between the co-taught and non co-taught students, with the latter group showing slightly higher gain scores. This is in stark contrast to the findings on the Minnesota Comprehensive Assessment which indicate that a significantly higher proportion of co-taught students scored "proficient" than did their non co-taught peers. It is somewhat

surprising to discover such contrast in findings between the two assessments. These divergent findings seem to suggest that while all students gained equally on the math assessment from the pre-test to the post-test, it was the co-taught students at the lower end of the spectrum that moved from "Not Proficient" to "Proficient". This is a significant finding in the age of high-stakes testing and educational accountability.

Controlling for free/reduced lunch revealed that *generally, co-teaching effects were larger among free/reduced lunch eligible students.* This effect approached significance for both reading and math gain scores. In terms of student proficiency, in both Reading and Math co-taught students scored at higher proficiency levels than did their non co-taught peers. In Math this finding was significant. It is possible that the emphasis placed on reading proficiency over the past several years in the district involved might account for the lack of significant differences in Reading.

DISCUSSION

While co-teaching is not a new phenomenon, its application in the student teaching experience is a new area of study. There are a number of individual and organizational factors to consider as programs begin to explore this model.

An individual's involvement in co-teaching must be voluntary. Participants' willingness to work in a collaborative partnership is essential and cannot be mandated if success is expected. Wald and Boehm (2002) say teachers must share ownership for the success of all the students in a co-teaching setting. In order to achieve this "shared ownership", co-teaching partners must share decision making, resources, responsibility, and accountability. There must also be respect and trust for a co-teaching partnership to work. There will always be a power differential in the student teaching experience as a result of the evaluative role of the cooperating teacher. This power differential can create an impediment to successful co-teaching if it is not overtly

addressed. The ability to effectively collaborate and communicate are two additional individual factors necessary for a successful co-teaching partnership. Co-teaching partners must be willing to talk about their strengths and weaknesses, their instructional and organizational preferences and their pet peeves. The last major individual factor necessary for successful co-teaching is a commitment to shared planning time. Effective co-teaching requires a consistent and unwavering commitment from participants to explore co-teaching strategies that are appropriate to meet a diversity of student needs.

There were numerous organizational factors that contributed to the success of our co-teaching in student teaching program. First, the leadership team implementing the co-teaching initiative was an incredible blend of individuals with strengths in communication, collaboration, organization, presentation, planning, co-teaching, research, and team building. In addition to a strong leadership team, the organizational structure of our project encouraged participation and buy-in from stake holders at all levels. This multi-faceted project began by developing partnerships with several area school districts, requiring Memorandums of Understanding and program endorsement from top administrators. As partnerships were established, an elaborate communication system evolved. Two-way communication was ongoing, reaching all stake holders, and employing a variety of communication strategies.

The heart of our success in co-teaching in student teaching was providing workshops for cooperating teachers, teacher candidates, and university supervisors. Initial workshops provided a fundamental understanding of co-teaching. As our work progressed, it became apparent that the collaboration and communication skills necessary to successfully co-teach are not inherent to teacher preparation programs. Therefore, the cooperating teacher and teacher candidate pair were required to attend a workshop focusing on communication, planning, and implementation of the co-teaching model.

These workshops were identified by both cooperating teachers and teacher candidates as pivotal in the understanding of co-teaching, the development of collegial relationships, and the implementation of co-teaching in the classroom. A second pair's workshop, highlighting advanced implementation and planning strategies, was required for teams utilizing co-teaching in student teaching over the course of two semesters. On-going meetings were also held for those university supervisors working with co-teaching pairs.

IMPLICATIONS

Prior research on class size has shown us that smaller class size may lead to increased student performance (Handley, 2002; Finn, 1998; Olson, 1977). Co-teaching in student teaching provides two professionally prepared adults in the classroom for greater periods of time than a traditional model of student teaching. This reduction of student to staff ratio allows children a better opportunity to get help when and how they need it. With current budget constraints, the reduction of class size is not a realistic goal for most districts. However, class size can be reduced when we add a teacher candidate to a classroom for significant periods of time. Districts that work in partnership with teacher preparation institutions are urged to consider the use of co-teaching during the student teaching experience as an academic benefit to P-12 students. Likewise, 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 P-12 learners they will serve. A co-teaching model of student teaching is a cost-effective way for colleges, universities and school districts to best meet the needs of teacher candidates, P-12 learners, and cooperating teachers.

Having quality teachers teaching in America's classrooms is the mutual goal of public educators and teacher preparation institutions. Implementing a co-teaching model in student

teaching is a proven way to enhance the preparation of tomorrow's teachers – while improving the learning experience for our P-12 students.

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