Evaluation of the Student Experience in the Co-taught Classroom

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Abstract
Co-teaching is the fastest growing inclusion model in the United States. Yet, the effectiveness of this model from the student perspective is largely under researched. Over a six-week period of systematic implementation of co-teaching models, this study quantitatively compared student and teacher perceptions of the effectiveness of the five most commonly used co-teaching models (i.e., One Teach/One Assist, Station Teaching, Alternative Teaching, Parallel Teaching, and Team Teaching). Quantitative analyses demonstrated statistical interactions between student and teacher perceptions. These findings differ from previous research in that they focus primarily on student perceptions in order to gain a better understanding of the impacts of co-teaching on students.

Keywords: *Co-teaching models, effectiveness, secondary education, inclusion, teaching methodology, perceptions*

Introduction
Co-teaching is defined as two licensed educators (one general educator and one special educator) collaboratively plan, teach and assess a diverse group of students. Its use allows students with disabilities consistent access to the general education curriculum via the content knowledge of the general educator and continuous specialized support via the special educator. Since 1995, it is the fastest growing inclusion model (Cook & Friend, 1995; Kloo & Zigmond, 2008; Murawski, 2009; Volonino & Zigmond; 2007) as it creates a highly effective service delivery option for both academic instruction and growth of students with disabilities. Simultaneously, it retains the integrity of the least restrictive environment as guaranteed by *The Education for All Handicapped Children Act (EAHCA)* and upheld by the Individuals with Disabilities Education Act (Conderman, 2011; Dieker, 2001; Dieker & Berg, 2002, IDEA, 2004). Developing the effectiveness of the co-taught classroom is crucial in an effort to facilitate the inclusion of students with special

educational needs and disabilities in the general education classrooms.

Benefits of Co-teaching

Six co-teaching models have been discussed and studied extensively and are currently utilized in co-taught classrooms (Cook & Friend, 1995; Fenty & McDuffie-Landrum, 2011; Forbes & Billet, 2012; Hepner & Newman, 2010; Nichols, Dowdy, & Nichols, 2010; Sileo, 2011). These include: (1) One Teach/One Observe, (2) One teach/One Assist, (3) Station Teaching, (4) Parallel Teaching, (5) Alternative Teaching, and (6) Team Teaching. For this study, One Teach/One Observe model was discarded because of a lack of interaction between the observing teacher (i.e., the special educator) and primary instructor (general educator). Previously, educators have postulated that co-teaching has value not only for students, but for themselves as well.   It has been reported that co-teaching improves student academic performance, behavior, and self-confidence (Hang & Rabren, 2009; Idol, 2006; Rabren, 2002; Walther-Thomas, 1997) while also providing teachers professional growth, behavior support, classroom management support, and opportunities for collaboration (Austin, 2001; Dieker, 2001; Fenty & McDuffie-Landrum, 2011; Forbes & Billet, 2012; Keefe & Moore, 2004; Kohler-Evans, 2006; Patel & Kramer, 2013; Scruggs, Mastropieri, & McDuffie, 2007).   Although research suggests a co-taught classroom should be a highly effective means of access to the general education curriculum for students with disabilities, research also suggests the co-taught paradigm is plagued with detrimental issues (Anderson & Speck, 1998; Austin, 2001; Keefe & Moore, 2004; Kohler-Evans, 2006; Patel & Kramer, 2013).

The Issues with Co-teaching

Although the co-taught classroom should be the best possible environment for students with disabilities based on the combined talent, knowledge, and experience of the educators; this is not always the case. There are deterrents to the potential success of the co-taught classroom that are differentiated into two categories, structural and perceived.

Structural Deterrents

Defined for this paper, structural deterrents for co-teachers include those elements of the school system out of direct teacher control.   For example, a lack of time in the school day for co-planning, pairing the best possible co-teaching teams together, and a lack of professional development for co-teachers are all structural issues (Cook & Friend, 1995; Murawski, 2009). Although these have an undeniable impact on the co-teacher success, they have potential remedies. For example, co-teachers may take advantage of various forms of communication technology (e.g. - text, Skype, Google Hangout, and email) in an effort to co-plan.   Furthermore, in an effort to more effectively pair co-teaching partners a protocol for co-teacher responsibility determination can be implemented to facilitate a productive year.   Lastly, professional development can be easily acquired and is widely available online for free and can be accessed directly through available school computing.

Perceived Issues

Unfortunately, not all issues are easily remedied.   Co-teacher perceived issues are inclusive of items such as personality conflicts, lack of confidence in content or differentiation strategies, unbalanced classroom management responsibilities, teaching philosophy differences, differences in teaching styles, feeling of being undervalued, effective planning, unbalanced authority between teachers, and differences in grading (Alvarez-McHatton & Daniel, 2008; Anderson & Speck, 1998; Forbes & Billet, 2012; Keefe & Moore, 2004; Harbort, et al., 2007; Kohler-Evans, 2006; Murawski, 2009; Murawski & Lochner, 2010; Murawski & Swanson, 2001; Patel & Kramer, 2013; Volonino & Zigmond, 2007; Zigmond & Matta, 2004).   These issues are commonly experienced by co-teaching partners and often personal.   Unfortunately, when these

issues occur a co-teaching classroom can quickly become ineffective.   However, by understanding students and how they respond to these perceived issues co-teachers can begin to successfully navigate some of these concerns that are associated with co-teaching.

There has been an abundance of research from the perspective of the teacher, but little is known about how students perceive their experiences in the co-taught classroom when a variation of models is implemented into the instructional process (Anderson & Speck, 1998; Austin, 2001; Keefe & Moore, 2004; Kohler-Evans, 2006; Patel & Kramer, 2013).   Therefore, this project expanded the current literature associated with co-teaching to explore student perceptions as it relates to the above referenced structural and perceived issues that are common co-teaching partner concerns in an effort to also understand the student experience in the co-taught classroom as students were exposed to various co-teaching models.

Methods
This study was designed to ascertain teacher and student perceptions of common co-teaching issues as reported by co-teaching partners using the (1) variation of co-teaching models over a 6-week period by co-teaching partners; (2) administration of the student survey (Table 1); and (3) administration of the teacher survey (Table 2).   The overall research question of this study: Are there perceived differences (among students, among teachers, between students and teachers) across the five co-teaching models introduced previously?

Table 1. Student rubric utilized in the current study

	Classroom Management	**"X" One**
5	The teachers presented themselves as equal partners with regard to discipline and answering student questions.	
4	The teachers mostly presented themselves as equal partners with regard to discipline and answering student questions.	
3	Some of the time one teacher would answer student questions and manage discipline while the other teacher would teach the class.	
2	Most of the time one teacher was in charge of answering student questions and managing discipline while the other teacher taught the class.	
1	One teacher answered student questions and disciplined students while the other teacher taught the class.	
	Teaching Model	**"X" One**
5	Both teachers presented new material to the class.	
4	For the most part, both teachers presented new material to the class.	
3	Some new information was provided by one of my teachers, but most new information came from the other teacher.	
2	Very little new information was presented by one of my teachers.	
1	New material was presented to the class by one teacher.	
	Teacher Confidence	**"X" One**
5	I can ask both of my teachers about what we are learning and I know they will both be able to help me.	
4	I am fairly certain both of my teachers can answer any question I may have about the material we are learning.	
3	I am not sure both of my teachers can answer any question I may have about the material we are learning.	
2	I am fairly certain I cannot ask one of my teachers a question about the material we are learning.	

1	I know that one of my teachers cannot answer a question I may have about the material we are learning.	
	Behavior	**"X" One**
5	My behavior was much better because of the teaching style and the activities.	
4	My behavior was better than normal because of the teaching style and the activities.	
3	My behavior was somewhat better than normal because of the teaching style and the activities.	
2	My behavior was not that much better than normal because of the teaching style and the activities.	
1	This style of teaching had NO impact on my behavior. I was like I always am in class.	
	Learning	**"X" One**
5	This style of teaching helped me to understand 90-100% of the lessons.	
4	This style of teaching helped me to understand 80-89% of the lessons.	
3	This style of teaching helped me to understand 70-79% of the lessons.	
2	This style of teaching helped me to understand 60-69% of the lessons.	
1	This style of teaching helped me to understand less than half of the lessons.	
	Student Confidence	**"X" One**
5	After the last two lessons and teaching style I feel confident that I could answer any question about the material.	
4	After the last two lessons and teaching style I feel mostly confident that I could answer any question about the material.	
3	After the last two lessons and teaching style I feel somewhat confident that I could answer any question about the material.	
2	After the last two lessons and teaching style I do not feel very confident about answering questions about the material.	
1	I don't feel like I learned much over the last two days and I hope my teacher does not ask me a question about the material.	
	Teacher Authority	**"X" One**
5	Over the last two days it seemed that both of my teachers have the same amount of power in the classroom.	
4	Over the last two days it seemed that, for the most part, both of my teachers have the same amount of power in the classroom.	
3	Over the last two days it seemed that one of my teachers may have had a little more power than the other teacher.	
2	Over the last two days one of my teachers seemed more powerful than the other teacher.	
1	Over the last two days it is obvious that one of my teachers is more powerful than the other teacher.	

Table 2. Teacher rubric utilized in the current study

	Classroom Management	**"X" One**
5	We presented ourselves as equal partners with regard to discipline and answering student questions.	
4	We mostly presented ourselves as equal partners with regard to discipline and answering student questions.	
3	Some of the time one of us would answer student questions and manage discipline while the other would teach the class material.	
2	Most of the time one of us was in charge of answering student questions and managing discipline while the other taught the class.	
1	One teacher answered student questions and disciplined students while the other teacher	

	taught the class.	
	Teaching Model	**"X" One**
5	Both teachers presented new material to the class	
4	For the most part, both teachers presented new material to the class.	
3	Some new information was provided by one of us, but most new information came from my partner.	
2	Almost all new information came from my partner while I added a few things here and there.	
1	New material was presented to the class by one teacher.	
	Learning	**"X" One**
5	It seemed as though this style of teaching helped my students to understand 90-100% of the material covered.	
4	It seemed as though this style of teaching helped my students to understand 80-89% of the material covered.	
3	It seemed as though this style of teaching helped my students to understand 70-79% of the material covered.	
2	It seemed as though this style of teaching helped my students to understand 60-69% of the material covered.	
1	It seemed as though this style of teaching helped my students to understand less than half of the material covered.	
	Behavior	**"X" One**
5	As a result of the model used, student behavior improved significantly compared to normal behavior.	
4	As a result of the model used, student behavior improved compared to normal behavior.	
3	As a result of the model used, student behavior seemed to improve compared to normal behavior.	
2	As a result of the model used, student behavior didn't really seem to improve as compared to normal behavior.	
1	As a result of the model used, student behavior did not improve at all and may have gotten worse compared to normal behavior.	
	Student Confidence	**"X" One**
5	I feel very confident that any student could answer questions about the material we have covered in the last two lessons.	
4	I feel confident that any student could answer questions about the material we have covered in the last two lessons.	
3	I feel somewhat confident that any student could answer questions about the material we have covered in the last two lessons.	
2	I do not feel confident that any student could answer questions about the material we have covered in the last two lessons.	
1	I don't feel like the students could confidently answer questions about the content that we have covered in the last two lessons.	
	Teacher Authority	**"X" One**
5	Over the last two lessons neither teacher appeared to have any more authority than the other teacher.	
4	Over the last two lessons both teachers mostly appeared to have the same amount of authority.	
3	Over the last two lessons my co-teacher may have appeared to have more authority than me.	
2	Over the last two lessons it appeared that I had less authority than my co-teacher.	
1	Over the last two lessons it appeared that I had no authority in the classroom.	

Selection of Participants

Upon Institutional Review Board (IRB) and local school district approval of the study, an overview was presented to co-teaching teams (n=5) at the participating school. Following the provision of written consent by all teachers (n=9), pre-data collection observations of the co-teaching partners were conducted to assess current teaching practices and potential for carrying out the proposed study. To assess reliability parameters during these observations, an inter-rater was utilized for 20% of the observations with a 100% agreement. Additionally, one special educator was paired with two participating general educators accounting for the uneven participant numbers (i.e, 5 co-teaching teams and 9 co-teachers). The demographic breakdown of teachers was such that there were five general education, two special education and two dual certified teachers. The average teaching experience was 18.77 years across all teacher participants with an average of 4.55 years of co-teaching experience. Additionally eight teacher participants held some form of Master's degree and three were national board certified. Following the initial teacher observations, student assent and parental consent forms were distributed to students in the co-taught environments (n = 177). Only those students that returned both signed forms participated in the study (n=122). A summary of demographics for the school district, participating school building, and participants is displayed in Table 3.

Table 3. Demographics for School District, Participating Building, and Participants

Characteristic	School District (Total & %)	School Building (Total & %)	Participants (Total & %)
Placement	N = 9,346	N = 633	N=122
Special Education	1,100 (11.65%)	106 (16.75%)	40 (32.78%)
General Education	7,360 (77.93%)	527 (83.25%)	82 (67.21%)
Gifted and Talented	886 (9.38%)	68 (10.74%)	0
Race/Ethnicity			
Asian	428 (4.53%)	15 (2.37%)	0
African American	1,126 (11.92%)	118 (18.64%)	23 (18.85%)
Hawaii/PI	57 (0.60%)	4 (0.63%)	0
Latino	961 (10.18%)	98 (14.85%)	19 (15.57%)
Native American	105 (1.11%)	4 (0.63%)	1 (0.819%)
Caucasian	6,767 (71.75%)	398 (62.88%)	76 (62.29%)
Gender			
Female	4,663 (49.38%)	306 (48.34%)	56 (45.90%)
Male	4,781 (50.62%)	327 (51.66%)	66 (54.09%)
Meal Status			
Free Lunch	3,180 (33.67%)	283 (44.71%)	67 (54.91%)
Reduced Lunch	622 (6.59%)	6.59	
Full Paid	5,642 (59.74%)	59.74	

Selection of Instruments

The rubrics utilized were initially created for a pilot study conducted during the 2012-2013 academic school year (Burks-Keeley & Brown, 2014). Following examination of the results of this pilot study, consultation of previously validated rubrics in the available co-teaching literature and Frye test for readability analysis (Adams, Cessna, and Friend's (1993) Colorado Assessment of Co-teaching (Co-ACT), Conderman (2011) student survey), the current rubrics were edited such that; (1) the number of categories assessed was decreased, (2) the rubric language was adjusted to increased student accessibility for those students with reading disabilities, and (3) there was an increased complimenting of content instruction. Following these edits, the revised rubrics were validated by three (3) experts in the field of special education. The final student and teacher co-teaching rubrics were designed to measure the opinions of participants, using a one to five Likert-type Scale, in the areas of (1) classroom management, (2) teaching model, (3) teacher confidence, (4) learning, (5) behavior, (6) student confidence, and (7) teacher authority.

Design and Procedures

The study spanned a 6-week period to facilitate implementation mimicking the realistic experiences of co-teachers, taking into consideration various obligations pulling co-teachers out of the classroom or causing other inconsistencies in co-teaching model implementation. Therefore, co-teachers were allotted 6 weeks to implement all 5 models, with the extra week serving as a "*safety net*" in case teachers were not able to use a model during one week of the study. At the onset of the 6-week period co-teaching partners were asked to plan and schedule for the implementation of the five co-teaching models for two consecutive days and each partnership recorded their dates of implementation on a master schedule.

Class periods during the study were 54 minutes in length providing students with 108 minutes of total exposure to a co-teaching model prior to them completing the rubric (2 classes at 54 minutes each = 108 total minutes of exposure). This decision was made because co-teacher participants in the pilot study reported that the implementation of one co-teaching model continuously over two days was difficult because it did not always complement the content instruction for the entire time frame; therefore, to extend the expectation to three or more days using the same model was unreasonable for the teacher participants and did not mimic a realistic instructional process (Burks-Keeley & Brown, 2014).

Planning sessions were scheduled for each co-teaching partnership in which the researcher assisted in (1) planning the implementation of the 5 co-teaching models, (2) the type of instruction they would incorporate, and (3) the model that they would use for instruction. Co-teaching partners decided among themselves their individual roles and responsibilities while implementing each model without researcher influence. Although assistance was provided to the co-teachers in selecting the co-teaching model(s) best complimenting content instruction, the final selection of the model to be used was ultimately the decision of each co-teaching team. This design did not control for the type of content presented in each lesson, student enjoyment of the subject matter covered during the session, or co-teacher responsibility during the instructional session(s).

During co-teaching model implementation and instructional sessions, a grid observation pattern was used to note co-teaching model characteristics during observations (with an inter-rater 20% of the time and with 100% agreement). Observations took place on both the first and second day of instruction to ensure integrity of the co-teaching model. At the end of day two, coded rubrics were provided to students and teachers, scripted oral instructions and the rubric in its entirety were read aloud, any questions were answered in detail and rubrics were collected following their completion.

Statistical Analysis

All data were initially analyzed to assess measures of stability and instability within the distribution of responses. Although it is understood that Likert-type data are typically not normally distributed due to them being discrete (non-continuous) and bounded on both the high and low end, the natures of the distributions were assessed to determine both the shape and symmetry of the response distributions in an effort to enhance the interpretation of the results. Following these initial analyses, tests for mean differences were conducted using both a within subject (both student and teacher to themselves) and between subject (student to teacher) repeated measures analysis of variance (ANOVARM). This method of data collection and analysis provided the study with the highest possible magnitudes of statistical power. The probability of committing a Type I error was set at alpha equal to 5% ($\alpha=0.05$) and the probability of committing a Type II error was set equal to 20% ($\beta = .20$). For all data with which significant mean difference results were observed ($p \leq 0.05$), Fisher LSD Post hoc comparison ($\alpha=0.05$) were conducted to identify specific area(s) in which differences were present.

Results
Student Responses

Stability, instability, symmetry and shape

Results of these initial analyses across all co-teaching models are displayed in Table 4. Overall, response averages for all co-teaching models and categories were observed to fall on the high end of the scale ($4.67 \geq \ \geq 3.34$) and demonstrated moderate variability ($2.730 \geq s2 \geq 0.433$) across the student sample. The data also consistently demonstrated a slight negative skew which is common with Likert-type data (Clason & Dormody, 1994). With regard to distributional shape, all student response data were observed to be either leptokurtic or platykurtic depending on either the co-teaching model or observed parameter. There did not appear to be any consistency with regard to distributional shape that was dependent on either co-teaching model or characteristic.

Table 4. Results of initial stability, instability, symmetry and shape analyses for student response data

Model	N		s2	skewness	kurtosis
One Teach / One Assist					
CM	85	4.08	1.250	-1.377	1.216
TC	85	4.67			
SL	85	4.39	0.455	-0.654	-0.631
SB	85	3.35	2.640	-0.405	-1.450
TA	85	4.40	1.090	-1.698	2.651
TM	85	4.08	1.089	-1.212	1.128
SC	85	4.40	0.433	-0.646	-0.586
Station					
CM	85	4.60	0.610	-1.882	4.463
TC	85	4.49			
SL	85	4.44	0.511	-1.671	5.044
SB	85	3.42	2.72	-0.529	-1.370
TA	85	4.38	0.583	-1.787	5.576
TM	85	4.60	0.485	-2.324	7.759
SC	85	4.38	0.681	-1.384	2.681
Alternative					
CM	85	4.19	0.890	-2.012	4.381
TC	85	4.59			

SL	85	4.27	0.795	-1.288	1.589
SB	85	3.42	2.730	-0.513	-1.408
TA	85	4.29	0.877	-1.421	1.415
TM	85	4.19	1.240	-1.406	1.328
SC	85	4.29	0.591	-0.563	-1.087
Parallel					
CM	85	4.19	1.31	-1.696	2.078
TC	85	4.62			
SL	85	4.25	0.593	-0.780	0.137
SB	85	3.52	2.47	-0.647	-1.134
TA	85	4.13	0.948	-1.656	2.872
TM	85	4.18	1.040	-1.347	1.619
SC	85	4.13	0.828	-1.135	1.667
Team					
CM	85	4.29	0.800	-1.494	2.744
TC	85	4.51			
SL	85	4.26	0.527	-0.633	-0.151
SB	85	3.34	2.44	-0.493	-1.298
TA	85	4.22	0.514	-1.396	1.200
TM	85	4.29	0.761	-1.043	0.259
SC	85	4.22	0.842	-1.221	1.265

Within subject ANOVARM. The results of ANOVARM for within student differences across the co-teaching models indicated no significant difference in student response for Classroom Management (p=0.086), Teacher Confidence (p=0.348), Learning (p=0.137), Behavior (p=0.713), and Teacher Authority (p=0.054). However; ANOVARM results did indicate an overall main effect in student responses for both Teaching Model ($F(4,336) = 4.696$; $p=0.001$; $\eta p2 = 0.039$; $1\text{-}\beta = 0.95$) and Student Confidence ($F(4,336) = 2.406$; $p=0.049$; $\eta p2 = 0.028$; $1\text{-}\beta = 0.69$). For those variables returning overall significant values, results of stability, instability, symmetry and shape.

Table 5. Results of Fisher LSD post hoc testing for student response data

Teacher Responses

Model (i)	Model (j)	$\bar{x}d$ (i-j)	Sig. (p)	95% **C.I**	
Lower Bound	Upper Bound				
Teaching Model					
Station Teaching	OTOA	0.467	<0.001	0.254	0.680
	Alternative	0.301	0.006	0.086	0.515
	Parallel	0.292	0.005	0.089	0.495
	Team	0.235	0.014	0.049	0.422
Student Confidence					
Parallel Teaching	OTOA	-0.271	0.008	-0.469	-0.073
	Station	-0.247	0.032	-0.473	-0.022

The results of these initial analyses across all co-teaching models are displayed in Table 6. Unlike student responses, teacher response averages for all co-teaching models and categories were observed to be distributed more widely across the scale ($4.95 \geq\ \geq 1.65$) and consistently demonstrated lower magnitudes of variability ($2.205 \geq s2 \geq 0.053$) across the teacher sample. The teacher data also demonstrated both positive and negative skew depending on the model and parameter. With regard to distributional shape, all teacher response data were observed to be leptokurtic or platykurtic depending on the co-teaching model or observed parameter with peak magnitudes of kurtosis being much higher than those observed for the student response data.

Table 6. Results of initial stability, instability, symmetry and shape analyses for student response data

Model	N		s2	skewness	kurtosis
One Teach / One Assist					
CM	26	4.73	0.258	-1.925	3.200
SL	26	3.50	1.140	-0.534	-0.241
SB	26	2.42	0.894	1.778	2.938
TA	19	2.63	0.801	-0.702	-0.073
TM	26	1.65	0.555	0.680	-0.818
SC	25	3.24	0.857	0.506	-0.329
Station					
CM	26	4.81	0.642	-4.686	22.641
SL	26	4.12	0.586	-0.204	-1.205
SB	26	2.96	1.798	0.075	-1.175
TA	19	4.58	0.368	-1.168	0.582
TM	26	4.27	2.205	-1.774	1.472
SC	25	3.64	0.490	0.643	-0.641
Alternative					
CM	26	4.62	0.726	-3.332	13.209
SL	26	4.08	0.634	-0.143	-1.377
SB	26	4.00	0.960	-1.382	2.565
TA	19	4.47	1.041	-2.552	7.280
TM	26	4.46	0.498	-0.962	-0.262
SC	25	3.84	0.723	-0.115	-0.723
Parallel					
CM	26	4.92	0.074	-3.373	10.156
SL	26	4.27	0.605	-0.527	-1.108
SB	26	4.08	0.474	-0.099	-0.722
TA	19	4.95	0.053	-4.359	19.000
TM	26	4.73	0.205	-1.105	-0.850
SC	25	3.96	0.623	0.073	-1.351
Team					
CM	26	4.73	0.285	-1.925	3.200
SL	26	4.42	0.414	-0.667	-0.428
SB	26	3.23	1.465	0.106	-1.162
TA	19	4.79	0.175	-1.545	0.419
TM	26	4.69	0.542	-2.691	7.292
SC	25	4.08	0.493	-0.112	-0.816

Within subject ANOVARM.

The results of ANOVARM for within teacher differences across the co-teaching models were only similar to student response data for non-significance observed with regard to Classroom Management (p=0.448). All other variables assessed were observed to differ significantly with regard to teacher perceptions. These results are displayed in Table 7. As with student response data, for those variables returning overall significant values results of follow-up testing to identify between which variables differences could be observed with regard to teacher response data are displayed in Table 8

Table 7. Overall ANOVA Results

Source	Type III SS	df	MS	F	p	$\eta p2$	1-B
Teaching Model							
Teacher Perceptions	176.692	4	44.173	53.280	<0.001	0.681	> 0.99
Error	82.908	100	0.829	---	---	---	---
Student Learning							
Teacher Perceptions	12.769	4	3.192	5.146	0.001	0.171	0.961
Error	62.031	100	0.620	---	---	---	---
Student Behavior							
Teacher Perceptions	51.338	4	12.835	13.851	<0.001	0.357	> 0.99
Error	92.662	100	0.927	---	---	---	---
Student Confidence							
Teacher Perceptions	10.382	4	2.708	4.678	0.002	0.163	0.941
Error	55.568	96	0.579	---	---	---	---
Teacher Authority							
Teacher Perceptions	67.432	4	16.858	32.137	<0.001	0.641	> 0.99
Error	37.768	72	0.525	---	---	--	

Table 8. Results of Post Hoc Analysis for Teacher Comparisons

Model (i)	Model (j)	$\overline{x}d$ (i-j)	Sig. (p)	95% C.I	
Lower Bound	**Upper Bound**				
Teaching Model					
OTOA	Station	-2.615	<0.001	-3.242	-1.989
	Alternative	-2.808	<0.001	-3.220	-2.395
	Parallel	-3.077	<0.001	-3.378	-2.776
	Team	-3.038	<0.001	-3.555	-2.521
Student Learning					

OTOA	Alternative	-0.577	0.033	-1.103	-0.051
Parallel		-0.769	0.003	-1.245	-0.294
Team		-0.923	<0.001	-1.379	-0.467
Student Behavior					
OTOA	Station	-0.538	0.024	-0.999	-0.078
Alternative		-1.577	<0.001	-2.103	-1.051
Parallel		-1.654	<0.001	-2.110	-1.198
Team		-0.808	0.001	-1.235	-0.380
Station	Alternative	-1.038	0.009	-1.792	-0.285
Parallel		-1.115	0.001	-1.745	-0.486
Alternative	Team	0.769	0.009	0.206	1.332
Parallel	Team	0.846	0.006	0.267	1.425
Student Confidence					
OTOA	Alternative	-0.600	0.022	-1.106	-0.094
Parallel		-0.720	0.002	-1.142	-0.298
Team		-0.840	0.001	-1.281	-0.399
Station	Team	-0.440	0.031	-0.837	-0.43
Teacher Authority					
OTOA	Station	-1.947	<0.001	-2.579	-1.315
Alternative		-1.842	<0.001	-2.381	-1.303
Parallel		-2.316	<0.001	-2.772	-1.860
Team		-2.158	<0.001	-2.647	-1.669
Station	Parallel	-0.368	0.015	-0.656	-0.081

Student and Teacher Response Comparison Analysis

Interaction Terms

The results of the ANOVARM analyses comparing student and teacher responses indicated that there was no observable interaction for classroom management. However, for all other variables, interactions were observed when comparing student and teacher response data. These results are displayed in Table 9 and Table 10.

Table 9. Interaction Overall Testing

Source	Type III SS	df	MS	F	p	ηp2	1-B
Teaching Model							
Perceptions	155.180	4	38.795	48.125	<0.001	0.308	> 0.99
Interaction	120.852	4	30.213	37.479	<0.001	0.258	> 0.99
Error	348.246	432	0.806	---	---	---	---
Student Learning							
Perceptions	7.572	4	1.893	4.547	0.001	0.040	0.943
Interaction	13.157	4	3.289	7.901	<0.001	0.068	0.998
Error	181.527	436	0.416	---	---	---	---
Student Behavior							
Perceptions	45.404	4	11.351	13.726	<0.001	0.112	> 0.99

Interaction	34.016	4	8.504	10.283	<0.001	0.086	>0.99
Error	360.567	436	0.827	---	---	---	---
Student Confidence						
Perceptions Interaction	10.382	4	2.708	4.678	0.002	0.163	0.941
Error	55.568	96	0.579	---	---	---	---
Teacher Authority						
Perceptions Interaction	67.432	4	16.858	32.137	<0.001	0.641	> 0.99
Error	37.768	72	0.525	---	---	---	

Table 10. Results of Interaction Post Hoc Testing for Students and Teachers

Model (i)	Model (j)	x̄d (i-j)	Sig. (p)	95% **C.I**	
Lower Bound	Upper Bound				
Teaching Model					
OTOA	Station	-1.564	<0.001	-1.853	-1.274
	Alternative	-1.457	<0.001	-1.721	-1.193
	Parallel	-1586	<0.001	-1.871	-1.301
	Team	-1.620	<0.001	-1.913	-1.328
Student Learning					
OTOA	Station	-0.331	0.005	-0.562	-0.100
Alternative		-0.230	0.049	-0.458	-0.001
Parallel		-0.314	0.003	-0.521	-0.107
Team		-0.397	<0.001	-0.589	-0.205
Student Behavior					
OTOA	Station	-0.305	0.037	-0.590	-0.019
Alternative		-0.824	<0.001	-1.125	-0.523
Parallel		-0.909	<0.001	-1.194	-0.624
Team		-0.398	0.003	-0.654	-0.142
Station	Alternative	-0.519	0.002	-0.841	-0.197
Parallel		-0.605	<0.001	-0.888	-0.321
Alternative	Team	0.426	0.004	0.624	1.194
Parallel	Team	0.511	<0.001	0.242	0.780
Student Confidence					
OTOA	Alternative	-0.247	0.015	-0.446	-0.048
Parallel		-0.225	0.038	-0.437	-0.012
Team		-0.332	0.002	-0.540	-0.124
Teacher Authority					
OTOA	Station	-1.097	<0.001	-1.401	-0.793
Alternative		-1.003	<0.001	-1.303	-0.704
Parallel		-1.205	<0.001	-1.501	-0.909
Team		-1.244	<0.001	-1.507	-0.981

Discussion and Conclusion

With regard to teaching model, the Station Teaching model was perceived by students as more easily recognized when compared to all other co-teaching models. This finding is not surprising because the classroom structure and instructional processes applied for the Station Teaching model are drastically different than what a typical secondary classroom would experience due to the grouping and timed rotations. For practical application, students seem to be mostly oblivious to what structure the classroom takes on unless the change is overly blatant, indicating professional development in the area of co-teaching should place less emphasis on changing up the structure of the classroom for the benefit of the student.

With regard to student confidence, Parallel Teaching model appeared to provide students with higher confidence levels than One Teach/One Assist and Station Teaching. This result, when compared with One Teach/One Assist, is not surprising as previous literature (Volonino & Zigmond, 2007) had indicated the One Teach/One Assist model is ineffective. However, with regard to the comparison with Station Teaching this finding is surprising because both Parallel Teaching and Station Teaching reduce the student to teacher ratio, which has been shown to be a beneficial practice for students (Burks-Keeley & Brown, 2014). For application purposes, in settings where co-teaching teams observe a severe lack of confidence in students with regard to the subject area content, it may be appropriate to consistently utilize the Parallel Teaching model in order to increase student confidence.

While student perceptions contradicted current co-teaching literature, in part, teacher perceptions appeared to be in alignment with current research. For example, teacher perception data revealed a common trend in that it placed One Teach/One Assist as the lowest ranking co-teaching model in every category. This finding is expected, in that professional development that a co-teaching partnership may receive urges co-teaching partners to move beyond One Teach/One Assist to become a more cohesive co-teaching team suggesting that the use of the One Teach/One Assist model is least preferred and less effective (Volonino & Zigmond, 2007).

Teachers also rated the Station Teaching model low in the areas of student behavior, student confidence, and teacher authority preferring Alternative Teaching, Parallel Teaching, or Team Teaching in this area. These ratings could be attributed to the use of an independent group in Station Teaching and the teacher's desire to monitor all student progress closely. This could lead to an uneasy feeling on the part of the teachers in terms of student progress as it relates to the independent group in Station Teaching. In contrast, Alternative Teaching and Parallel Teaching reduce the student to teacher ratio giving the teachers more access to the individual needs of their perspective group, while Team Teaching puts both teachers as lead of the whole group.

Potentially, the most interesting and perhaps impactful findings gleaned from this study were the analysis for interaction data between students and teachers. A visual inspection of mean data illustrates the overall consistent responses of the students while teacher responses fluctuate. With a cursory inspection of data, it is evident that the One Teach/One Assist model is consistently one of the highest ranked models for students, while teachers seem to rate it lowest. In an effort to understand these findings further, each area will be discussed.

Teaching model mean data indicated large differences in the way students and teachers perceived One Teach/One Assist, with students rating it as second highest and teachers rating it lowest. Furthermore, student ratings were mostly consistent across the five models while teacher perceptions indicate a much lower rating for One Teach/One Assist. This result could be attributed to the teachers' insider knowledge of the characteristics of the co-teaching models and they know that by definition, the One Teach/One Assist model requires that one teacher does not present new content instruction to the class. However, this finding is purposeful because co-teachers will, at times, report that their presence in the classroom is pointless when they are not "*teaching*", but here students have indicate that perceived issue is not a factor for them. This could serve as support that

One Teach/One Assist can be an effective model for instruction when used in alternation with other co-teaching models.

Again, with student learning, student and teacher data are closely aligned in terms of Station Teaching, Alternative Teaching, Parallel Teaching, and Team Teaching. However, student and teacher ratings of One Teach/One Assist are starkly different. Here, teachers are suggesting that they don't feel that their students have learned as much when the One Teach/One Assist model is applied and this supports previous co-teaching research (Burks-Keeley & Brown, 2014). Fortunately, the student experience was the complete opposite. This would suggest that teachers should not feel as if their student is unable to learn when One Teach/One Assist co-teaching model is implemented because students indicate that this model has value with regard to their learning.

The category that was the most inconsistent for teachers was student behavior, while student responses were constant across the board. The findings for students are not surprising in that regardless of the model, there are always two teachers in the room and co-teaching research reports that student behavior is better in a co-taught classroom because two teachers are present (Walther-Thomas, 1997). These ratings suggest that teachers may have connected student behavior to the co-teaching models. For example, teachers rated One Teach/One Assist and Station Teaching lowest and both models do not allow for continual monitoring of all students by both teachers. Whereas, Alternative Teaching and Parallel Teaching reduce the student to teacher ratio, allowing for continuous monitoring of a smaller group of students, and then Team Teaching allows for both teachers equal responsibility of classroom management simultaneously (Dieker, 2001; Hepner & Newman, 2010; Magiera & Zigmond, 2005; Sileo, 2011). The encouraging information provided by students is that their behavior remains unchanged, regardless of the co-teaching model being applied. This finding could allow co-teaching partners the opportunity to more comfortably integrate a rotation of teaching models that more appropriately aligns with the curriculum.

Additionally, student confidence was rated and once again a difference between student and teacher responses was found to exist. For this area, student ratings have very little variation, but teachers rated One Teach/One Assist as the weakest model for student confidence. The differences in student and teacher responses imply that teachers may have been influenced by current literature with regard to One Teach/One Assist in that it is suggested that One Teach/One Assist is an overused model.   However, One Teach/One Assist is not a lesser co-teaching model, it just should not be the only model that co-teaching partners implement (Murawski, 2009; Volonino & Zigmond, 2007).   These results suggest that students found the One Teach/One Assist model to be beneficial to their confidence as compared to the other models.

Lastly, teachers reported that their authority was greatly diminished when One Teach/One Assist was incorporated, however, student responses remained consistent with little variation among their ratings of the models. This result could be attributed to the teacher's inside knowledge of the responsibility and structure of the One Teach/One Assist model (e.g., one teacher is the "*assisting*" teacher and not responsible for instruction). According to the student ratings, the co-teaching model seems to have no connection to how much authority a teacher had in the classroom.   Therefore, for practical purposes, co-teaching partners should be prepared to understand that their overall perceived authority in the classroom may not be a function of the co-teaching model. Based on the results of this study, it appears that teacher authority is established elsewhere (e.g., classroom management style, teaching philosophy, rapport with the students, etc.).

The co-teaching model implemented in the co-taught classroom has taken criticism for many of the issues associated with co-teaching (e.g. differing teaching philosophies, personality conflicts, differing classroom management styles, etc.).   These data suggest that the model alone may not be at the origin of co-teaching issues. It seems that multiple contributing factors converge to create unsuccessful co-teaching partnerships (i.e, structural issues, perceived issues, lack of co-teaching model variation). This study seems to suggest that all co-teaching models have beneficial qualities when models are varied, especially from the student perspective. This study

provides some narrow insight into the perceptions of students and how that relates to their experience in the co-taught classroom. These findings seem to suggest that by simply applying a variation of co-teaching models then students can experience positive outcomes and experiences in the co-taught classroom.

Implications and Further Research

This research is a beginning step in the argument that the teaching model employed does not diminish the potential for efficacy for the co-teaching classroom, but rather the lack of variation of co-teaching models contributes to an unsuccessful co-taught classroom. Therefore, perhaps the student experience in the co-taught classroom could be related to other factors not inherent in the actual model being implemented, but could be related to other factors either structural, perceived, or lack of variation of co-teaching models. The voice of the student with regard to educational practices is limited, but also critically pertinent and crucial to the further understanding of the co-taught classroom. The findings presented in this study have provided the student with a voice in the co-taught classroom and presents evidence that student perceptions of co-teaching models tend to be consistent with little variation and they tend to rate all co-teaching models positively. This research suggests that the variation of co-teaching models may have more influence on the effectiveness of the co-taught classroom as perceived by students.

This important, potential discovery leads to new questions and avenues for research in the co-taught classroom. If in fact, the co-teaching model, when varied, is not a critical issue for student experiences, then future research efforts should explore the other elements of the co-taught classroom in an effort to improve the student experience. Additionally, long-term, systematic variations of the co-teaching models should be implemented and studied further. Lastly, the research should layer in the academic performance of students in order to measure overall co-teaching effectiveness in an effort to improve the practice overall.

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