CRITICAL LOOK AT THE CONTRIBUTIONS OF A SPECIAL EDUCATOR IN CO-TEACHING SETTINGS IN A US SECONDARY SCHOOL: A CASE-STUDY

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Co-teaching occurs between two or more professionals who are actively involved in providing substantive instruction in a shared physical space to a diverse student population in inclusive settings. It is often compared to "professional marriage." Research has established various benefits of co-teaching for children with and without disabilities, both socially and academically. In addition, co-teaching provides opportunities for general and special educators to collaborate and learn from each other's expertise. However, most of the time special education teachers adopt a supportive role in co-teaching rather than one of equal professional status, thus highlighting the limited contributions of special educators in the instructional partnership. The focus of the study was on the contributions and the roles of the special education teachers in co-teaching in content areas. Data sources were interviews; observations; artefacts and field notes. The characteristic of this high performing team, and the way their relationship evolved confirmed many of factors that have been identified as contributing to successful co-teaching. The special education teacher contributed both in planning and in teaching biology; in addition to a supportive role, he also took a lead role in teaching, thus; providing meaningful learning experiences to both students with and without disabilities.

KEYWORDS: Inclusion, Collaboration, Co-teaching, Secondary School, Special Educator

INTRODUCTION

The idea of co-teaching is not new in the education arena. The history of co-teaching goes back to the 1960s, when it was considered a part of progressive

Bharti Tandon 🔀 Assistant Professor, MIER College of Education, Jammu Email: bharti.tandon7@gmail.com education in U.S. schools. By the 1970s, it was used as a school reform model to provide instruction to a diverse student population. In the 1990s, co-teaching received much attention in the educational research and practice literature as one of the most frequently employed collaborative service delivery options in schools to teach students with diverse learning styles, including children with disabilities (Villa, Thousand, & Nevin, 2004; Zigmond, Kloo, Volonino, 2009). Co-teaching has been identified as the most widely used model of teacher collaboration in schools nationwide (Lipsky & Gartner, 1997b; Zigmond, 2001; Villa et al., 2004).

With the increase of students with disabilities in schools nationally, coteaching as a collaborative teaching model has created a potential to enable two professionals, general and special education teachers, to jointly provide meaningful education to children both with and without disabilities in the general education curriculum. Co-teaching is often compared to "professional marriage" (Friend & Cook, 2002) where two professionals—general and special education teachers—collaborate, trust, respect, and share responsibilities as in any other relationship. It embraces the philosophy that children with disabilities have a right to learn with their non-disabled peers regardless of their grade level achievement. There are different definitions of co-teaching in the field. Friend and Cook (2002) included co-teaching in student-centered teams and defined it as "two or more professionals delivering substantive instructions to a diverse, or blended, group of students in a single physical space."

Research not only points out "what it takes" to maintain a collaborative coteaching partnership, but also indicates that in effective implementation of these essentials or elements in the process of co-teaching could result in implementation barriers (Cook & Friend, 1995; Friend & Cook, 2002, 2010; Trent, 1998; Walther-Thomas, 1997; Gately & Gately, 2001; Keefe, Moore & Duff, 2004, Dieker, 2001, Weiss & Brigham, 2000; Rice & Zigmond, 2000; Austin, 2001; Mastropieri et al., 2005 Scruggs et al., 2007; Villa et al., 2004; Pugach & Winn, 2011).

NEED AND SIGNIFICANCE

Proponents of co-teaching believe and advocate that general and special education teachers must contribute mutually to make it effective. Even though co-teaching might blur the boundaries of traditional roles, it is evident in research that the roles constitute what general and special education teachers contribute to this instructional partnership; sometimes the roles are not clear enough to know what the special education teachers are expected to do. Literature indicates that most special education teachers in inclusive settings adopt a supportive role in co-teaching rather than one of equal professional

status, thus highlighting the limited contributions of special educators in the instructional partnership. Typically, a general education teacher would be a lead teacher and take responsibility for planning, curriculum development, and large group instruction; a special education teacher would, on the other hand, share responsibility for curriculum modification and accommodations. He/she would contribute in collection and grading of assignments, providing individual help to students as and when required, manage classroom activities, take notes, ask questions, monitor student performance, modify curriculum, model behaviour, and so on (Wallace, Anderson, Bartholomay, 2002; Mastropieri, Scruggs, Graetz, Norland, Gardizi & McDuffie, 2005; Rice & Zigmond, 2000; Keefe & Moore, 2004).

There is scant literature that talks in detail about the contributions of special education teachers, in either a support role or a lead role, indicating what a special educator brings to the team but none of them provides fine-grained analysis of these contributions. For example, there is little indication of questions they asked, examples they provided in a lesson, or activities they suggested in planning and/or teaching within the context of a specific content area.

This study focuses on the contributions made by a special education teacher in teaching a concept and making connections among concepts and processes in the core content area as well as provides fine-grained analysis of these contributions in different aspects of teaching such as planning, teaching and evaluation. It was envisaged that the study will add to the knowledge base on co-teaching by exploring the instructional partnership role between a special and a general education teacher in a high-performing co-teaching team. An important objective of the study was to make an attempt to suggest ways to improve instruction in teacher education programs for preparing teachers to co-teach in inclusive settings and sets a platform for future research on coteaching.

OBJECTIVE OF THE STUDY

The following question drove this inquiry:

What contributions did the special education teacher make in co-teaching science-biology?

RESEARCH METHODOLOGY

This section discusses the research design, research site, participants, data sources as well as data analysis.

RESEARCH DESIGN

Using a qualitative interpretative framework and the exploratory case study approach, the present study addressed the contributions of the special educator within a core content area. The study examined the involvement of a special education teacher in multiple aspects of co-teaching at the secondary level of education. The descriptive insight emerged from experiences and contributions of a special education teacher and provided a window into the interactions between that teacher and the general education teacher as they planned, instructed, and assessed together the students. The researcher, through the shared experiences of a special education teacher tried try to understand these contributions of special education teachers in co-teaching. This was a single subject case study which included a co-teaching team of a general and a special educator and identified the contributions of a special education teacher in a high performing co-teaching team teaching science at the high school level.

RESEARCH SITE

The research was undertaken at the Green Valley High School. Green Valley High School is located in a suburb of a large metropolitan city in the Midwest with a population of 70,718 (U.S.Census Bureau, 2010). This suburb appeared in the Money Magazine "100 Best Places to Live" in the nation and was recognized for the second consecutive year on Forbes.com "Best Schools for your Housing Bucks" list (School's Annual Report, 2010-11). It serves approximately 7, 000 resident and non-resident students. Green Valley High School is a four year public secondary school with approximately 1300 students enrolled in grades 9-12. The student population is 83% white; 7% Asian; 6% African American; 2% Hispanic; and 1% other (school website). Co-teaching was initiated in the Green Valley High School approximately six years ago. Previously the school had self-contained classes with support for students with disabilities. Although the school still has a few self-contained classes with modified curriculum and limited access to regular education curriculum for students with severe cognitive disabilities, most of the students with disabilities are in inclusive settings.

PARTICIPANTS

Kristin (general educator) and Dan (special educator) had known each other for approximately 17 years and were friends before they were co-teaching partners. They went to college together and volunteered together at the YMCA in their college sophomore year. Both acknowledged that their prior personal relationship was one of the contributing factors to their exemplary co-teaching partnership; they knew they had similar teaching philosophies and were

comfortable teaching together. After the third time co-teaching opportunity in two years, they agreed that they would not opt for a substitute teacher if one or the other went on leave. Both felt that being flexible and valuing the other's input helped them became more cohesive. Kristine said:

He [Dan] opens my eyes to be flexible and recognize that if the kids did not get something, we can't move on. It is better to take this activity out or re-teach and then move on. I like to go according to my schedule (that's how I am as a mom too); sticking to a schedule is comforting to me. So he helps me to be little more flexible about what the kids need in the moment. Just because kids did not need help with this topic during the past eight years doesn't mean this group doesn't need help. Dan also helps me welcome new ideas.

Kristine had been teaching biology for 10 years, but she welcomed and valued a fresh perspective and flexibility that Dan brought to their co-teaching partnership. Both Dan and Kristine said they never perceived students as "his or hers." They thought of them all as "our students."

DATA SOURCES

The data for the study were collected over a period of several months. Data collection was done through classroom observations and debriefings, teacher interviews, document analysis, and field notes and memos. Observations were videotaped and field notes were taken during and after each observation. For example, questions regarding the classroom activity or wanted more information on any aspect. Every observation was followed by a brief debriefing session with the special education teacher. In addition to the observations and debriefings, in-depth semi-structured interviews were conducted with both special and general education teachers. These interviews were approximately an hour long each. The interviews were conducted at the school, the research site and a location convenient to the participants. A total of six interviews: three individual interviews of the special education teacher, one individual interview of the general education teacher, and two team interviews. The third data collection strategy included the collection of course documents. Course artefacts included a copy of the school annual report and school magazine, a copy of the pacing guide, the syllabus, curriculum materials, and handouts.

DATA ANALYSIS

Before identifying the contributions made by the special education teacher in this instructional partnership either when the regular teacher was teaching or when he took the lead role, the term "contributions" was defined as specific behaviours that included suggestions, additions, or changes to content or instruction that impact the way that content is taught or made the content accessible to all students or students with disabilities. Coloured flags were put to mark the contributions on the hard copy and highlighted contributions with colours on the electronic copy. After highlighting the contributions, information was pulled from three sources of data-direct observations, interviews, debriefings and field notes. Next, a separate document listing all the contributions at one place was generated and a table was created. This was organized into two groups-those related to planning and those related to implementation [i.e., teaching]. Then the implementation contributions were re-organized into the following three types of teaching: (a) whole group teaching, (b) small-group teaching and (c) as a supportive role. This was done to identify what Dan brought to the team when the general education teacher was teaching or when he took the lead role in this instructional partnership. A 2x3 table was created to showcase Dan's individual contribution in two categories – planning and implementation with its three types of teaching. The table data became the graphic organizer that displays the layers of the coding categories used in the study (Figure 1).

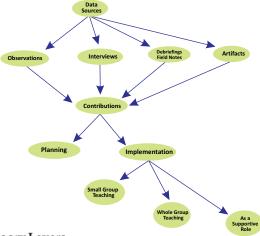


Figure 1: Coding Category Layers.

Lastly, after consolidating the contributions into three types of teaching, similar contributions were identified and clustered into categories like providing examples or using mnemonics.

FINDINGS AND DISCUSSION

In this study, the data analysis process involved identifying Dan's contributions and their corresponding rationale in three types of teaching: in small-group teaching, in whole-group teaching, and in the supportive role.

Contributions of the Special Education Teacher

Table 1 highlights Dan's contributions in two categories, planning and implementation. These are explained later in the section.

Table 1 Dan's Contributions in Co-Teaching Biology.

Contribution to Planning	Contribution to Implementation
	[Classroom Teaching]
Assessment	Giving examples
· Pre-test assessment	Daily examples
· Modified tests	Examples from other content areas
Activities	Providing mnemonics
· Adding an activity	 Using the first letter of a word(s)
 Modifying an activity 	· Adding a letter before a word to
· Eliminating an activity	develop a mnemonic
Materials	Asking questions
 Modifying handouts 	Retrieving information
 Modifying assignments 	 Applying information
	· Synthesizing information
Seating arrangements	Conducting review sessions
	· Quizes
	· Guided reviews
	· Note cards

Contributions in Planning

In addition to curriculum planning, Dan contributed in co-taught biology class in three important areas: assessment, activities, and materials.

Assessment

Dan's contributions in assessment were twofold. One, he introduced a pre-test assessment that all students took a couple of days before the test. The pre-test assessment contained 10 or 12 questions from different sections of a unit. Results of this activity helped both teachers identify students who needed extra help and who might be struggling with the content. This assessment provided feedback to teachers about specific content that should be reviewed either in a small group or in the whole group. Dan said, "I will take a look at what questions most of them get wrong usually it is pretty clear. If twelve people got question 7 wrong, obviously we should review that content." Second, Dan modified tests to make them less confusing for all students, especially for students with disabilities who had either short-term memory issues or reading issues. He changed their vocabulary, increased their font size, and limiting the options in multiple-choice questions.

Curricular Activities

In the current co-teaching role, Dan contributed by adding, modifying, and removing activities from the curriculum. Drawing from his previous coteaching experiences, Dan introduced a jelly bean activity and the nature centre scavenger hunt activity. In the jelly bean simulation activity, the students acted as predators and hunted for prey (jelly beans) and documented observations at the end of each hunting round. Dan and Kristine, through this activity, wanted their students to understand the law of natural selection and its process. Dan's input on distinctive activities and teaching strategies resulted in changes in the curriculum. For example, in one lab students burnt different types of food and documented their results. Dan felt it was a confusing lab, and he believed it only addressed the standards tangentially and did not focus on either a particular skill or the scientific processes. He discussed it with the general education teacher and they decided to remove it from their pre-determined science curriculum.

Curricular Materials

Before Dan started co-teaching with Kristine, she had been in the habit of distributing handouts that included class notes so students could focus more on listening. These went to students with Individualized Educational Plans (IEPs), at-risk students, and sometimes to all students. In fact, she observed some students were not listening attentively in class. Dan observed the same in his first year of co-teaching with Kristine and modified the format of the handouts. He strategically added blanks to the handouts, blanks that students could fill in as they listened to a presentation. This middle-of-the road approach meant that students were not overwhelmed by having to write complete notes, but they were responsible for filling in the missing information. Dan and Kristine note positive outcomes of this change as students seemed more focused and involved in the lesson. In addition to modifying handouts, Dan also provided input in modifying assignments in accordance with the needs of the students or as per their IEP requirements. He said, "I modify tests or I modify assignments, whatever is needed for the students."

Seating Plans

Dan prepared seating plans for the biology class in order to meet the needs of all students, those with and without disabilities, and to make sure that no student felt isolated in class. This was something which Kristine did not do. Dan was responsible for developing strategic seating arrangements for the entire academic year. In the beginning of the year, students filled out a personal information sheet that included seating preferences. Dan used this information in addition to IEPs and other information in the school database to create strategic seating plans using software. Dan supplied an example from the previous year. "A student from last term could hear with his right ear but not with his left ear. He needed to sit on the left side of the room so his good ear was facing the activity." He added, "As students work together in pairs or in small

groups we get a much better sense of who should or shouldn't be sitting next to each other."

Dan was not only actively involved in preparing the seating plans for the classroom, but was equally engaged in planning the biology curriculum. The following section explains Dan's engagement in different aspects of teaching.

Contributions Towards Implementation

It was possible to divide Dan's contributions into five sub-sections namely: giving examples, providing mnemonics, asking questions, running review sessions, and conducting pre-test assessment.

Giving Examples

Often in teaching, Dan provided examples from daily life to explain a concept or introduce a topic. For example, In a small-group teaching setting Dan showed a diagram of an atom and explained two types of bonds, covalent and ionic. He explained that the best way to remember covalent bonds was to remember that two atoms are cooperating by sharing electrons. He emphasized the "co" syllable on both words. Then he said that one way to remember ionic bonds is to think of "I" being selfish. He explained that atoms do this bonding activity to become full or stable. In addition to providing examples from daily experience, Dan also added examples from other content area. For example, in a whole-group teaching Dan explained the passing down of alleles in heterozygous parents using the mathematics distributive property "FOIL." Dan demonstrated a connection between two content areas-math and science-by using a distributive property example in a science-related problem.

Providing Mnemonics

Dan used mnemonics to help students comprehend and remember a complex concept. He used mnemonics as a strategy in all the three contextual settings-the whole-group setting, the small-group setting, and as a supportive contribution when the regular education teacher was teaching. He created mnemonics using the letters of each word. For example, in small-group teaching Dan was explaining the concept of classification, which includes three domains, six kingdoms, and eight taxa. To remember the names of the eight taxa (kingdom, phylum, class, order, family, genus, and species), he suggested remembering "King Philip Came Over for Good Spaghetti." He used the first letter of each taxa to create this mnemonic.

Asking Questions

Dan asked questions while giving notes or conducting an activity. He used a

wide array of questions that required students to retrieve, apply or synthesize information. Sometimes he asked questions when the regular education teacher was teaching: (a) to clarify the content and (b) to break down a concept into parts. To make sure students were understanding the content being taught or to help them complete an assignment, Dan would ask analytical and/or developing question. He also encouraged students to ask questions.

Conducting Review Sessions

In this co-teaching partnership, Dan conducted all the review sessions in both whole-group and small-group settings. Whole-group review sessions were usually quizzes. Quiz questions appeared on PowerPoint slides and were displayed on the Smart board. Dan would read a question and allow time for students to work in groups at the lab tables to come up with an answer. The groups were pre-determined and were numbered from one to seven. Students were given an option to select an interesting science-related group name such as Excellent Enzymes or Food Catalyst. Review sessions in small-group teaching consisted of either making note cards or doing guided reviews. Often these review sessions followed a quiz in the whole-group teaching a day prior to the test and after the pre-test assessment.

Conducting Pre-Test Assessment

As with review sessions, Dan conducted all pre-test assessments in the cotaught biology class. This was one of the activities that did not happen before Dan started co- teaching with Kristine. Dan created this assessment to learn where students were struggling and then geared his review session towards it. Pre-test assessment was a quick activity that contained 10-12 multiple-choice, true-false, and short-answer questions. This activity focused on both the needs of students with disabilities and on the class as a whole. Both teachers were happy with the results of this activity and the difference it made in terms of better test scores. Instead of assigning grades, Dan gave coloured stars to indicate performance in the pre-test assessment. Star colours varied from one test to another, preventing students from stigmatizing peers. For example, a day before the test, Dan or Kristine would announce that they were doing a review for tomorrow's test. If they had a green star on their pre-assessment, they would be staying with Kristine. If they had a purple star, they would be going with Dan for the small-group review session.

Dan not only provided support and advocated for children with disabilities in this inclusive biology class; he also took the lead role and taught students with and without disabilities as a class. His contributions included giving examples, providing mnemonics asking questions, and conducting review sessions and pre-assessment tests. In addition, he also used to jump in

whenever he sensed that students were confused or needed another example. Dan believed his understanding about students, content, and curricula helped him in this process.

IMPLICATIONS AND RECOMMENDATIONS

The present research has shown, in order for a co-teaching team to become effective and seamlessly contribute in this instructional partnership it must manoeuvre its way through the stages of co-teaching. This can take time and require effort of both teachers. Therefore, schools should not frequently regroup co-teaching pairs. They should develop a time framework with parameters in order to determine the right fit. Principals or administrators should involve potential co-teachers in the pairing process and accept their input because forced co-teaching does not result in efficient instructional partnerships.

The co-teaching model adopted by the teachers in the present study, having Dan teach 50% of the time, worked for them and improved over time. In addition, Dan provided support when Kristine was teaching and helped small groups with their assignments or conducted guided reviews. It is not necessary for a special education teacher to always take a lead role. There are six different models of co-teaching and their selection depends upon the content material, ecology of the class, and comfort level of the teachers implementing it (Friend & Cook, 2003; Villa et al., 2004) but both teachers have to get involved in different aspects of teaching equally.

Although there is not sufficient literature to strongly claim its academic gains, research do indicate the social benefits of co-teaching for all students, both with and without disabilities. Collaboration not only improves professional competencies of both teachers, but also enhanced social relationships, diffused the stress that comes with teaching, and changed teachers' attitude towards students. Both teachers could develop a positive attitude toward students' success as well as towards their own co-teaching experience (Evan-Stout, 1998; Villa et al., 1996).

Co-teaching could be used in providing meaningful education to both students with and without disabilities. It seems clear that co-teaching not only helps to eliminate 'social stigma," it also provides equal educational opportunities that allow students with disabilities to grow and learn in inclusive settings, which would be difficult otherwise.

CONCLUSION

The co-teaching model had been successful in U.S. schools to a greater extent in implementing inclusion, however; in India it is still in its infancy stage. In recent years the Government of India has strongly advocated for teaching children with different abilities in the same classroom with their non-disabled peers. Co-teaching as a collaborative model could be implemented to accomplish this vision but it needs more experimentation within the Indian context to teach children with and without disabilities under same roof.

The results of the present study indicate that the process of co-teaching is both challenging and rewarding as educators or professionals have to build upon each other's strength as well as to know each other's weakness and/or pet peeves. Moreover, the present study provided fine-grained analysis of a special educator's contributions in different roles as well as in different aspects of teaching such as planning, teaching and evaluation in meeting the needs of all children in the classroom whether with exceptionality or not. It's therefore important that the Rehabilitation Council of India (RCI) and the Government of India to take appropriate measures for ensuring effective implementation of co-teaching in schools as well as training of pre and in-service teachers to co-teach in diverse classrooms.

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