

Coteaching: A professional development model of co-respect, co-responsibility and
cogenerative dialogues for interns and cooperating teachers

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Abstract

Coteaching is an approach for teachers, experienced and beginning, to critically analyze teaching and learning. This paper discusses the use of coteaching as a model for student teaching and professional development with high school science teachers. During their fifteen week student teaching practicum, interns taught in a variety of teaching configurations: they cotaught with peers and/or cooperating teachers during several class periods during the day; they taught one class period in a "traditional" solo teaching model, and some interns assumed sole responsibility for one class. From the year-long pilot study we found that successful coteaching required that three elements exist in a dialectical relationship: co-respect, co-responsibility, and cogenerative dialogues. Additionally, we have found that the establishment of a professional learning community impacted cooperating teachers' practice.

Introduction

Preservice and inservice teachers need meaningful opportunities to grow professionally together. Traditionally, student teachers are isolated in classroom situations with a cooperating teacher who may offer little guidance. Although many researchers have discussed the isolation new teachers face in the classroom, few practicum models or professional development programs work to break down the inherent isolation in teaching. While recent reforms have promoted the establishment of learning communities at the classroom level for inservice teachers (Putnam & Burke, 1998; Roth, 2002), little has been done to forge learning communities among individuals during the student teaching experience. In secondary programs, student teachers have limited opportunities to meet with other professionals aside from their cooperating teachers during their daily interactions to discuss salient issues in teaching and learning. Our model begins to explore such issues by offering an alternate method that emphasizes responsibility, reflection, respect and collaborative planning. One of the goals in this study was to establish a reflective, community-driven experience for student teachers by placing in a coteaching arrangement with multiple cooperating teachers at one high school.

We adapted a coteaching model from Roth & Tobin (2002) during the student teaching experience, secondary science student teachers¹, taught with at least two different cooperating teachers and one other intern. Additionally, the interns "solo teach" one class period; this construct resembles the traditional student teaching experience

¹ To acknowledge the higher level of responsibility student teachers assume during their practicum we refer to as interns.

where the intern assumes full responsibility of the classroom. Cooperating teachers supervise interns by sitting in the back or to the side of the classroom. Interns worked in several different classrooms, cotaught a range of courses and students with various ability levels, and became immersed in the professional learning community and social networks of the school. Additionally, all stakeholders (interns, cooperating teachers, clinical supervisors, researchers, and program faculty and administrators) participate in a weekly coteaching seminar designed to discuss and to support the student teaching experience

Frame of paper

This paper reports on initial findings from the first year of a multi-year study on the implementation of coteaching. A central goal of the paper is to depict the coteaching model developed for the University Secondary Science Teacher Education Program and to discuss three elements that we have found integral for successful coteaching practice. As will be discussed, our model of coteaching integrates the notion of a professional learning community with reflective practice on praxis. While teacher education programs focus on the learning of beginning teachers, the establishment of a professional learning community, improved the cooperating teachers' practice. This paper concludes with a discussion of the self-reported examples from cooperating teachers on how coteaching changed their practice.

Background

Coteaching is an approach for teachers, experienced and beginning, to critically analyze teaching and learning. Described as "teaching at the elbow of another" (Roth & Tobin, 2002), interns, cooperating teachers, and researchers teach and learn together in

classroom. Coteaching provides teachers the opportunity to learn through praxis by teaching collaboratively in a supportive environment. Previous research has noted that coteaching provides support for student teachers to develop of their management skills and subject matter knowledge thus enabling them to focus on other aspects of teaching earlier in their career which helps build their confidence (Eick, Ware, & Williams, 2003).

Coteaching assumes that learning to teach is a sociocultural activity. An integral component of coteaching is the cogenerative dialogue, a "collective, dialogic generation of descriptions and explanations (theory) of the events, which led to the formulation of new concrete action possibilities" (Tobin & Roth, submitted, p. 3). During cogenerative dialogues, the conscious and unconscious aspects of praxis become visible. Teachers, students and other stakeholders are able to share their insights, questions, observations, and emerging understandings about the teaching and learning and thus influence future practice (Paugh & Malley, 2002; Tobin & Roth, in press).

Cogenerative dialogues are open discussions where all participants' opinions and voice have equal value (Lavan & Beers, in press). They may focus on the implementation of an activity, a lesson, or an assessment and provide the opportunity for teachers to reflect on their praxis. Through discussion of coteaching, teachers become aware of explicit and inexplicit aspects to teaching (Tobin, Zurbano, Ford, & Carambo, 2003). Working together teachers plan, teach, and debrief—thus affording rich learning opportunities to interns, cooperating teachers, students, and researchers (Roth et al., in press; Roth, Tobin, & Zimmerman, 2002; Tobin et al., 2003).

Coplaning is a form of cogenerative dialogue and requires the participation and involvement of all coteachers. Coplaning is time and labor-intensive as all teachers

reflect upon lesson and program objectives and goals, relate the learning to standards and provide input on artifacts such as assessments or laboratories. Coplanning is an excellent professional development activity because teachers share ideas, use past experiences, and collectively develop an understanding of students' learning needs and discuss effective teaching strategies. Coteachers may have face to face discussion to coplan and then use technology such as email and telephone to revise, refine and modify lessons.

We propose that successful coteaching exists in a dialectical relationship with co-respect, co-responsibility, and cogenerative dialogues. The foundational “co” of these is co-respect. The teachers must view each other as peers—with each person providing valuable insight and knowledge that will improve the group's coteaching. Additionally, successful coteaching requires co-responsibility. Co-responsibility occurs when each teacher assumes responsibility for all aspects of the classroom: the instruction, the students, and the teaching and learning outcomes.

Overall design of the co-teaching study

Objectives or purposes

Coteaching was introduced as the primary approach for student teaching because it afforded interns increased opportunity to make connections between theory and practice through active reflection on the tacit, unconscious aspects of teaching by “being in and with” others (Roth, Lawless & Tobin, 2000; Roth, Mascriota & Boyd, 1999; Roth & Tobin, 2001). We initiated this evaluation study to ascertain coteaching's effectiveness and viability as an approach for student teaching. In conducting the study we found that coteaching also enhanced cooperating teachers' professional development. The purpose

of this paper is to describe the essential elements of coteaching (co-respect, co-responsibility, and cogenerative dialogues) and to discuss how coteaching is a form of professional development for cooperating teachers.

Prior studies on coteaching have discussed the rationale for the model and initial outcomes from its implementation in various preservice education programs (Roth & Tobin, 2002; Roth et. al. 2002; Tobin et. al., 2003). In this study the interns' daily schedule divided their time between coteaching with peers, coteaching with cooperating teachers, and solo teaching without supervision. This structure afforded interns the opportunity to work in multiple classroom settings, to experience multiple teaching styles, and to work in inclusion classes with students who had a range of academic abilities and levels of interest in science. Finally, we placed the interns at the same suburban high school in an attempt to foster a community of practice (Lave & Wenger, 1991).

Theoretical framework of the overall study

Student teaching is a highly social event in which individuals learn through to teach through praxis, from an experienced teacher. As the student teaching experience is framed by the social and cultural settings of schools, we used Sewell's (1992) notion of the structure | agency dialectic as an analytical tool to examine how individuals' practices are constantly shaped and reshaped by schema and human and material resources. Thus, an actor's power or agency is constantly empowered or constrained by such structures and her/his ability to appropriate both human and material resources. Human resources include coteachers and students, whereas material resources include science equipment,

the physical environment, and the artifacts such as notes generated when science is taught.

Using a socio-cultural theoretical perspective allows us to investigate the interns' experiences and highlight their successes and failures in terms of the schemas and resources. Conversely, this framework is particularly useful for considering ways to improve coteaching by facilitating the interns' agency and changing structures.

Methodology

Based on the nature of our research questions, we conducted an ethnographic project to follow secondary science preservice teachers from the fall semester of their senior year (during their enrollment in a science methods course) through their first year of teaching. We are also studying the successive cohorts of preservice teachers as they progress through the University program and into their pre-practicum experience in the science department professional learning community at Biden High School. As researchers, we seek to add a critical aspect to the study; we are committed to the transformation of the traditional teacher education program through the development of a reflective, yet rigorous, student teaching component . Finally, we evaluated the research's authenticity using Guba and Lincoln's (1989) criteria: ontological, educative, catalytic and tactical authenticity.

Throughout the project, we sought to create a collaborative research ethos that includes all participants and stakeholders as potential learners and change-agents; thus all participants—including "the researched"—assumed multiple roles throughout the data collection and analysis phases. For example participants have taped various teaching and

planning sessions; they have been member-checked all interview transcriptions; and also some of the research participants have been involved in the analysis process and theoretical testing.

Data Sources & Evidence

For this paper we utilized the textual data that was collected throughout the study. During each year of the study the science interns are interviewed three times: during their fall methods course, shortly after beginning coteaching, and after completing the program. Methods instructors, university supervisors, and cooperating teachers are interviewed yearly. Video data are collected regularly throughout the practicum experience. During the 2003-2004 year, each intern provided at least ten hours of video of their coteaching, solo teaching or coplanning experiences. Additionally, the weekly seminar associated with practicum is videotaped. Finally, weekly lesson plans, student journal entries and researcher field notes serve as additional data resources.

All interviews and seminar video footage are transcribed, and the video data is reviewed using the iMovie ® software. All data from 2003-2004 have been coded to produce segments or vignettes, and then further analyzed for themes and patterns utilizing HyperResearch ®Software. Two interns from the 2003-2004 cohort also participated in initial data analysis, thus providing an emic, or insider, perspective on the data constructions and interpretation. All data sources are represented on Table 1.

Insert Table 1 here

Data Analysis

The research findings presented in this paper are representative of textual data analysis. For these analyses, we used an interpretive lens. Analysis followed grounded theory approaches as described by Strauss and Corbin (1990). We examined all intern interviews and journal activities as well as cooperating teacher interviews from the first year of the study. Additionally, cooperating teacher perceptions' about the impact of the coteaching experience on their current practice were included.

All data was analyzed using the HyperResearch© Qualitative software package. This software supports qualitative analysis in that researchers are able to label data snippets with both open and axial codes. Additionally, multiple coding is possible. Once all coding is completed the software sorts the data by code or case and generates code reports for further researcher analysis.

Open coding was the first step of this analysis. Drawing upon the participants' language, codes were created, and textual data was labeled. We began axial coding during this process. Both the open codes and axial codes used for this analysis can be found in Appendix II. A constant comparison method was utilized. As coding continued, relationships between codes were noted and themes began to emerge. These themes are listed in Appendix III. All data for each theme were thoroughly read, while noticing patterns and relationships throughout the data. Theoretical sampling occurred by testing the findings to situations found throughout the entire data set. Careful attention was paid to test findings in situations where coteaching was successful and also in situations in which the coteaching practices broke down.

Coteaching model at UD

The secondary science teaching interns

Science education students at State University attain a B. A. degree in biology, chemistry, earth science or physics and complete departmental content and college liberal arts requirements, in addition to the professional studies courses in education. In the final semester of their senior year, interns complete a 15-week student teaching experience in a public high school. Interns must complete the degree requirements, PRAXIS I and attain a 2.75 GPA in their major and an overall GPA of 2.5 before this extended field experience. At the beginning of student teaching, interns have the equivalent of a BA degree in their content area. NCATE approved State University's Secondary Science Education program in the fall of 2003.

The program's majors come from a variety of pathways. While several students declare one of the science education tracks as their major in the first year, the majority enter the teacher education programs after completing several semesters in another major. Interns enroll in science methods in the fall semester of their senior year. Even if they are in the same content major, this is the first opportunity for most of these science education majors to meet each other.

Bringing the coteaching model to UD

For five years, Kathryn, the program director and science education professor, had participated in a coteaching research group at the University of Pennsylvania. Sue, a high school chemistry teacher and science department chair, and Kathryn had an established teaching and research relationship. Sue offered her school as a site for State University to implement coteaching.

Introducing Coteaching

Sue and Kathryn had cotaught the secondary science education methods course at State University. This was a four credit course with a laboratory that met for twice a week for three hours each time. In the first year of the coteaching model, there were seven interns enrolled in the science methods course: three in biology, three in chemistry and one in earth science.

During the methods course, Sue and Kathryn let interns visit any of the cooperating teachers in their content area to encourage social networks to develop. The interns either emailed or talked with Sue after methods to arrange their visits to BHS and coteaching assignments were not made until early in December. The plan was to allow interns time to work with each other and the teachers at BHS. Interns conducted their field observations during the fall semester in a supportive role in the cooperating science teachers' classrooms, observing ninth and tenth grade coordinated science classes, chemistry, biology, anatomy and physiology, environmental science, and chemistry and biology AP courses. While in the classrooms, interns predominantly observed instruction and classroom structure, however, they also supported instruction during labs and answered questions while students worked independently or in small groups.

When the spring semester began, six of the seven interns began the practicum experience. A coteaching arrangement was instituted where the biology interns worked with three cooperating teachers, and the chemistry interns worked primarily with Tim and Sue. Two of the chemistry interns also were assigned to Patsy's coordinated science course with the special education teacher², because topic was chemistry.

² Joan is an alternative certification teacher who has a BS degree in chemistry.

The coteaching practicum site: Biden High School

Biden High School is located in a community that is changing from a small farming environment to a populated suburb. As farmland becomes residential space, new homes are being built at a rapid pace. Strip malls with grocery stores, restaurants, and other amenities have arrived to this rural community. Biden High School is growing at a rate of approximately 8 percent per year. The high school built in 1997 was designed for 1,600 students. Currently there are over 1,700 students in the building. In 2002, an additional wing was added to the school to help alleviate overcrowding. This wing is already filled beyond capacity. Last year the town passed a bond for the construction of an additional high school.

The student population is 82 percent White, 16 percent African American, and 2 percent Latina/o or Asian. Low-income families make up 9 percent of the school population. Ninety-one percent of the staff are White, 61 percent are female.

Due to the growing student population, the number of teachers in the science department has increased from four to eleven teachers in the last ten years. Despite its recent growth, there is low teacher turnover on the science faculty. There are eleven science teachers, seven women and four men. One male teacher is African American—all the other teachers are White. While all of the teachers have science degrees, they arrived to teaching from different paths. Five teachers either have or are seeking their teaching certification through an alternative route program. Of the other six teachers, five have secondary teaching degrees and one teacher has an elementary education background. Many of the teachers have or are seeking advanced degrees. Four of the teachers have or are working on Masters degrees, one of the teachers has a PhD in Biology, and one

teacher is working on National Board Certification. Finally, six teachers entered teaching as a second career.

All teachers teach at least one class of coordinated science, the curriculum was originally developed by the department for ninth and tenth grade students. Three teachers are assigned to the ninth-grade academy that is designed to help transition students to the high school. Additionally there is a special education, inclusion teacher with a science degree who works with the science teachers.

Biden High science department: A professional learning community

One reason that teachers join and remain in the science department is because of its collaborative and supportive culture. Originally a small school with limited resources, teachers at Biden High are accustomed to sharing equipment and supplies. Additionally, several years ago the teachers worked together to develop interdisciplinary science curricula for 9th and 10th grade students. It is the nature of this interdisciplinary curricula that Pam, the department chair attributes to some of the cohesiveness of the department. Coordinated Science forces teachers to teach outside of their content area. Additionally, although divided across gender lines, the science teachers eat lunch together and while conversation is typically social, they also problem-solve, discuss curricula, and practice³. The science teachers receive frequent email updates from their department chair and also use email to coordinate the use of equipment and to share assessments and lesson plans. Overall, the science department is characterized by a sense of mutual respect for each other as professionals. (Sources, Pam interview, Fall 2003; Cooperating teacher interviews, Spring 2004; Fieldnotes, 2003-2004).

The department's history of collaboration and its sense of community is one of the reasons that Biden High School was selected as a school for placing interns. Figure X depicts the numbers of cooperating teachers, the interns, and their content area of specialization working at Biden High School during each year of the research study.

Figure X. 2003 - 2004 Coteachers at Biden High School

Content Area of Specialization	Secondary Science Teaching Interns	Cooperating Teachers
Chemistry	3 Teaching interns	2 Cooperating teachers
Biology	3 Teaching interns	2 Cooperating teachers
Earth Science		1 Cooperating teacher
Physics		1 Cooperating teacher
Special Education Teacher		1 Cooperating teacher

Figure X. 2004 - 2005 Coteachers at Biden High School

Content Area of Specialization	Secondary Science Teaching Interns	Cooperating Teachers
Chemistry	3 Teaching interns	2 Cooperating teachers
Biology	4 Teaching interns	3 Cooperating teachers
Earth Science	2 Teaching interns	2 Cooperating teachers
Special Education Teacher		1 Cooperating teacher

Preparing for Coteaching: Setting up coteaching assignments

Sue and Kathryn met with school administrators to discuss how the science faculty and interns could maintain the high school students' science learning while one of the teachers left for maternity leave. Sue and Kathryn raised concern regarding the legal implications of interns assuming primary responsibilities for teaching the classes. The principal solved this problem by designating the interns as non-paid substitute teachers.

³ While both groups are predominantly social, the female teachers are more likely to talk

This status provided the interns with the same insurance and legal coverage as ‘paid’ teachers. The school paid the interns as substitutes.

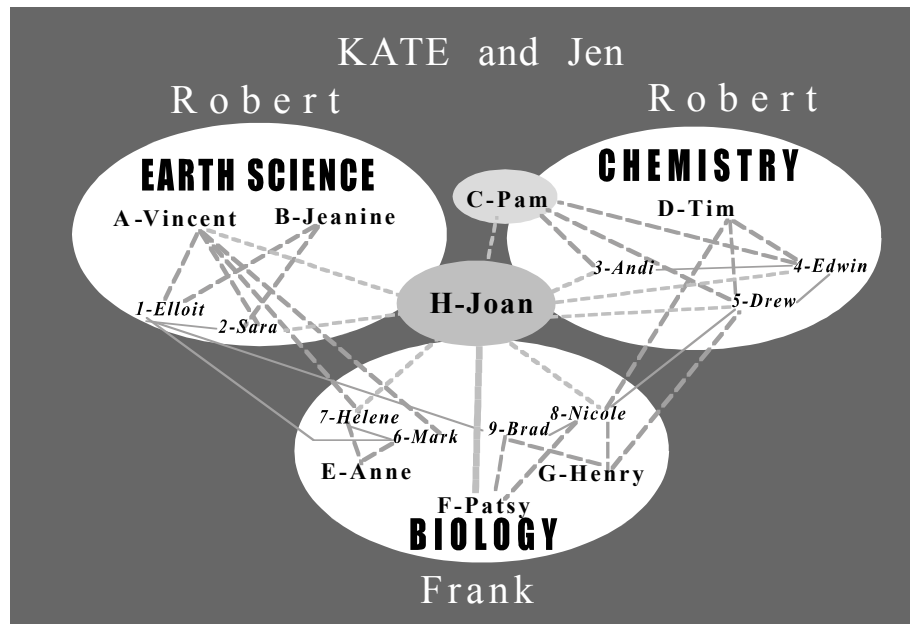
Teaching placements at Biden High School were complex. Teaching interns were not assigned to a single cooperating teacher as is often done in traditional student teaching arrangements. Rather, interns teach alongside up to three multiple cooperating teachers and two other teaching interns over the course of each school day. Coteaching partnerships shift each class period. Coteaching groups are generally organized around content area of specialization (i.e. Chemistry, Environmental Science, Biology). For example, Chemistry teaching interns teach together and with the other Chemistry teachers in the department. Additionally, they coteach with a special educator in order to provide classroom inclusion for students with Individual Education Plans (IEPs). As a result subcommunities of practice are created within the larger professional learning community. Figure X presents the cooperating teachers and interns and their teaching partnerships. Through this visual one is able to see the subcommunities that are created by content area. In this figure, coteachers are connected by solid lines.

Placements were designed in this way in order to provide varied teaching opportunities for the interns. By teaching with different cooperating teachers not only are teaching interns exposed to different teaching styles, but they also taught a variety of courses (including interdisciplinary science, honors track, general track, and special elective, elective courses), work with students across different grade levels, and teach classes structured around different theoretical models (i.e. block scheduling and inclusion classes). Each intern's teaching schedule is also included in Appendix I.

about work than the male teachers.

While coteaching, interns also teach with peers. All interns cotaught with more than one intern. It is important to point out that the coteaching model has theoretical underpinnings in sociocultural theories (Vygotsky, 1978; Wersch, 1985). Classroom teachers were not viewed as experts, rather all coteachers are viewed as equals—assuming responsibility shaping what occurs within the classroom and for the learning of all coteaching participants.

Figure X: 2003 - 2004 Biden High Science Coteaching Partners



U-DeI Teachers -----
 Student Teachers -----
 Joan -----

KATE and Jen	
Robert	Frank
<p>EARTH SCIENCE</p> <p>A-Vincent H, 1, 2, 7 & 6 B-Jeanine 1 & 2 1-Elloit A, B, 2 & 9 2-Sara A, B, H, 1</p>	<p>CHEMISTRY</p> <p>C-Pam H, 3, 4 & 5 D-Tim 3, 4 & 5 3-Andi C, D, H & 4 4-Edwin C, D, H, 3 & 5 5-Drew C, D, G, H, 4 & 8</p>
<p>BIOLOGY</p> <p>E-Anne 6 & 7 F-Patsy H, 8 & 9 G-Henry 5, 8 & 9 6-Mark A, E, 1 & 7 7-Helene A, E & 6 8-Nicole D, F, H, 5 & 9 9-Brad G, F, H & 8</p>	
<p>H-Joan A, C, E, 2, 3, 4, 5, 8 & 9</p>	

Solo Teaching

In addition to coteaching, interns assumed full responsibility for one class period, this was called 'solo teaching'. This plan was devised to provide interns with this experience to offset possible concerns for their classroom management abilities from prospective employers, and to provide the interns with a more 'traditional teaching experience to build their confidence in this area. Solo teaching constituted a 'traditional' student teaching arrangement where the intern was solely responsible for the planning and teaching of the class. The cooperating teacher observed the lessons and acted as a consultant for the planning, but in contrast to coteaching, there was no collective responsibility established for the teaching and learning of science. This is in keeping with the research literature that argues that independent teaching experiences are also important elements in the new teachers' development (Paugh & Malley, 2002; Tobin & Roth, submitted).

The practicum experience: Coteaching

The interns began their placements coteaching five of seven periods each day, which was one period less than the cooperating teachers. There was no observation time, as coteaching assumes that 'learning at the elbow of another' is the most effective approach to engage teachers in reflective practice.

Coplanning

The expectation was that the coteachers would have collective responsibility for the planning and teaching of their classes. Teaching interns' schedules were arranged so that the interns often shared common planning time with other coteachers. However, coplanning often did not occur during this time. With the multiple and conflicting

responsibilities that cooperating teachers had outside of their teaching duties, often they used their daily planning time to for other responsibilities, e.g managing extra-curricular activities such as sports teams or school plays. Two cooperating teachers assumed the responsibility for coplanning and used different strategies to ensure that it occurred.

Vincent declared “Vincent hour” on Monday's after school. The biology interns met with Anne on Wednesday's and/or Thursday's after school to plan both Anatomy & Physiology and Biology. The chemistry interns typically spent their preparation period in Tim's classroom. Coordinated Science and Chemistry planning with Sue and Joan, however was more erratic and often did not occur.

Elements important to co-teaching success: The three "Cos"

Research Findings and Discussion

Three large themes were apparent during data analysis. These three elements of successful coteaching included co-respect, co-responsibility, cogenerative dialogues. For discussion purposes, we called these three elements "the three Cos". When the three Cos existed in a dialectical relationship, coteaching was successful and coteaching failed if any one of the three were absent. Each of the Cos is discussed below.

Co-respect

The foundational “co” of the three is co-respect. The mutual respect between coteachers fosters communication and creates an environment that is open to constructive criticism, the sharing and generation of new ideas, and ultimately a productive coteaching experience. The textual data has frequent comments from the coteachers about having, or gaining and loosing, respect. Data show that co-respect provides teachers room to maneuver within the coteaching classroom. Sharing co-respect between coteachers opens

up room for the sharing of voices, ideas and control within the classroom space. To gain the co-respect of one's coteachers, means that one has coteaching capital. When co-respect exists, teachers view each other as peers, and each person is able to provide valuable insight and knowledge that will improve their teaching.

The process of gaining co-respect is multifaceted and entwined in the process of constructing teaching relationships. Co-respect builds on relationships and rapport that are constructed in both formal coteaching, coplanning, and seminar settings in addition to informal interactions during lunch, happy hours, group socials, and carpooling to and from school. Issues of trust, honesty, and confidence are critical as teachers take chances to share ideas and develop their practice. While it is not necessary that personalities and teaching styles mesh, effective coteaching is easier to achieve when this occurs and is valued by interns and cooperating teachers.

Co-responsibility

Integral to the three Cos model is the assumption of co-responsibility between all teachers for the lesson's success and students' learning. Co-responsibility incorporates equally shared: authority, classroom preparation, instruction, and other aspects of management. All coteachers are equally responsible for making sure the coteaching occurs successfully.

Participants describe a balanced "give and take" between coteachers when co-responsibility for coteaching occurs. It can take multiple forms, and all teachers may be participating in the on-going instruction differently at one time (i.e. leading class discussion, working individually or in small groups with students, dealing with issues of classroom management). Regardless of how they are involved in the coteaching, at any

moment all coteachers are involved and responsible for what is occurring in the room at all times. Lisa wrote the following in her journal about a successful coteaching experience in mid February.

I had a great co-teaching experience with Tim today. It totally wasn't planned [to occur in the way that it did]. We were teaching the kids about the phospholipids bilayer and were just playing off of each other so well. He knew more of the chemistry terms that they would understand, and I was able to put it into a biological realm. When he turned to write notes on the board (which I'm not too good at doing yet!), I was able to further explain what he was writing, and add to his descriptions. I was so happy that it worked so well.

Matt provided another example of the co-responsibility that he shared with Michelle, another intern, with whom he had taken over the class of a teacher on maternity leave.

Even during a normal anatomy and phys lecture, Jaime and I (sixth period) I think work well together in that class. At the beginning of the class, one of us would do the attendance, get everybody settled down, intro what we're doing while the other one's going around checking homework or something. And if it was a lecture, just a normal note taking thing, we'd switch off, and, one person was up front at the overhead-primarily we gave through notes through the overhead or power point. So while one of us was giving notes up front the other person was circulating around, making sure everyone was on task.

We found that interns quickly assumed co-responsibility for classroom 'house-keeping' responsibilities. At the beginning of their student teaching, interns became integrated into classroom structures by taking part in classroom routines such as attendance, homework checks, and providing additional support for small groups of students, and addressing grading of student work. Generally, interns reported that they assumed co-responsibility first in regard to sharing classroom workload—the instruction, grading, and planning.

I think the 3 guys have been real open-minded about stuff. Who takes the lead? Who does what? Who grades this? So, it's made it good, because everyone's been real open and kind of willing to just go with the flow and do whatever, you know.

It's my turn to do this; I'll do that then. So that's worked out well.... I think the 3 Chemie guys as a group, work pretty well together. Like I said they are like, "I've got this one. You've got that one. And I'll grade these, you grade those." I think they are doing good like that. I think that they've been able to get ideas from each other. They bounce ideas off of each other. (Tim, Cooperating teacher, May 2004).

While interns assumed co-responsibility in terms of sharing the instructional space and time, co-responsibility around issues of authority in the classroom was more of a challenge and evolved after co-responsibility for instruction. The interns have fewer classroom management skills than their cooperating teachers. Furthermore, classroom management is a frequently a focus of the student teaching experience (Adams & Krockover, 1997). As Pat discussed in his journal, classroom discipline and management were areas that he worked on throughout the semester. As time passed he became more confident in his dealings with students and parents. This is not surprising, as classroom management is a common concern for most beginning teachers (Adams & Krockover, 1997).

*I think they're starting to see that they're stuck with me. Like today, I told one of the kids to do something. I was like, We're going to do this worksheet and turn it in to get your points. We pass out the worksheets and this is an activity that the class did yesterday and he was absent. So I pass out the worksheets and handed out the ones that were done. And he [the kid] just looked over and copied right off one guy and was like ready to turn it in. I said, "Well I saw you copy off of him and you haven't done the activity because you weren't here yesterday." He's like, "I did it."
"You can hand it in, but I'm not going to give you any credit for it."
He's like, "Why not?"
I was like, "You didn't do the activity, just go back there and do the activity real quick."
He's like, "I don't want to do that."
I'm like, "Alright, you won't get credit for it. You never did this."
So I went and talked to Ms. Felix and she said alright, told Sue, so that everybody was on the same page—if he turns this in he gets a zero. He has to do the activity. So he tried to hand it in and Ms. Felix looks around and goes, "Okay that's a zero."*

And then he kind of understood that I'm not just something that you can just push aside and get around. I think, he ended up doing the activity. I think through stuff like that, they see that you can't really get around us as easily.... I think they're starting to see that Pat or Joan Felix are no going to undermine what we say. (Pat, Intern, Interview Feb.)

I still have a trouble with discipline. When the students are off task and interrupting my teaching then I tend to take it a little personal and I think my punishments and reprimands are a little harsh. However, I also think this might be me because I have not always been a very confrontational person and calling out a student is a confrontation. I am continuing to improve in this area. (Pat, Journal, Month)

I kind of dropped the hammer on the sixth period class today. After the discussion about the discipline in that class last night at seminar, I felt I wanted to say something to the class. I didn't want Sue to say it and I didn't want Joan to say it. I felt that if we (Sam and I) wanted to ask for the respect, that it was going to be us who asked for it. I decided to focus my rules on the basis of respect. After Joan talked about some of the kids in our class having families so centered on respect I felt that modeling that would be a good way to get their respect as a teacher. "If you give me respect, then I will respect you." I gave the talk very calmly and just said that they could do what they wanted, but then I told them about the consequences for the things that they did. We handed out a few detentions today to students after they did what we told them not to do, I think it set the tone. (Pat, Journal, Month)

Throughout the text, interns discussed the sharing of authority in the classroom as co-authority. We found that central to co-responsibility was the intern's intent. When interns become equal participants in addressing issues of classroom discipline and management a successful balance is struck. All interns and cooperating teachers report that sufficient space is available for the learning curve, as long as all coteachers have an equal stake in the process.

After years of working independently, it is not always easy for teachers to move from enacting individual responsibility to a working model of collective responsibility. Given time, teachers make this transition. For instance, a few months into the coteaching

experience, a discussion ensued to reinforce the importance of these concepts. As, Pat, one of the interns commented later:

The ideas of co-respect and co-responsibility—I think those were two issues that definitely needed to be tackled in the beginning. The idea, that we as student teachers needed to [step up] because we didn't; it was she's got responsibility or he's got responsibility. But it went both ways. As soon as that got into the mix it was like, well, we're both responsible for everything that happens. Once we realized that it's our kids, our classroom, it's our grading, it's our test, I think then it got a lot better. (Pat, Teaching Intern, May Interview

Critical underpinnings of co-responsibility are the sense of both collective and individual responsibilities. In the statement above, Pat, verbalizes a pivotal point when he realized this. Successful coteaching requires coteachers to maintain responsibility for their teaching actions in both individual and collective ways. All events that unfold in the classroom, as well as the planning and maintenance of teaching, requires collective responsibility and for the coteachers to understand that coteaching is a joint endeavor. Yet this process is supported by each individual's commitment to come prepared and to support each other's practice. Achieving the collective is not possible without individual preparation and contributions. Bob explained his realization that coming prepared to coplanning sessions, by pre-planning, that is having read the text and having begun to think of ways to address the material enabled coplanning sessions to be more productive and enhanced his own ability as an equal participant.

Attaining joint responsibility and authority requires that both teaching interns are involved in coplanning and must take an active role in the instruction. Meanwhile, cooperating teachers who have had control of all aspects of the classroom for the year relinquish some of their control. We found that in classrooms where coteachers were able

to "step up" and "step back" appropriately were most successful coteachers. The comments refer to both successful and difficult situations that evolved.

I think that the cooperating teachers need to be aware of how much student teachers are supposed to be doing and make sure they step back when they need to so that student teachers can step up-so they shouldn't be running the show the whole time. (Michelle, post interview)

In bio, they definitely perceived me as an authority figure-definitely as their teacher, but I think with Anne-they still went to her. I mean, Anne, she's pretty possessive of her class... She did share the class, but I still felt that she positioned herself as the head of the teachers in the room. In my Envi Sci class that I co-taught with Pat and Vincent the students were such a handful. Definitely some behavior issues in this class. So very quickly I got used to taking charge and taking on classroom management issues. We were always hovering around doing the authority thing-classroom management and I think the students perceived us on a level p[lane with Vincent and Joan. They would always ask me questions about the content of the class, just as they would normally do with Vincent (Matt, Intern, Interview, May)

One question which needs to be raised about co-responsibility is: no matter how much they do, does an intern ever completely assume fully co-responsibility and co-authority for the classroom? This question was scattered throughout the data and touched on by numerous participants. Chris, in his post interview stated,

I have not really had any discipline problems, and I probably wouldn't have even in a traditional placement because its mostly honors classes and stuff like that, that's not really an issue for me. But like when something has come down the person who you usually turn to is the coop, when it's a coteaching class.

Perhaps, the best that can be expected is that an air of co-responsibility and co-authority is assumed by all. Both interns and cooperating teachers must jointly work towards the idea of equal sharing of the classroom and collectively assume all responsibilities.

Achieving this is not an easy task, but one that requires interns to "step up" to meet these goals and also that cooperating teachers step back, relinquishing control of the classroom and supporting the interns as they move to attain the status of equal coteacher in the eyes

of students and colleagues. As Matt explained in his interview at the end of his coteaching experience:

Beth: What about co-authority? Do you think the kids perceived you as much an authority figure as [the others]?

Matt: Yeah, I don't think in bio, though, they definitely perceived me as an authority figure-definitely as their teacher, but I think with Anne-they still went to her. I mean, Anne, she's pretty possessive of her class. ...She did share the class, but I still felt that she positioned herself as the head of the teachers in the room. In my Envi Sci class that I co-taught with Pat and Vincent they were such a handful. Definitely some behavior issues in this class. So very quickly I got used to taking charge and taking on classroom management issues. We were always hovering around doing the authority thing-classroom management and I think the students perceived us on a level p[lane with Vincent and Joan. They would always ask me questions about the content of the class, just as they would normally do with Vincent.

Cogenerative Dialogues

Evolved from debriefing sessions used by Tobin, Sieler, and Walls (1999), cogenerative dialogue is based on the understanding and ideology that one needs to articulate and explain personal experiences through collective understanding and activity. These conversations between stakeholders allowed all participants to share in the responsibility of thinking about and making sense of events and activities and identify and review practices that are unintended and unconscious, while discussing the power relationships and roles of participants. Since all participants are represented, their perspectives are used to inform the "emerging understanding of the factors that mediated the activity of the different members of the community and how those patterns of activity contribute to collective activity and accomplishment" (Seiler, 2001). Furthermore, because of a redistribution of power (vertically and horizontally) all stakeholders could discuss future actions and activities as well as aid in planning for improving the quality of teaching (Lavan, in press, pp. 103-104).

Cogenerative dialogues can take multiple forms. In her research, Lavan (in press) specifically addresses the benefits of cogenerative dialoguing with students. We believe that such a process provides important insight into teacher practice and believe that it should be integrated into the coteaching model. However, for numerous reasons—time being the key factor cited by five out of the six Cohort I interns—during our initial implementation of coteaching such dialogues did not occur.

Cogenerative dialogues in many other structures did occur. Coteachers used cogenerative dialogues to enhance and to enable instruction throughout the practicum experience. Cogenerative dialogues occurred during teacher huddles throughout classroom lessons, when debriefing or sharing feedback following lessons, during on-going conversations about instructional practices and strategies, in our weekly coteaching seminar of all the stakeholders, and also during coplanning sessions. We found that conversations from one often carried over to another, building upon previous dialogues and information about the on-going practices of the coteachers. These multi-layered conversations proved integral to the process of coteaching in that they informed and shaped ongoing practice. This on-going communication and reflection as peers was an integral component for helping teachers to improve their practice.

Several factors were found to have supported or hindered the process of cogenerative dialogues, the most crucial of these was time. Each intern had numerous coteachers with whom they worked on a daily basis. As numbers of coteachers increased it appeared that so did stress levels regarding planning and getting time to reflect and improve upon practice. One of the decisions for restricting coteaching pairing numbers

for this year was provide additional support around issues of time and the number of people that coteachers needed to meet with in order to successfully support their practice.

Coteaching is not haphazard or spontaneous, but the result of coplanning. Coplanning requires the participation and involvement of all coteachers. The act is labor-intensive as all teachers reflect upon lesson and program objectives and goals, relate the learning to standards and provide input on artifacts such as assessments or laboratories. Coplanning is an excellent professional development activity because during this time, teachers share ideas, use past experiences, and collectively develop an understanding of students' learning needs. Without coplanning teachers do not have common understandings of classroom instruction and they may have divergent goals for students. Teaching interns noted how weak coplanning limited their coteaching experience.

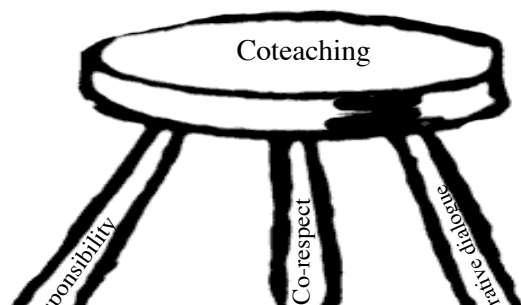
[Coplanning] worked really well with Vincent...we just tossed in ideas and discussed whether they were good, whether they were bad. And I think there was a lot of equality. .. with Anne sometimes she was a little more set in her ways, so it wasn't as easy to throw out your ideas. (Michelle, Teaching Intern, May Interview)

The relationship amongst the "Cos"

When the three Cos existed in a dialectical relationship, coteaching was successful and coteaching failed or weakened if any one of the three were absent or became less secure.

One way to visualize this relationship is through the model of a three-legged stool with

each of "The Three Cos" represented as a leg of the stool, a coteaching being



represented as the top of the stool. Each of the Cos is needed to support the coteaching and to keep it on a parallel and functional plane. However if the any of legs were to become wobbly or broken, the stool would no longer function successfully. This is what occurs when issues arise with any of "The Three Cos." The coteaching then becomes off balance, and coteachers experience increasing difficulty functioning as a unit.

Conclusion: Lessons learned

Developing a stronger understanding of role of the Three Cos in supporting coteaching has helped us as we continue to shape the coteaching experience of teaching interns and cooperating teachers. The recognition of the role of time and how increased numbers of coteachers (interns and cooperating teachers) spreads interns too thin, thus inhibiting opportunity for strong cogenerative dialogues. Has impacted how we schedule coteachers throughout the day. We again allowed them time to meet the cooperating teachers and vice versa. But rather than delaying until December, coteaching assignments were made by the end of September so that coteaching partners could plan together and also target their visits at BHS to the teachers with whom they would work with in the spring. As per the feedback from the previous year, we tried to limit the number of coteaching arrangements between interns and cooperating teachers. Teaching interns now generally work with fewer numbers of coteachers. This number has decreased generally a total number of 1-2 other teaching interns and 2-3 other classroom teachers, for an average number of four coteachers. As a result the interns were able coteach micro-classes together during the science methods course and they also worked together to design their curriculum unit. . We are finding this year that with fewer

coteachers; they are better able to plan and spend time talking together about their teaching practice at Biden HS.

One significant change on the curriculum unit assignment for methods class was informed by our understanding of the importance of co-respect and the role of coplanning as a component of cogenerative dialogues. This knowledge informed the decision to decrease the number of curriculum units interns are expected to develop during their methods course in the fall. Now instead of working on three units, intern pairs coplan to begin to develop one unit. This enables the teaching intern pairs to work together much more intensely. We are finding that this forum provides a strong foundation for learning how to work together and understand each other's teaching styles and preferences and develop a beginning sense of respect for each other's strengths and what they bring to the coteaching relationship.

Knowledge about the role of co-responsibility in the classroom, has informed the ways in which we helped teaching interns enter the coteaching setting. In both methods and seminar we emphasized the importance of getting to know the classroom structures of coteaching classroom. We encouraged interns to work to establish coplanning sessions for the group and spent time discussing the collaborative nature of coresponsibility. Such changes appear to have helped to foster the establishment of coteaching relationships.

Table 1: Data Sources

Data Source	Year 1: 2003-2004	Year 2: 2004-2005	Type of data produced
Teaching Interns Interview - Followed Science Methods Course	7	14	Audio tape - Text - Transcription
Teaching Intern interview 2 - Early in coteaching experience	6	14	Audio tape - Text - Transcription
Teaching Intern interview 3 - Near end of coteaching experience	6	Yet to be scheduled 14 anticipated	Audio tape - Text - Transcription
Coteaching Seminars - Spring semester weekly 1.5 hour meetings with all coteaching stakeholders	15 seminars	15 seminars	Video tape - Partial transcription ('03- '04); video clips (2003-2004-2005) Audio tape - textual transcription ('04- '05)
Interviews with coops	7 at end of coteaching experience	8 after 4 weeks of coteaching End of coteaching experience to be scheduled	Audio tape - Text - Transcription
Interviews with methods course faculty /program administrator	2	To be scheduled	Audio tape - Text - Transcription
Interviews with supervisors	1	Yet to be scheduled	Audio tape - Text - Transcription
Classroom Observations of Coteaching	<i>Insert #</i>	21 classes observed as of 4/1/05	Audio & Video Tapes - video clips; Fieldnotes
Observations of CoPlanning Sessions	<i>Insert #</i>	9 sessions as of 4/1/05	Audio & Video Tapes - video clips and transcription; Fieldnotes
Journal Entries & Journal Prompts	3 journal entries each week per teaching intern	3 journal entries each week per teaching intern	Electronic text
Additional observation time at Biden includes attending lunch; down time in between classes; etc.	Throughout the 15 week experience	Throughout the 15 week experience	Observational fieldnotes

Intern Weekly Schedules and Lesson Plans	6 participants for 15 weeks	14 participants for 15 weeks	Electronic textual data
Miscellaneous other: Coteaching classroom Documents	As offered by participants	As offered by participants	Classroom documents
Science methods course assignments	7 students	14 students	Electronic textual data, video data, classroom documents

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Appendix 1: Interns' schedules

Lisa Schedule

1*	Anatomy and Phys. (with Anne)
2	Anatomy and Phys. (with Michelle)
3	
4	Anatomy and Phys. (with Michelle)
5	Biochemistry (with Tim)
6	
7	Biology (with Anne & Matt)

Matthew Schedule

1*	
2	Biology (with Anne)
3	Anatomy and Phys. (solo)
4	
5	Environmental Science (with Vincent & Pat)
6	Anatomy and Phys. (with Michelle)
7	Biology (with Anne & Lisa)

Michelle's Schedule

1*	
2	Anatomy and Phys. (with Lisa)
3	Biology (with Anne)
4	Anatomy and Phys. (with Lisa)
5	Environmental Science (with Vincent & Pat)
6	Anatomy and Phys. (with Matt)
7	

Andrew Schedule

1*	Coordinate II (with Mike & Colleen)
2	Chem (with Mike & Tim)
3	
4	Coordinate II Honors (with Pat & Sue)
5	

6	Chem (with Tim & solo)
7	Conceptual Physics (with George)

Pat Schedule

1*	Chem (with Tim & solo)
2	
3	
4	Coordinate II Honors (with Andrew & Sue)
5	Environmental Science (with Vincent & Matt)
6	Coordinate II (with Mike & Sue)
7	Coordinate II (with Mike & Sue)

Mike Schedule

1*	Coordinate II (with Andrew & Colleen)
2	Chem (with Andrew & Bryan)
3	
4	
5	Coordinate II Honors (with Sue & solo)
6	Coordinate II (with John & Sue)
7	Coordinate II (with John & Sue)

Appendix 2: Open and axial coding

Codes pertaining to coteaching success

Collective vs. Individual - Not coded for consistently throughout

© Debriefing

© Coplanning-new course vs. old course - Many of these comments do not make specific reference to coplanning & did not come out of coplanning conversation. While, it fits contextually with coplanning in many ways these comments are about coop control. (And needing to maintain control vs. loosen & share control.)

© Lunch/Informal Interactions

© Personalities - Comments about how similarities/differences impact coteaching relationships and ability to teach together; also includes some similar comments about the impact of teaching styles

© Voice - As I got to end of coding I realized that many of these were related to coteachers' ability to participate or not participate in the coteaching process and are connected to issues of control. That code was added at the very end, but I did not go back through and recode date in this section.

© Coplanning-importance of

© Cotchr Communication

© Cotchr Relationships/Rapport

© Trust - Includes comments about trust, honesty & confidence in other coteachers

© Co-Generative Dialogues - Refers specifically to cogenerative dialogues with students about teaching practice

© Control-Issues of - I didn't start coding this until the end. It is related to Voice codes (I think that there is overlap between these). Look at these two together.

© Co-Respect

© Co-Respons/Authority

© Cotchr Interactions

©? Time - Originally was "Important 2 Coteaching Success" - Time appears to impact coteachers' ability to communicate and coplan, and as a result plays a role in coteaching success

©? Coplanning-Nature of

Coteaching & Numbers

Codes around professional development/cooperating teacher learning

* Cotching experience impacts inclusion teaching

* Cotching provides coop opp 4 reflecting on curriculum

* Cotching provides opp for reflective practice

* Cotching & multiple ways of presenting info

* Cotching provides new perspective on teaching - *Often these comments are about breaking down the isolation of teaching. Comments include: Shake things up a bit; refreshing; breaks down isolation; make me think outside the box.

* Cotching provides opp to try new pedagogical approaches

* Exposure to new ideas

* Coplanning leads to curricular/unit changes

* Coplanning=place to try out ideas - Includes bouncing ideas off of one another

* Coplanning=rehearsal/practice time

* Opportunity to learn content material - Intern & coop learning

* Coplanning leads to new teaching activities

* **Prof. Dev'l** - Not sure how this was/is different from PD @ Coteaching initially. At the end of coding when I got to John's journal I realized that the PD related to the NSTA conference probably should have been included in here. Except for that 1 quote I didn't code that way throughout. The following people were involved in the conference: Bryan?, John, Matt, Michelle, Meredith, Vincent? & Sue

Themes

Elements essential to coteaching success

Theme I: Co-respect and relationships

Open and Axial Codes: Co-respect, lunch/informal interactions, Personalities, Trust, Voice, Relationships/Rapport

Theme II: Co-responsibility

Open and Axial Codes: Collective vs. Individual, Control - Issues of, Co-planning new course vs. old course, Co-responsibility/Authority

Theme III: Cogenerative dialogues

Open and Axial Codes: Coplanning-importance of, Debriefing, Cogenerative dialogues, Time, Coteaching & Numbers, Coplanning-Nature of, Coteacher Communication, Coteacher Interactions

Cooperating teacher learning

Theme I: Coteaching is invigorating for practice

Open and Axial Codes: Coteaching provides new perspective on teaching

Theme II: Instructional changes

Open and Axial Codes: Coplanning leads to new teaching activities, Coplanning leads to curricular/unit changes, Coteaching & multiple ways of presenting information, Coplanning = place to try out ideas, Coplanning = rehearsal/practice time, Coteaching provides opportunity to try new pedagogical approaches, Exposure to new ideas, Opportunity to learn content material, Coteaching experience impacts inclusion teaching

Theme III: Reflective practice

Open and Axial Codes: Coplanning provides opportunity for reflective practice, Coteaching provides coop opportunity to reflect on curriculum, Coteaching provides opportunity for reflective practice

Theme IV: Varied venues for professional development

Open and Axial Codes: Professional development