Margaret E. King-Sears[1] & Vasilis Strogilos[2] (2018): An exploratory study of self- efficacy, school belongingness, and co-teaching perspectives from middle school students and teachers in a mathematics co-taught classroom, International Journal of Inclusive Education, DOI:10.1080/13603116.2018.1453553

Abstract

In this exploratory study, self-rated measures from two co-teachers who taught mathematics to a group of students with and without disabilities were gathered to determine perspectives about their co-teaching experiences. Students also completed three measures. Students and co-teachers agreed that the *one-teach, one observe or drift* co-teaching model was used most frequently. Although students noted the general educator was the instructional lead, they also believed the special educator provided a valid and valuable role in providing help to all students. All students reported high levels of school belongingness and self-efficacy. Some results matched other researchers' findings that special educators are less frequently the lead teacher, yet our results indicated students appreciated the support received from both co-teachers. Students' reports may have been influenced by their co-teachers' mastery approach to instruction, which emphasised students' individual progress versus a competitive approach. Implications for researchers and co-teachers include examining how supportive co-teaching can be transformed to maximise instructional experiences for students, and how positive co-teacher relationships translate to students' sense of belonging and increased self-efficacy.

Keywords: co-teachers, inclusion, students with and without disabilities, self-efficacy, school belongingness

[1] mkingsea@gmu.edu

[2] v.strogilos@soton.ac.uk

When general and special educators share the same instructional space and students, there are generally accepted models of co-teaching describing their interaction patterns, as originally described by Cook and Friend (1995). First, team teaching consists of highly interactive instructional approaches in which each co-teacher maintains similarly active instructional roles; no one co-teacher predominates during instruction. Other co-teaching models feature individual co-teachers leading instruction with individual groups of students with disabilities (SWD) and students without disabilities (SWOD). A parallel model features each co-teacher instructing half the students, so the groupings are fairly equal in size, whereas an alternative model features one co-teacher with a larger group and the other co-teacher instructing a smaller group of students. Station teaching features each co-teacher with a smaller group of students as well as students working independently at one or more stations, or learning centers, in the classroom.

Each co-teaching model described thus far requires each co-teacher to be actively involved in instructional experiences for SWD and SWOD. However, there are two models typically characterised in the research as one co-teacher holding the primary or lead role for instruction whereas the other co-teacher serves in a more passive role as an observer or assistant (Pancsofar and Petroff 2016; Weiss and Lloyd 2002). Although researchers call for a range of co-teaching models to be used, there is concern when any specific co-teacher is primarily in the observer or assistant role, sometimes considered the supportive role, because of less parity between the co-teachers (Bouck 2007; Harbort et al. 2007; Rice and Zigmond 2000). Moreover, because the supportive role is primarily held by special educators, researchers have consistently expressed concern that these educators' pedagogical expertise is not evidenced in the actual instruction; their role is relegated to assistants in the classroom versus in equitable roles as instructional leaders (Magiera and Zigmond 2005; Scruggs, Mastropieri and McDuffie 2007; Strogilos and Tragoulia 2013).

Regardless of which co-teaching model is used, it is unpredictable that effective instruction is received by SWD and SWOD (McKenna et al. 2015; Moin, Magiera and Zigmond 2009; Strogilos, Tragoulia and Kaila 2015; Zigmond 2006), although some studies document effective instruction (Hang and Rabren 2009; King-Sears, Brawand, Jenkins and Preston-Smith 2014). One reason SWD receive co-taught instruction is to access the general education curriculum in the least restrictive environment (Nichols, Dowdy and Nichols 2010; Solis, Vaughn, Swanson and McCulley 2012). Another reason is when increased achievement occurs for SWD (Fontana 2005; Walsh 2012) and their peers (Hang and Rabren 2009). Although such gains are not sufficiently evidenced in the co-teaching research (cf: Murawski 2006; Packard, Hazelkorn, Harris and McLeod 2011; Wilson, Kim, and Michaels 2011), when gains do occur, self-efficacy for SWD can increase (Hang and Rabren 2009). Additionally, SWD can feel a greater sense of belonging in co-taught classes when they thrive academically and socially (Rivera, McMahon and Keys 2014). As such, it is important to investigate how SWD and SWOD perceive their instruction, sense of belongingness, and self-efficacy in co-taught classes.

Students' Perspectives on Co-Teaching

Of the few studies that queried students of co-teachers, some focused on perspectives from SWD (Bessette 2007; King-Sears et al. 2014), whereas others also included SWOD (Pugach and Wesson 1995). For example, Wilson and Michaels (2006) conducted a mixed methods study with almost 350 secondary SWD and SWOD. Both groups of students indicated availability of help and structural support as the two greatest benefits. Other benefits included multiple explanations and different teaching styles as well as increased understanding of

assignments. Students also reported drawbacks, including receiving contradictory explanations and being distracted when one teacher was teaching and the other was assisting other students. Embury and Kroeger (2012) interviewed seventh-grade SWD and SWOD who noted their co-teachers primarily used the one-teach one-assist co-teaching model. The seventh-grade students were more likely to describe the general educator as the "real" teacher. Conversely, eighth-grade students from the same study whose co-teachers used varied co-teaching models characterised both co-teachers as having the same instructional roles.

Students' School Belonging and Self-Efficacy

Osterman (2000) found students who related to and felt they belonged within a school community were more highly motivated and engaged in learning. Anderman and Anderman (1999) noted the middle school years as critical regarding students' declined motivation due to their transition to new social and academic environments. According to early theories on goal orientation (Anderman and Anderman 1999; Midgley et al. 2000), middle school students who feel accepted and as if they belong in the class and school are "more likely to pursue their academic work for the purposes of personal understanding and increased competence ….. a task goal orientation ... linked to the use of more adaptive learning strategies" (Anderman and Anderman 1999, 32-33). In addition to accessing the general education curriculum via co-taught classes, some researchers hypothesise that middle school SWD may feel a greater sense of belonging to the class and school when in fewer or no self-contained special education classes (O'Rourke and Houghton 2009: Wischnowski, Salmon and Eaton 2004). McMahon, Wernsman and Rose (2009) found that school belonging was the most important factor influencing elementary students performance in language arts and self-efficacy. Conversely, if students felt conflict within the class, believed the content was too difficult, and believed they were in competition with their peers, they did not feel a strong positive connection to their school.

Rivera et al. (2014) found evidence between co-teaching and school satisfaction as well as self-efficacy for SWD in co-taught classes. Higher levels of co-teaching related to students' higher levels of school belonging, school satisfaction, and self-efficacy for new experiences. The extent to which SWD perceive they "fit in" to co-taught classes and perform better academically can lead to increased efficacy. On the other hand, decreased self-efficacy may be experienced by students who do not perceive they fit in or perform well academically.

Klassen and Lynch (2007) examined self-efficacy for middle school students with learning disabilities (LD) who received pull-out learning support services for one period per day but spent the rest of their day in non-co-taught general education settings. In this qualitative study, students with LD reported they had less confidence doing tasks compared to their peers. Similarly, other studies reported students' disability status influenced their self-efficacy (Baird, Scott, Dearing and Hamill 2009; Hampton and Mason 2003). Conversely, Fontana (2005) found that students with LD in co-taught classes showed significant improvements in self-concept.

Co-Teachers' Perspectives on Instruction

Whether co-teachers' perspectives on co-teaching match their students' perspectives is important to know because co-teachers can be shifting instruction based on students' feedback. For example, Hang and Rabren (2009) found both students and co-teachers had positive perceptions about co-teaching, and the students' learning increased based on data from the previous year. In another study by King-Sears et al. (2014), although students with disabilities perceived team teaching was used most of the time, observational data indicated the science co-

teacher presented new content almost three times more frequently than the special educator. By including students and co-teachers in studies, researchers have opportunities to compare their perspectives on multiple topics, including the extent to which instruction is responsive to students' learning needs. Although one purpose for co-teaching is so instructional adaptations (e.g. modifications, accommodations) occur, some researchers noted that few instructional changes occurred (Moin et al. 2009). Indeed, special educators' roles as co-teachers are to ensure such adaptations occur, yet when they feel subordinate to general educators, they may not advocate on behalf of both themselves and the SWD (Strogilos et al. 2015). Rice and Zigmond (2000, 190) also noted co-teachers in their study found "professional and personal compatibility between co-teaching partners as critical for success." Bouck (2007) characterized co-teaching relationships as a conundrum in which co-teachers have opportunities to collaborate that only flourish within the context of relinquishing control of instruction. That is, each must give up individual control to collaborate toward shared control.

Co-Teachers' Instructional Approaches and Self-Efficacy

Among the factors in which control is shared are instructional approaches, wherein goal orientation theory plays a role (Ben-Eliyahu, Linnenbrink-Garcia and Putallaz 2017; D'Lima, Winsler and Kitsantas 2014). For example, Mensah and Ettah (2015) found students with a mix of performance and mastery approaches, derived from their teachers' approaches to instruction, were influenced by how their teachers engaged them during instruction, modeled positive and supportive relationships, and used varied instructional techniques. Meece, Anderman and Anderman (2006) distinguish between students who are motivated in classroom settings focused on a *mastery* approach in which understanding and improving skills and knowledge are emphasised contrasted with classrooms focused on a *performance* approach in which demonstrating high ability and competition for grades are emphasised. In the latter approach, although some students were motivated, other students experienced decreased motivation. Referred to as achievement goal theory, when comparing the mastery versus performance classroom approach, students with disabilities are more likely motivated when co-teachers emphasise mastery. A mastery-oriented approach highlights an individual's skill development for understanding and learning challenging content. In contrast, a performance-oriented approach emphasises an individual's quest to demonstrate high ability relative to peers, with emphasis on social comparisons. Inclusive classroom goal structures are particularly well matched to mastery approaches wherein individuals' learning relative to self is the goal, thus sparking motivation to achieve within an internal individualised learning context. Nonetheless, some research indicates that by middle school, classrooms shift from mastery to performance goals. As such, examining the classroom goal structure in the current study situated in a middle school was of interest to determine if this shift had occurred. These factors are particularly essential for effective middle school co-taught settings.

Unexplored thus far in co-teaching research is whether co-teachers have distinct goal orientations in their instruction which could in turn influence their students' self-perceptions, both for self-efficacy and sense of belonging within the classroom. Also unexplored is co-teachers' self-efficacy, which is important because high self-efficacy for co-teaching students with and without disabilities can influence the co-teachers' capacity for designing and delivering quality instruction. Malinen et al. (2013) analysed data from almost 2,000 teachers in three countries and found that experience teaching students with disabilities was the strongest predictor of teacher self-efficacy for inclusive practices, but co-teaching specifically was not

isolated for their study. When co-teachers feel unprepared to be responsive to the needs of students in co-taught settings (van Hover et al. 2012), students may not be receiving high-quality instruction (Harbort et al. 2007; Zigmond 2006). For the current exploratory study, there were two research questions:

1. How do SWD and SWOD compare in their ratings about their experiences in receiving co-taught instruction, their co-teachers' use of co-teaching models, school belongingness, and self-efficacy for learning?
2. How do co-teachers compare in their responses to perceptions about their co-teaching relationship, approach to instruction, and use of co-teaching models?

Methods

After receiving permission from the university, school system, co-teachers, parents, and students, the research commenced at the end of the school year. This timing was intentional to avoid state testing administration and to ensure students and co-teachers had sufficient experience to provide informed perspectives on co-teaching.

Research Design

The exploratory research design is a descriptive analysis of how a team of sixth-grade co-teachers and their students self-rated on measures of co-teaching. Additionally, students rated themselves on school belonging and self-efficacy questionnaires, and co-teachers rated themselves on their instructional approach and self-efficacy. Comparisons occurred at two levels: (a) general educator's ratings on instruments compared to the special educator's ratings; and (b) ratings from SWOD compared to ratings of SWD.

Participants

One team of sixth-grade co-teachers was nominated by their administrator to participate in the research because it was considered an effective co-teaching team. From the 27 total students in the class, ten students with and without disabilities volunteered to participate in this research. From the three SWD, two students were males and one student was female. One student was 11-years-old, and two students were 12-years-old. Seven SWOD participated in this research; two were male and five were female. Refer to Table 1 for additional descriptors of the participants.

Both co-teachers were fully certified and highly qualified in their respective teaching areas, and they each had their master's degree. The general educator held certification to teach mathematics, and the special educator was certified in special education. Both were Caucasian and had taught for over 13 years, with over eight years of co-teaching experiences. The co-taught team had over four years co-teaching together. When they began co-teaching, the general education co-teacher was approached by an administrator and then volunteered to co-teach, whereas the special education co-teacher was told by school administration that he would be a co-teacher. Both co-teachers were over 36-years-old.

Instruments for Students

Three questionnaires were completed by the students to answer research question 1: the Co-Teaching Student Questionnaire (King-Sears et al. 2014), Psychological Sense of School Membership Scale (Goodenow 1993), and Self-Efficacy for Learning Form-Abridged (Zimmerman and Kitsantas 2007). Refer to Figure 1.

Co-Teaching Student Questionnaire. The Co-Teaching Student Questionnaire (CTSQ) was designed based on research and literature about co-teaching (King-Sears et al. 2014). Content validity was previously established for the CTSQ (King-Sears et al. 2014; Preston-Smith 2015) by eliciting input from co-teachers and researchers on co-teaching. There were four sections on the CTSQ. First, demographic information such as age and grade were acquired. Second, the "Which Co-Teacher, or Both?" Section was comprised of 10 statements for which responses could be the general educator, special educator, or both educators. These 10 statements clustered into three categories: learning, aspects of instruction, and support. Third, the "How Much Do You Agree?" section had 15 statements for which students selected responses based on a 4-point likert scale (4: strongly disagree; 3: disagree; 2: agree; 1: strongly disagree). Fourth, students indicated which co-teaching model was used the most.

Psychological Sense of School Membership Scale. The Psychological Sense of School Membership (PSSM) is an 18-item scale developed and validated by Goodenow (1993) for the purpose of measuring students' social relationships related to the classroom and the school. The Cronbach α for reliability was .842. Students responded to statements such as "The teachers here respect me" using a rating from 1 (not true of me) to 5 (very true of me).

Self-Efficacy for Learning-A. Zimmerman and Kitsantas (2007) developed the Self-Efficacy for Learning Form (SELF) to measure students' self-efficacy beliefs for self-regulation and other areas of academic performance (e.g. note-taking, test preparation, attention, time management). They developed an abridged form of the SELF (SELF-A), which consisted of 19 statements and had high internal reliability, so the abridged version was used in this study. Students responded on a scale of 0% to 100% (definitely cannot do it to definitely can do it) to questions such as "When you have trouble studying your class notes because they are incomplete or confusing, can you condense your notes down to just the essential information?" Cronbach's α for the SELF-A was .842.

Instruments for Co-Teachers

Co-teachers completed two instruments to answer research question 2: the Co-Teacher Relationship and Co-Teaching Models (CRCM) and Patterns of Adaptive Learning Scale (PALS). The CRCM are subscales of a broader survey which has undergone content validity and reliability procedures in a previous co-teaching study (King-Sears et al. 2014). Refer to Figure 2.

Co-Teacher Relationship and Co-Teaching Models. The CRCM consisted of two domains with a total of 19 items. For the Co-Teacher Relationship, 13 statements were rated using a 4-point Likert scale indicating level of agreement per statement (1 = strongly disagree to 4 = strongly agree). Cronbach's α was .71. For the Co-Teaching Models, six items matched each co-teaching model, and co-teachers reported the percentage of time they used each model. For this domain, due to the types of responses, reliability was not appropriate to calculate.

Patterns of Adaptive Learning Scale. Midgley et al. (2000, 2) developed the Patterns of Adaptive Learning Scale (PALS) which uses "goal orientation theory to examine the relation between the learning environment and students' motivation, affect, and behavior." Teacher scales consisted of 29 items across three domains: (a) 13 items about co-teachers' perceptions of the school's goal structure; (b) nine items about goal-related approaches to instruction; and (c) seven items about personal teaching efficacy. For the first two domains, statements reflected either mastery or performance goal structures. For the last domain on self-efficacy, co-teachers responded to statements such as "I can deal with almost any learning problem" with a rating of 1

(strongly disagree), 3 (somewhat agree), or 5 (strongly agree). The Cronbach α for PALS was .924.

Results
Co-Teaching Models

On the Co-Teacher Student Questionnaire, students indicated the co-teaching model used the most with a "1," and they could check a second co-teaching model if they believed another model ("2") was also used sometimes. All ten SWD and SWOD noted the *one teach, one observe or drift* as the co-teaching model used the most. For a second co-teaching model used sometimes, one SWD and one SWOD noted *station teaching*, and one SWD and two SWOD noted *alternative teaching*. On the CRCM, co-teachers noted that the two co-teaching models used most frequently during math was one-teach one-drift, with alternative teaching used some (up to 1/3 of the time).

Co-Teacher Student Questionnaire

Two sections of the CTSQ required students' responses about co-teaching. First, on the *Which Co-Teacher, or Both?* of the CTSQ, ten statements clustered into three categories learning (one item), aspects of instruction (four items), and support (five items) (refer to Table 2). Titles, illustrations, and written definitions of five co-teaching models were provided, and students indicated which co-teaching model was used the most. Two open-ended queries allowed students to "tell more" about co-teaching by asking students to identify two main benefits of having co-teachers and two ideas for co-teachers to do something different or new so they could learn better. Second, on the *Agree or Not?* of the CTSQ, students reacted to 15 statements about co-teaching with the number that best matched their response on a scale of 1 (strongly disagree) to 4 (strongly agree). Results are reported on Table 3.

CTSQ mathematics *Which Co-Teacher, or Both?* The majority of SWD and SWOD indicated that they learn best from the general educator (see item 1 on Table 2). In addition, all SWOD agreed the general educator is solely responsible for grading their work, planning most instruction, and in charge of the lesson, whereas the majority of students indicated that both teachers organise the material for instruction. All SWD agreed that both teachers grade their work and seem to be in charge of the lesson, whereas the majority of them indicated that both teachers plan most of the instruction and organise materials for instruction (see items 2-5 on Table 2).

With regards to the support provided in the co-taught class, the answers of SWOD provided variety in the support these students receive. Although the majority indicated the general educator was who they ask for more help, they also indicated the special educator was the one who more often explains things to them when they do something wrong. Most SWOD described the general educator as the one who explains things most of the time and the special educator as the one who walks around and helps students. A variety of responses was elicited from SWOD about the teacher who explains things in different ways (see items 6-10 on table 2).

For the query to describe two benefits of co-teaching during mathematics, all SWD and SWOD indicated at least one benefit for co-teaching during mathematics. The most common ones were the extra help that is provided in a co-taught classroom and the increased opportunities for learning as a result of this extra help.

CTSQ mathematics *Agree or Not?* There were 15 statements which students reacted with the number that best matched their response on a scale of 1 (strongly disagree) to 4 (strongly agree). Percentages for agree and strongly agree as well as disagree and strongly disagree are combined in the following section. The 15 statements clustered in three categories: (a) parity; (b) climate; and (c) learning.

There were three statements about parity during mathematics instruction. The majority of SWD and SWOD did not agree that the two teachers divided the teaching in half so that one is not doing more work than the other. All SWD agreed or strongly agreed that one teacher is mostly in charge of behavior with the other teacher in charge of teaching, with SWOD giving a mixed answer (57.1% disagree and 42.9% agreed). The majority of SWD and SWOD perceived their teachers as equal with the percentage of SWOD slightly lower (14.3% agreed and 42.9% strongly agreed) than the percentage of SWD (66.7% agreed) (see items 1, 2, and 3 on Table 4).

Four statements were about the classroom climate during mathematics. All SWD and SWOD believed both co-teachers enjoyed teaching the mathematics class. All SWOD agreed that they enjoyed having two teachers in the mathematics class, and one-third of SWD indicated the same. However, two-thirds of SWD disagreed they enjoyed having two teachers. All SWD agreed students seemed to behave better with two teachers, and most SWOD (85.7%) also agreed. Two-thirds of SWD agreed the two teachers seemed comfortable sharing responsibilities when teaching together, and all SWOD also agreed (see items 4-7 on table 3).

Eight statements were about student learning during mathematics. All SWD agreed they learned more *and* better in the mathematics class with two teachers, and most SWOD also agreed (see items 8 and 9 on table 3). With regard to the remaining six items, in which students had to indicate whether they prefer one or two teachers in the math class, the majority of SWD and SWOD agreed with the presence of two teachers in the class. With the exception of item 13 "I wish all my classes had two teachers" in which the majority of SWOD disagreed, both student with and without disabilities agreed that the presence of two teachers benefits their learning. For example, the majority of SWD and SWOD agreed that the two teachers use more ways to teach than when there is only one teacher or that they would not rather learn with one teacher in the classroom (see items 10-15 on table 3).

Psychological Sense of School Membership Scale

The Psychological Sense of School Membership Scale was developed and validated by Goodenow (1993), who recommended reporting group averages and standard deviations for results (refer to Table 4 for individual items for the 18 statements). Students responded to statements such as "People here notice when I'm good at something" using a rating from 1 (not true of me) to 5 (very true of me). Six of the 18 items were reverse coded. The average score across all 18 items is reported; for two students who did not respond to one item, their average for 17 items is calculated. The average score for the SWD ($M = 3.70$, $SD = .48$) was slightly lower than for the SWOD ($M = 4.01$, $SD = .64$), although SWD self-rated higher ($M = 4.67$ on three statements) than SWOD ($M = 4.43$ on three statements) on some items. The range for SWD was larger ($M = 2.67$ to 4.67) than for SWOD ($M = 3.43$ to 4.43).

Self-Efficacy for Learning-Abridged

Zimmerman and Kitsantas (2007) recommend reporting the mean and standard deviation for the 19 items on the SELF-A. Composite scores were obtained by summing scores then

calculating an average for SWD and SWOD. SWD scored lower ($M = 53.95$, $SD = 4.35$) than SWOD ($M = 64.85$, $SD = 15.15$) on a scale of 1 to 100.

Co-Teachers

Co-Teacher Relationship. For co-teacher relationship, the general educator self-rated higher ($M = 3.92$) than the special educator ($M = 3.31$). Ratings of 3 were agree and 4 were strongly agree, so both co-teachers were within the agree-to-strongly agree range for having a good co-teaching relationship

Patterns of Adaptive Learning Scale. Three domains were assessed on the Patterns of Adaptive Learning Scale (Midgley et al. 2000): school goal structure, instructional approaches, and personal teaching efficacy. For both school goal structure and instructional approaches, items were separated for mastery and performance. Responses were from 1 (not at all true of me) to 5 (very true of me).

For school goal structure items indicating mastery for students, the general educator self-rated an average of 4.00 with the special educator's rating of 3.57. For school goal structure indicating performance for students, the general educator self-rated an average of 3.0 with the special educator's rating of 2.83. Ratings were higher for mastery versus performance for both educators.

For approaches to instruction items indicating mastery for students, the general educator self-rated an average of 4.25 with the special educator's rating of 3.25. For approaches to instruction indicating performance for students, the general educator self-rated an average of 3.40 with the special educator's rating of 2.40. Ratings were higher for mastery versus performance for both educators.

For personal teaching efficacy, the general educators self-rated an average of 4.00 on a scale of 1 to 5. The special educator self-rated an average of 3.14, whereas the general educator rated herself higher than the special educator's ratings.

Discussion
Dominance of One Co-Teaching Model

Students with and without disabilities from other studies reported that the *one teach, one observe or drift* co-teaching model was primarily used (Bessette 2008; Scruggs et al. 2007), which is consistent with results from the current study in which all SWD and SWOD noted this co-teaching model was used the most. SWD and SWOD also noted that sometimes *station teaching* and *alternative teaching* were used. The co-teachers concurred with their students in noting the most frequently used model was *one teach, one observe or drift*; they did not note *station teaching*. In addition, the co-teachers also indicated *alternative teaching* was used some, consistent with students' responses.

It may be that when researchers observe the structural use of the *one teach, one observe or drift* co-teaching model without also querying students or co-teachers about perceived benefits (Scruggs et al. 2007), an assumption is that the structural use *of one-teach, one observe or drift* equates to a lesser role for the special educator. When this is true for co-teachers, special educators should self-advocate for active pedagogical roles. Alternatively, some students note benefits from co-teachers even when the most frequently used model is *one teach, one observe or drift* (Embury and Kroeger 2012; Wilson and Michaels 2006), suggesting special educators have active and important (versus lesser) roles.

In the current study, with agreement among students and co-teachers that *one teach, one observe or drift* was the predominant model used in math, further exploration occurred via students' responses to specific statements about their co-teachers and their learning. Although most SWD and just over half of SWOD did not believe teaching was divided in half, SWOD reported for co-teachers' roles and responsibilities were about even for one teacher in charge of behavior and the other does teaching. Most, but not all, students agreed that both teachers were equal during math. Given the frequent use of the *one teach, one observe or drift* co-teaching model, it may be unsurprising that the special educator was credited the most by SWD and SWOD as the one who walks around and helps students the most. To that end, having two teachers to provide assistance was seen as a benefit of co-teaching, consistent with results from other studies (Wilson and Michaels 2006).

Availability of Support from Co-Teachers

Embury and Kroeger (2012, 112) noted that "students … said they appreciated having an extra teacher to help with questions and work." The students described their general education co-teacher as the lead teacher who prepared things, yet also noted the special education co-teacher's role was to make sure content was understood. Pratt (2014) characterised one aspect of parity as flexibility in roles. Students in this study noted both co-teachers were available to help, and they sought help from both co-teachers, evidencing this flexibility. The students in this study may value their co-teachers' responsiveness to assistance when needed as much if not more than which co-teacher leads instruction. All SWOD in the current study agreed they enjoyed having two teachers, and all SWD agreed they would not rather learn with one teacher.

Embury and Kroeger (2012) reported students were aware of a power differential between their co-teachers. Students in the current study noted the general educators was lead instructor most of the time and seemed to be in charge of lessons the most, and more students learned best from the general educator, yet some students credited both educators as teachers they learned best from. There were other statements where SWD and SWOD indicated the active role of both the special and general educators: who explains things to me when I do something the wrong way; learning better in the class with two teachers; and learning more in the class with two teachers. Some of these responses seem to contradict that students perceived a power differential, but that may be because other statements on the CTSQ with similarly-worded (but not identical) statements sometimes elicited different responses.

Varied Instructional Methods

Pancsofar and Petroff (2016) noted that multiple years with same co-teacher was associated with different approaches to co-teaching. Although co-teachers in the current study had been together for multiple years, they did not experiment much beyond using the *one teach, one observe or drift* co-teaching model. Regardless of the model of co-teaching used, one benefit of co-teaching should be that co-teachers use different ways of teaching (Solis et al. 2012). In the current study, most SWD agreed their co-teachers used more ways to teach than when in other classes with one teacher. All SWOD agreed their co-teachers used more ways to teach than classes with only one teacher. This is in contrast to O'Rourke et al. (2009, 36), who noted that "[d]espite teacher attempts to create a more stimulating classroom content and to maintain efforts to present the work clearly, the focus students did not perceive major changes in teaching within their classroom."

Students in the current study also noted their co-teachers explained things in different ways. Although there was no observational component for the current study, based on students' reports, a difference between their co-taught classes and solo-taught classes was that their co-teachers used more instructional techniques. In contrast, other researchers reported few instructional changes in co-taught classrooms (Magiera and Zigmond 2005; Strogilos et al. 2015; Weiss and Lloyd 2002).

Efficacy, Mastery Approach to Instruction, and School Belongingness

The co-teachers' personal teaching efficacy as reported by the PALS (Midgley et al. 2001) were in the average range (4.00 for general educator and 3.14 for special educator on a scale of 1-5, with 5 "very true for me"). To some extent, this score reflects co-teachers' beliefs that they can successfully instruct all students and can contribute to their students' progress, although scores also indicate room for efficacious growth. Both co-teachers scored high on statements like: "I can deal with almost any learning problem." and "I am certain I am making a difference in the lives of my students." Their lowest score item indicates their efficacy about overcoming factors beyond school that impact students' learning.

According to the PALS (Midgley et al. 2001), the co-teachers were more mastery goal oriented than performance goal oriented, indicating they were more concerned with students making progress for individualised learning versus emphasising a more competitive atmosphere in which students focus on doing better than their peers. For example, one mastery statement with high ratings from all co-teachers was "In this school, students are told that making mistakes is OK as long as they are learning and improving." Conversely, a performance statement with low ratings from both co-teachers was "In this school, students are encouraged to compete with each other academically." Midgley et al. (2001) note that students' self-efficacy is usually higher in mastery v. performance orientation from teachers. Hang and Rabren (2009) also reported higher efficacy for SWD in co-taught classes. Students' self-efficacy scores bore this out in the current study, in that there were not big differences for SWD compared to SWOD. Given the diversity of students within co-taught classes, the mastery orientation may be a better fit versus the performance orientation, and may influence a more convivial instructional climate, which also aligns with students' high sense of belongingness in co-taught classes. On the measure of students' belongingness (Goodenow 1993), SWD and SWOD self-rated similarly, indicating they had a high sense of belonging in their classroom and school.

Limitations, Future Research, and Implications for Teaching

Given the small sample for this exploratory study, one limitation is that no generalisations should occur beyond the population participating in this research. Because most students in the class had LD or language impairments, the results may not correspond to students with different types of disabilities. Another limitation is that self-report measures were used, with no observational components to verify or clarify content conveyed by either the students or the co-teachers. The timing of when students and co-teachers completed the instruments precluded the opportunity to follow-up on any explanations that the participants could have provided through the use of additional research instruments such as interviews.

Consistent with Pratt's (2014) characterisation of effective co-teaching as complex is whether co-teachers' instructional approaches are mastery or performance oriented (Midgley et al. 2001) such that SWD or SWOD feel they belong in the class and school (Goodenow 1993) and have a high sense of self-efficacy for learning (Zimmerman and Kitsantas 2007), factors

examined in this exploratory study. Examining beneath the appearance of the supportive co-teaching model may uncover ways in which the special educators' roles are valued and valuable for SWD and SWOD. Although some research-to-date has revealed the subordinate nature of special educators in a supportive co-teaching role (Scruggs et al. 2007), there is both a need for special educators to advocate for parity as co-teachers and for researchers to elicit from students and co-teachers ways in which parity may be more evident than is apparent when only examining the structural nature of co-teaching models.

Although students in this study believed they benefitted from the range of instructional techniques used by their co-teachers, varied methods are not the norm in co-taught settings (Magiera and Zigmond 2005; Strogilos et al. 2015). One way to increase the quantity of instructional techniques used in co-taught settings is through professional development, which Shaffer and Thomas-Brown (2015) found resulted in mutual benefits: general educators acquired more pedagogical skills and special educators acquired more content knowledge. In this study, although both educators scored comparably for teaching efficacy, the special educator's score was lower than the general educator's score. Unexplored is whether the special educator's score may have been impacted by content knowledge. Pancsofar and Petroff (2016) also found professional development expanded co-teachers' use of varied co-teaching models. It may be that even experienced co-teachers would benefit from professional development to increase the use of evidence-based practices (McKenna et al. 2015) and varied co-teaching models.

References

Anderman, L. H., and E. M. Anderman. 1999. Social predictors of changes in students' achievement goal orientations. *Contemporary Educational Psychology*, *24*(1): 21-37.

Baird, G. L., W. D. Scott., E. Dearing, and S. K. Hamill. 2009. Cognitive self-regulation in youth with and without learning disabilities: Academic self-efficacy, theories of intelligence, learning vs. performance goal preferences, and effort attributions. *Journal of Social and Clinical Psychology, 28*: 881-908.

Ben-Eliyahu, A., L. Linnenbrink-Garcia, and M. Putallaz. 2017. The intertwined nature of adolescents' social and academic lives: Social and academic goal orientations. *Journal of Advanced Academics*, *28*(1): 66-93.

Bessette, H. J. 2008. Using students' drawings to elicit general and special educators' perceptions of co-teaching. *Teaching and Teacher Education, 24*: 1376-1396.

Bouck, E. C. 2007. Co-teaching…Not just a textbook term: Implications for practice. *Preventing School Failure, 51*: 46-51.

Cook, L., and M. Friend. 1995. Co-teaching: Guidelines for effective practice. *Focus on Exceptional Children*, *28*(2): 1-12.

D'Lima, G. M., A. Winsler, and A. Kitsantas. 2014. Ethnic and gender differences in first-year college students' goal orientation, self-efficacy, and extrinsic and intrinsic motivation. *The Journal of Educational Research, 107*: 341-356.

Embury, D. C., and S. D. Kroeger. 2012. Let's ask the kids: Consumer constructions of co-teaching. *International Journal of Special Education, 27*: 102-112.

Fontana, K. C. 2005. The effects of co-teaching on the achievement of eighth grade students with learning disabilities. *Journal of At-Risk Issues, 11*: 17-23.

Goodenow, C. 1993. The Psychological Sense of School Membership among adolescents: Scale development and educational correlates. *Psychology in the Schools, 30*: 79-91.

Klassen, R. M., and S. I. Lynch. 2007. Self-efficacy from the perspective of adolescents with LD and their specialist teachers. *Journal of Learning Disabilities, 40*: 494-507.

Hampton, N. Z., and E. Mason. 2003. Learning disabilities, gender, sources of efficacy, self-efficacy beliefs, and academic achievement in high school students. *Journal of School Psychology, 41*: 101-112.

Hang, Q., and K. Rabren. 2009. An examination of co-teaching: Perspectives and efficacy indicators. *Remedial & Special Education, 30:* 259-268.

Harbort, G., P. L. Gunter, K. Hull, Q. Brown, M. L. Venn, L. P. Wiley, and E. W. Wiley. 2007. Behaviors of teachers in co-taught classes in a secondary school. *Teacher Education and Special Education*, *30*: 13-23.

King-Sears, M. E., A. E. Brawand, M. Jenkins, and S. Preston-Smith. 2014. Co-Teaching Perspectives From Secondary Science Co-Teachers and Their Students With Disabilities. *Journal of Science Teacher Education*, 25 (6): 651–680.

Magiera, K., and N. Zigmond, 2005. Co-teaching in middle school classrooms under routine conditions: Does the instructional experience differ for students with disabilities in co-taught and solo-taught classes? *Learning Disabilities Research & Practice, 20*: 79-85. doi:10.1111/j.1540-5826.2005.00123.x

Malinen, O. P., H. Savolainen, P. Engelbrecht, J. Xu, M. Nel, N. Nel, and D. Tlale. 2013. Exploring teacher self-efficacy for inclusive practices in three diverse countries. *Teaching and Teacher Education, 33*: 34-44.

McMahon, S. D., J. Wernsman, and D. S. Rose. 2009. The relation of classroom environment and school belonging to academic self-efficacy among urban fourth- and fifth-grade students. *The Elementary School Journal, 109*: 267-281.

McKenna, J. W., C. Muething, A. Flower, D. P. Bryant, and B. Bryant. 2015. Use and relationship among effective practices in co-taught inclusive high school classrooms. *International Journal of Inclusive Education, 19*: 53-70. doi:10.1080/13603116.2014.906665

Meece, J. L., E. M. Anderman, and L. H. Anderman. 2006. Classroom goal structure, student motivation, and academic achievement. *Annual Review of Psychology, 57*: 487-503. doi:0.1146/annurev.psych.56.091103.070258

Mensah, E., and G. Atta. 2015. Middle level students' goal orientations and motivation. *Journal of Education and Training Studies, 3*: 20-33.

Midgley, C., M. L. Maehr., L. Z. Hruda., E. Anderman., L. Anderman., K. E. Freeman., M. Gheen., A. Kaplan., R. Kumar., M. J. Middleton., J. Nelson., R. Roeser, and T. Urdan. 2000. *Manual for the Patterns of Adaptive Learning Scales*. Ann Arbor, MI: University of Michigan.

Moin, L. J., K. Magiera, and N. Zigmond. 2009. Instructional activities and group work in the US inclusive high school co-taught science class. *International Journal of Science & Mathematics Education*, 7: 677-697. doi:10.1007/s10763-008-9133-z

Murawski, W. W. (2006). Student outcomes in co-taught secondary English classes: How can we improve? *Reading & Writing Quarterly, 22*: 227-247.

Nichols, J., A. Dowdy, and C. Nichols. 2010. Co-teaching: An educational promise for children with disabilities or a quick fix to meet the mandates of No Child Left Behind? *Education, 130*: 647-651.

O'Rourke, J., and S. Houghton. 2009. The perceptions of secondary teachers and students about the implementation of an inclusive classroom model for students with mild disabilities. Australian Journal of Teacher Education, 34: 23-41.

Osterman, K. F. 2000. Students' need for belonging in the school community. *Review of Educational Research*, *70*: 323–367.

Packard, A. L., M. Hazelkorn, K. P. Harris, and R. McLeod. 2011. Academic achievement of secondary students with learning disabilities in cotaught and resource rooms. *Journal of Research in Education*, *21*: 100-117.

Pancsofar, N., and J. G. Petroff. 2016. Teachers' experiences with co-teaching as a model for inclusive education. *International Journal of Inclusive Education*, *20:* 1043–1053.

Pratt, S. 2014. Achieving symbiosis: Working through challenges found in co-teaching to achieve effective co-teaching relationships. *Teaching and Teacher Education*, *41*: 1–12.

Preston-Smith, S. 2015. *A comparison of perceptions from high school students with and without disabilities about their science co-teaching experience* (Doctoral dissertation). Retrieved from *http://hdl*.handle.net/1920/10152.

Pugach, M. C., and C. L. Wesson. 1995. Teachers' and students' views of team teaching of general education and learning-disabled students in two fifth-grade classes. *The Elementary School Journal*, *95*(3): 279-295.

Rice, D., and N. Zigmond. 2000. Co-teaching in secondary schools: Teachers reports of developments in Australian and American classrooms. *Learning Disabilities Research & Practice, 15*: 190-197.

Rivera, E. A., S. D. McMahon, and C. B. Keys. 2014. Collaborative teaching: School implementation and connections with outcomes among students with disabilities, *Journal of Prevention & Intervention in the Community, 42*(1): 72-85.

Scruggs, T. E., M. A. Mastropieri, and K. A. McDuffie. 2007. Co-teaching in inclusive classrooms: A meta-synthesis of qualitative research. *Exceptional Children, 73*: 392-416.

Shaffer, L., and K. Thomas-Brown. 2015. Enhancing teacher competency through co-teaching and embedded professional development. *Journal of Education and Training Studies*, *3*: 117-125.

Solis, M., S. Vaughn, E. Swanson, and L. McCulley. 2012. Collaborative models of instruction: The empirical foundations of inclusion and co-teaching. *Psychology in the Schools*, *49*: 498-510.

Strogilos, V., and E. Tragoulia. 2013. Inclusive and Collaborative Practices in Co-Taught Classrooms: Roles and Responsibilities for Teachers and Parents. *Teaching and Teacher Education*, 35: 81–91.

Strogilos, V., E. Tragoulia, and M. Kaila. 2015. Curriculum Issues and Benefits in Supportive Co-Taught Classes for Students With Intellectual Disabilities. *International Journal of Developmental Disabilities,* 61 (1): 32–40.

van Hover, S., D. Hicks, and Sayeski, K. 2012. A case study of co-teaching in an inclusive secondary high-stakes World History I classroom. *Theory & Research in Social Education*, *40*(3): 260-291.

Walsh, J. M. 2012. Co-teaching as a school system strategy for continuous improvement. P*reventing School Failure: Alternative Education for Children and Youth*, *56*: 29-36. doi:10.1080/1045988X.2011.555792

Weiss, M. P., and J. W. Lloyd. 2002. Congruence between roles and actions of secondary special educators in co-taught and special education settings. *Journal of Special Education*, *36*: 58-68.

Wilson, G. L., S. A. Kim, and C. A. Michaels. 2013. Factors associated with where secondary students with disabilities are educated and how they are doing. *Journal of Special Education, 47*: 14-161. doi:10.1177/0022466911411575

Wilson, G. L., and C. A. Michaels. 2006. General and special education students' perceptions of co-teaching: Implications for secondary-level literacy instruction. *Reading & Writing Quarterly, 22*: 205-225. doi:10.1080/10573560500455695

Wischnowski, M. W., S. J. Salmon, and Eaton, K. 2004. Evaluating co-teaching as a means for successful inclusion of students with disabilities in a rural district. *Rural Special Education Quarterly, 23*: 3-14.

Zigmond, N. 2006. Reading and writing in co-taught secondary school social studies classrooms: A reality check. *Reading & Writing Quarterly*, 22: 249–268.

Zimmerman, B., and A. Kitsantas. 2007. Reliability and validity of Self-Efficacy for Learning Form (SELF): Scores of college students. *Journal of Psychology, 215*: 157-163.

Table 1

Descriptors of Student Participants

	Students with Disabilities		Students without Disabilities	
Age	12.1 years		12.0 years	
	(range 11.67 to 12.6)		(range 11.8 to 12.33)	
Gender				
Male	2		2	
Female	1		5	
Ethnicity				
African-American			2	
Caucasian	3		4	
Hispanic			1	
Free or Reduced Meals	Yes	No	Yes	No
	1	2	2	5

Table 2

Responses from Students with Disabilities (SWD) and without Disabilities (SWOD) on Learning, Instruction, and Support from Mathematics Co-Teachers

Statements	General Educator	Special Educator	Both Educators	
1. I learn best from:	66.7%		33.3%	SWD
	57.1%		*42.9%*	*SWOD*
Aspects of Instruction				
2. The teacher who grades my work the most is:	100%			SWD
	100%			*SWOD*
3. The teacher who organizes the materials for instruction is:*	66.7%		33.3%	SWD
	57.1%		*28.6%*	*SWOD*
4. The teacher who seems to plan most instruction for this class is:	66.7%	33.3%		SWD
	100%			*SWOD*
5. The teacher who seems to be in charge of the lessons the most is:	100%			SWD
	100%			*SWOD*
Support				
6. When I need help, the teacher I ask is:	33.3%	33.3%	33.3%	SWD
	28.6%		*71.4%*	*SWOD*
7. The teacher who walks around and helps students the most is:		100%		SWD
		71.4%	*28.6%*	*SWOD*
8. The teacher who explains things most of the time is:	33.3%		66.7%	SWD
	71.4%		*28.6%*	*SWOD*
9. The teacher who explains things in different ways is:	33.3%	33.3%	33.3%	SWD
	14.3%	*42.9%*	*42.9%*	*SWOD*
10. The teacher who explains things to me when I do something the wrong way is:		33.3%	66.7%	SWD
	28.6%		*71.4%*	*SWOD*

*Percentages do not sum to 100% when all students did not respond.

SWD: Students with Disabilities

SWOD: Students without Disabilities

Table 3
Students' Responses on Parity, Climate, and Learning for Mathematics

	Strongly Disagree	Disagree	Agree	Strongly Agree	
Parity					
1. When the two teachers are teaching, I think they divide the teaching in half so that one teacher is not doing more work than the other.		66.7%		33.3%	SWD
	14.3%	*42.9%*	*42.9%*		*SWOD*
2. One teacher is mostly in charge of our behavior, and the other teacher is mostly in charge of teaching.			66.7%	33.3%	SWD
		57.1%	*42.9%*		*SWOD*
3. I think both teachers are equal teachers in the classroom.		33.3%	66.7%		SWD
	42.9%	*14.3%*	*42.9%*		*SWOD*
Climate					
4. I believe both teachers enjoy teaching this class.			66.7%	33.3%	SWD
			28.6%	*71.4%*	*SWOD*
5. I enjoy having two teachers in this class.*		66.7%		33.3%	SWD
		57.1	*28.6%*		*SWOD*
6. Students seem to behave better when there are two teachers in this class.*			66.7%		SWD
		14.3%	*71.4%*	*14.3%*	*SWOD*
7. The two teachers seem comfortable sharing responsibilities when they are teaching together.	33.3%	66.7%			SWD
		71.4%	*28.6%*		*SWOD*
My Learning					
8. I learn more when I am in this class with two teachers.				100%	SWD
		14.3%	*71.4%*	*14.3%*	*SWOD*
9. I learn better with two teachers.				100%	SWD
		14.3%	*28.6%*	*57.1%*	*SWOD*
10. The two teachers use more ways to teach than when I am in other classes where there is only one teacher.	33.3%		33.3%	33.3%	SWD
			71.4%	*28.6%*	*SWOD*
11. One of my teachers explains things better than the other		33.3%	33.3%	33.3%	SWD
		57.1%	*42.9%*		*SWOD*
12. I would NOT rather learn with only one teacher in the classroom (*reverse coded*).			33.3%	66.7%	SWD
	14.3%	*14.3%*	*42.9%*	*28.6%*	*SWOD*
13. I wish all my classes had two teachers.*			33.3%	33.3%	SWD
	14.3%	*42.9%*	*28.6%*	*14.3%*	*SWOD*
14. It is NOT hard to have two teachers at the same time (reverse coded).		33.3%	33.3%	33.3%	SWD
			42.9%	*57.1%*	SWOD
15. Having two teachers does NOT make me confused sometimes (*reverse coded*).*		33.3%		33.3%	SWD
	14.3%	*14.3%*	*57.1%*	*14.3%*	*SWOD*

*Percentages do not sum to 100% when all students did not respond.
SWD: Students with Disabilities
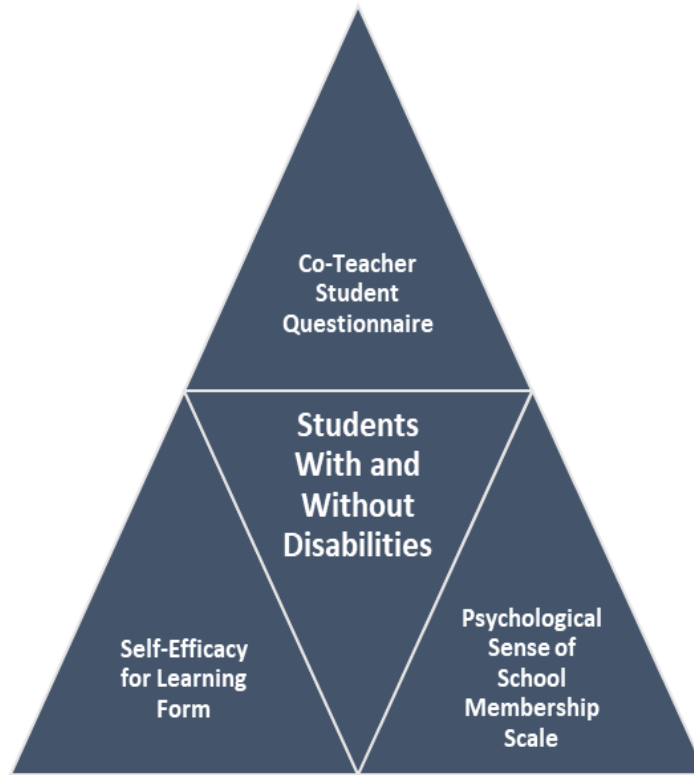*SWOD: Students without Disabilities*

Table 4

Responses from Students to the Psychological Sense of School Membership Scale

Item	Students with Disabilities (*n* = 3)		Students without Disabilities (*n* = 7)	
	M	*SD*	*M*	*SD*
1. I feel like a real part of ___ Middle School.	3.67	.58	4.14	.90
2. People here notice when I'm good at something.	2.67	.58	3.71	1.38
3. It's NOT hard for people like me to be accepted here. [a]	4.67	.58	4.57	.79
4. Other students in this school take my opinion seriously.	4.00	.00	3.43	.98
5. Most teachers at ___ Middle school are interested in me.	4.00	1.00	3.43	1.51
6. I feel as if I belong here.[a]	4.00	1.00	4.43	.98
7. There's at least one teacher or other adult in this school I can talk to if I have a problem.	4.67	.58	4.00	1.53
8. People at this school are friendly to me.	4.67	.58	4.14	1.07
9. Teachers here are interested in people like me. [a]	3.33	2.08	4.29	1.50
10. I'm included in lots of activities at ___Middle School.	2.67	1.53	4.14	1.57
11. I'm treated with as much respect as other students.	4.33	.58	4.00	1.29
12. I do NOT feel very different from most students here. [a]	2.67	1.53	4.14	.90
13. I can really be myself at this school.	2.67	1.53	3.57	1.51
14. The teachers here respect me.	4.50	.71	4.14	1.21
15. People here know I can do good work.	4.00	.00	4.43	.53
16. I do NOT wish I were in a different school. [a]	2.67	1.53	4.43	1.51
17. I feel proud of belonging to ___ Middle School.	3.33	2.08	4.29	1.25
18. Other students here like me the way I am.	4.33	.58	4.14	.38

Note: Statistics are based on a 5-point rating scale; 1 = not true of me and 5 = very true of me.

[a]Negatively worded items were reverse coded and the statement changed in the Table to read as a positive. A higher number indicates a higher sense of belonging.

Figure 1. Research question 1: Instruments used to compare responses from students with and without disabilities.
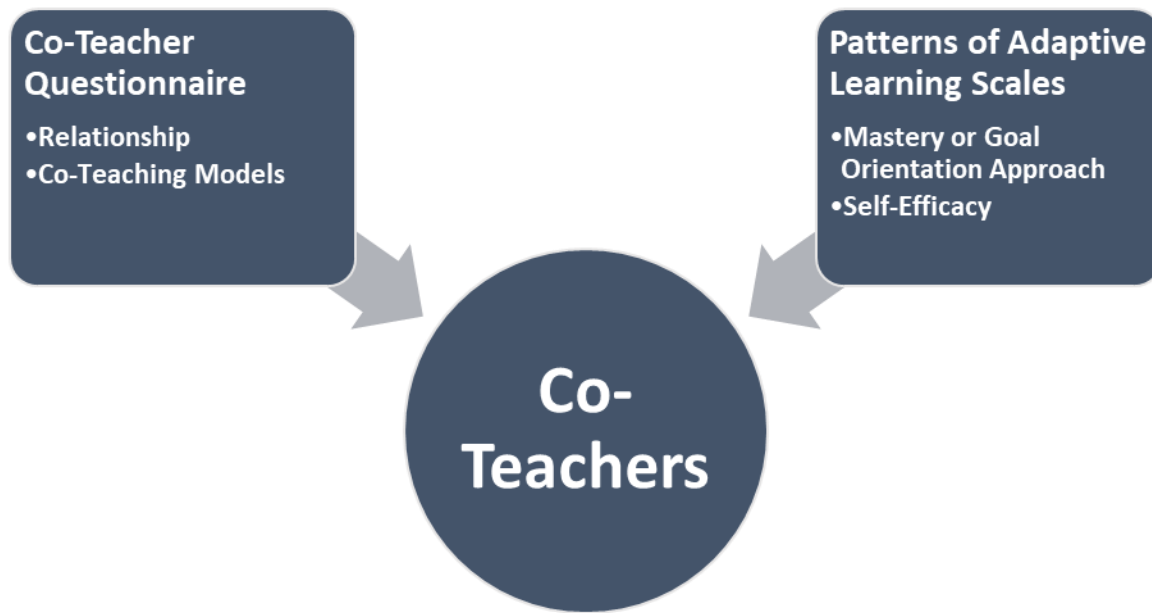
Figure 2. Research question 2: Instruments used to compare responses from co-teachers.